CONSTRUCTION MANAGEMENT PLAN

1 HURDWICK PLACE, LONDON, NW1 2JE

REC REFERENCE: 1CO104730/P1/R0

REPORT PREPARED FOR: KEYSTONE HOLDINGS LTD

DATE: DECEMBER 2017

National Consultancy, Locally Delivered

A CONCEPT LIFE SCIENCES COMPANY

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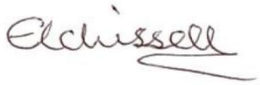
Signature			
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APPENDICES

Appendix I Drawings

1CO104730-001 – Site Location Plan

1CO104730-002 – Site Development

Appendix II Fire Safety in Construction (HSE) – Appendix 3 and 4

Appendix III Site Photographs

COMMITMENT

Commitment to the Construction Method Statement and Logistics Plan	
Signed on behalf of the Project Owner:	
Date:	
Signed on behalf of the Principal Contractor:	
Date:	

Distribution

London Borough of Camden expects to receive no complaints regarding the proposed works to be carried out at sites in Camden. A Construction Management Plan (CMP) shall be kept on site of the proposed works ready available for inspection at the request of an Authorised Officer of the Council. This CMP shall be reviewed as necessary and all revisions shall be signed and dated in an addendum format forming part of the original CMP.

The Project Owner shall distribute copies of this plan to the CDM Co-ordinator, Client, Site Manager and each Subcontractor where relevant/applicable. This will be undertaken every time the plan is updated.

1.0 INTRODUCTION

Resource and Environmental Consultants (REC) Ltd was commissioned by Keystone Holdings Ltd referred to as 'the client', to produce a Construction Management Plan (CMP) in order to support planning application reference 2015/1630/P, for the redevelopment and extension of the existing building into 5no. residential units to include 2no. studio flats, a single 3no. bedroom flat and a single 2n. bedroom flat, and associated works at 1 Hurdwick Place, London, NW1 2JE, 'the site'. A site location plan (ref. 1CO104730-001) is presented within Appendix I.

In order to progress the development, a detailed **Construction Management Plan (CMP)** [i.e. this document] is required by the local authority. The plan includes the following information in order to support the scheme:

- Health and Safety;
- Public safety, site security, neighbourly relations and complaints;
- Operating hours;
- Controls to limit noise, vibration and dust nuisances;
- Monitoring of noise, vibration and dust levels;
- Fire and Emergency Arrangements;
- Pest Control;
- Traffic Management; and,
- Waste Management.

1.1 Key Project Personnel and Involved Parties

Project Owner	GA & A Design Ltd
Contact	Carmen Sala
Address	Mountbatten House, Fairacres, Dedworth Road, Windsor, Berkshire, SL4 4LE

Environmental Consultant	REC Ltd
Project Manager	Charlotte Toth
Address	Unit 47, 1 Winnall Valley Road, Winchester, SO23 0LD
Telephone No	01329 847 783
Email	ctoth@recltd.co.uk

Site Principal Contractor	To be confirmed	
Contractor Lead Contact	To be confirmed	
Site Manager	To be confirmed	Tel:
Health and Safety Coordinator	To be confirmed	Tel:

Fire Safety Coordinator	To be confirmed	Tel:
Recycling / Waste Coordinator	To be confirmed	Tel:
Site Telephone No.	To be confirmed	
Site Email	To be confirmed	

1.2 Proposed Development

REC understands that the proposed development comprises the redevelopment and extension of the existing building into 5no. residential units to include 2no. studio flats, a single 3no. bedroom flat and a single 2n. bedroom flat, and associated works.

A proposed development plan (ref. 1CO104730 – 002) is included in Appendix I.

1.3 Confidentiality

This report has been produced in accordance with REC's standard terms of engagement. REC has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or whom an assignment has been agreed. Should any third party which to use or rely upon the contents of the report, written approval must be sought from REC; a charge may be levied against such approval.

2.0 SITE SETTING

2.1 Site Details

Table 2.1 Summary of Site Details

Site Address	1 Hurdwick Place, London NW1 2JE
National Grid Reference	529183, 183324

A site location plan (ref. 1CO104730-001) is presented in Appendix I.

2.2 Current Site Use

2.2.1 Site Description

A site walkover visit was undertaken on 12th December 2017 with a summary provided below:

At the time of the walkover, the site comprised a two storey dwelling with a commercial property located on the ground floor just off Hampstead Road and adjacent to Mornington Crescent Tube Station.

The site is an end terrace building. Currently 2 Hurdwick Place is undergoing renovations and is using the carpark associated with Hurdwick House to gain access to the rear of the property.

The site is bordered by commercial and residential properties to the south and east, with Hampstead Road and the ASOS headquarters to the west and Mornington Crescent Tube Station to the north.

Access to the site is via Hampstead Road to the west.

2.2.2 Hazardous Materials Storage

No Above Ground Storage Tanks (ASTs) and or Underground Storage Tanks (USTs) were observed to be on site.

2.2.3 Polychlorinated Biphenyls (PCBs)

No equipment that may potentially contain PCBs were observed at site.

2.2.4 Asbestos Containing Materials (ACMs)

No Asbestos Containing Materials were identified

2.3 Surrounding Area

The surrounding land uses are summarised below:

Table 2.2 Summary of Surrounding Area

Direction	Land Use
North	Mornington Crescent London Underground Station
East	Commercial and residential dwellings
South	Residential dwellings

West	Hampstead Road and ASOS headquarters

3.0 SITE MANAGEMENT

3.1 Health and Safety

The contractor should designate the person(s) who will have overall responsibility for Health and Safety on site. The designated person should be on site at all times while operations are taking place, and have the necessary authority to initiate changes to work practices and/or mitigation as appropriate.

The Health and Safety Executive (HSE) has issued Health and Safety requirements for all construction projects within the document **The Construction (Design and Management) Regulations 2015**. Reference should be made to this document prior to and during all construction activities.

This Health and Safety note is for pre-construction guidance and is not intended as a detailed Construction Phase Plan.

3.1.1 Principal Contractor Requirements

The Principal Contractor should ensure that all obligations identified by the Construction (Design & Management) Regulations 2015 and other applicable legislation are complied with. Notably:

- To develop a Construction Phase Health & Safety plan;
- Carry out site inductions to all contractors and operators. These should include both site specific and industry standard rules and regulations;
- Project Safety information will be displayed at site access and egress points, as well as site offices and welfare areas. This should include PPE requirements and details of site Health and Safety managers;
- As required, restrict site access to allow only authorised persons in by use of site security;
- Obtain risk assessments and method statement from all contractors engaged to work on the project, particularly where they may impact on others;
- Maintain the Safety Notice Board and the display of all Statutory Notices;
- Procure the appointment of competent designers or contractors as far as is reasonably practicable through the use of the supply chain management process;
- Monitor the health and safety performance of persons and companies working on the Project;
- Maintain adequate levels of welfare facilities for the work force, including contractors; and
- Encourage an open door policy and blame free safety culture in the reporting of hazards and useful work practices. The statutory requirement of all operatives to look after their own safety and not engage in activities which will put others at risk /cause them harm will be underlined.

3.1.2 Risk Assessment Method Statement

The principal contractor should prepare a Risk Assessment Method Statement (RAMS) prior to commencement of any site works. All personnel who will be on site must be made aware of the

RAMS through a formal induction. A copy of the RAMS should be available in the site office for anyone to access and refer to at any moment.

All personnel on site must sign in and out of site at the beginning and end of each working day.

3.1.3 Smoking Policy

In accordance with current UK legislation, a 'no smoking' policy must be established. Any designated safe open air locations where smoking is allowed should be of a low fire risk design, away from any combustible or flammable materials and provided with metal ashtrays filled with sand.

Smoking rules should be brought to the attention of all workers and visitors to the site. Appropriate signs should be displayed, particularly in high-risk or communal areas such as canteens and site access points.

Contractors should be advised of the health risk associated with smoking and material should be displayed which encourages giving up smoking.

3.1.4 Pest Control

As well as being a threat to health and wellbeing rats, mice and birds can have serious structural and financial impact on buildings such as damaging thermal insulation, electrical wiring, drainage systems and other structural components.

Regardless of whether the site has been previously developed, the contractors shall take the necessary measures to ensure proper control of rodents. The principal contractor should submit a method statement on how the destruction/dispersion of rodents will be controlled during demolition works 28 days prior any building works are being carried out. Additionally the method statement shall demonstrate how the presence of rats and mice has been ascertained and how they will be destroyed if they have been/are found on site. If any rodents are found on site all pest control job receipts will be summited to the council.

3.1.5 Other Considerations

Materials which detail other aspects of personal health, safety and welfare should be made available to all site personnel. These could include:

- Mental health awareness and a contact number for Samaritans;
- Hydration level indication through urine colour;
- Recommendation to use adequate sun protection (sun cream); and,
- Promoting a positive health and safety culture, including incident reporting.

The HSE may attend site at any time and request to see all health and safety documentation, to verify that all safe working practices are being adhered to, and are entitled to stop all works if their findings are unsatisfactory.

3.2 Public Safety, Site Security and Neighbourly Relations

Liaison with local residents who may be affected by construction works is essential. The local residents should be informed of the nature of the works, proposed hours of work and their expected

duration. Additionally clear information should be given well in advance and in writing, where possible within 2 weeks prior to the works commencing.

Communication to local residents should include publicity, with the name, telephone number and address of the main contractor, name of site manager, month and year of completion of works and names and telephone numbers of staff who take immediate action on a contact board.

3.3 Complaints

The applicant shall ensure that a staffed telephone enquiry line is maintained at all times when site works are in progress to deal with enquiries and complaints from the local community. The telephone number shall be publicised widely in the local community affected by the works. It shall also be notified to the Noise and Licensing Enforcement Team on 0207 974 4444.

Should noise, vibration and dust complaints arise from the building works, these complaints must be recorded in a complaint's register and make available to the Local Authority, if requested. The complaint register shall provide information on day, time, details of complaint, details of monitoring carried out and any additional mitigation works.

Should complaints be received concerning works, then all works being the cause of complaint must cease, until such time as further agreement to work is negotiated.

All site staff are to be regularly briefed regarding the complaints procedure.

3.4 Operating Hours

Where residential occupiers are likely to be affected by noise, the hours of work will normally be restricted to:-

- Monday: Friday: 08.00 – 18.00;
- Saturday: 08.00 – 13.00; and
- Sunday and Bank Holidays: No work.

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

Any noisy operations outside the standard hours cannot be undertaken without prior written approval of the Local Authority. The permitted times of working may be reduced in the case of noisy schedules.

All vehicles and plant arriving at and leaving the site should comply with the same restrictions on hours. The main contractor should be held responsible for ensuring these instructions are given to all drivers, including those delivering site materials.

Additionally there should be procedures in place for notifying the owners and or occupiers of the residences and business in the locality in advance of major operations, delivery schedules and amendments of normal traffic arrangements

3.5 Site Welfare and Site Offices

Welfare facilities and site offices will be located within the site and will include facilities for dining, heating of food and water, hand wash basins with hot and cold running water and toilet facilities in sufficient quantities to satisfy the compliment of site staff in line with CDM regulations 2015.

3.6 Controls to limit noise and vibration

3.6.1 Site Preparation, design and layout

It is important to consider the impact of the construction site on the local environment. This will include understanding where the nearest sensitive resource or residential receptor is, the general ambient noise level in the area and having an understanding of what the impacts will be, given the duration, scale and type of construction and demolition required.

Where practicable:

- Locate the site access and the material storage away from sensitive receptors;
- The standard hoarding height of 2.44m (surface density of not less than 7kg/m^2) will be increased to break the line of sight to any residential window;
- Position site huts to provide additional screening of works;
- Maximise the screening effect of buildings through programming/phasing of works. Planning the demolition sequence to utilise screening afforded by buildings to be demolished;
- Provide turning space within the site, or create a through road, avoiding the need to reverse and reducing the associated noise from reverse warning systems;
- Delivery routes and vehicle holding areas will be chosen to avoid diverting traffic;
- Establish an electricity supply to the site via liaison with UKPN. This will limit the requirement for diesel generators which can have a localised noise and air quality impact; and,
- Ensure adequate planning within the project to prevent noise generating from double handling of materials and overlapping of high noise activities.

3.6.2 Operations

All plant and equipment, including any on hire, is to be checked to ensure it is in good working order and conforms to the standards of the manufacturer. Equipment is to be properly silenced and meet statutory emission standards. Defective items are not to be used.

When working within a building, wherever possible ensure all openings (i.e. windows and doors) are sealed.

Before works commence, the site workforce will be fully briefed on the need to keep all noise generated to a minimum. Shouting and raised voices are not permitted other than in cases where warnings of danger must be given. Radios will not be played at a volume that is likely to disturb local residents.

The opening and closing of the site access will be minimised through good coordination of deliveries and vehicle movements.

3.6.3 Monitoring

In order to be proactive and a considerate contractor we would recommend that attended noise monitoring is undertaken at the start of each new activity as identified in the Method Statement/Works Schedule and during out of hours work (if this has been agreed). The Contractor will maintain a record of these noise monitoring results.

Monitoring locations will be chosen to accurately measure the worst affected locations on/off site and be subject to agreement with the Environmental Protection Team.

Noise and vibration monitoring will be used by the Contractor as a proactive tool to: improve work processes; identify and address issues as they arise; investigate complaints and check compliance with any noise predicted levels.

The effectiveness of all measures will be monitored frequently by the main contractor and reviewed at least weekly.

3.6.4 Plant and Equipment

Noisy plant or equipment will be sited as far away as is practically possible from sensitive receptors. The use of barriers such as site huts and acoustic sheds or partitions to deflect noise away from noise sensitive areas are to be employed wherever practicable.

Wherever practicable, all plant and equipment will be powered by mains electricity in preference to locally powered sources such as diesel generators. Hand tools will also be electrically powered rather than petrol or diesel driven.

Vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, maintained in good and efficient working order and operated to minimise noise emissions. The contractor will ensure that all plant complies with the relevant statutory and manufacturers' requirements.

For works consented to occur outside of normal working hours, where practicable, a broad-band reverse warning system will be used on all vehicles and at any time where it is safe to do so, all sirens and alarms will be disengaged.

Machines in intermittent use will be shut down in the intervening periods between works or throttled down to a minimum. Noise emitting equipment that is required to run continuously may have to be housed in suitable enclosures.

Compressors will be "sound reduced" models fitted with properly lined and sealed acoustic covers that will be kept closed whenever the machines are in use.

Equipment which breaks concrete, brickwork or masonry by bending or by bursting will be used in preference to percussive tools as far as practicable.

Pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.

Where practicable, rotary drills and bursters actuated by hydraulic, chemical or electrical power will be used for excavating hard or extrusive material.

Plant will be maintained in good working condition so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum.

Care will be taken when loading or unloading vehicles, dismantling scaffolding or moving materials etc. to reduce impact noise.

3.7 Dust Suppression, Mitigation and Avoidance Measures

3.7.1 Introduction

Referring to visible dust, it is imperative to prevent statutory nuisance arising from the demolition, construction works or dusty activities. Therefore a philosophy of the prevention of dust formation shall be adopted.

A development may include all or some of the following phases which have the potential to generate dust:

- Demolition;
- Earthworks;
- Construction; and,
- Vehicle Movements and Trackout.

The Institute of Air Quality Management (IAQM) has produced guidance on assessing the risks of dust arising from each of these activities and it is recommended that this guidance and risk assessment methodology be followed.

Once the risk of dust and air pollution from each of the phases has been assessed, these risks need to be managed and appropriate mitigation measures put in place.

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

Areas where there is vehicular movement should have a consolidated surface which should be kept in good repair.

The main principles for preventing dust emissions are containment of dust and suppression of dust using water or proprietary suppressants. Suppression techniques should be properly designed, used and maintained, in order to be effective.

Where there is evidence of airborne dust from the building construction/demolition activities the site, the principal contractor should make their own inspection and assessment, and where necessary undertake monitoring. Once the source of the emission is known, the correct action should be taken.

Effective preventative maintenance should be employed on all aspects of the construction/demolition works including all plant, vehicles, buildings and the equipment concerned with the control of emissions to air.

Important management techniques for effective control of emissions include; proper management, supervision and training for process operations; proper use of equipment; effective preventative maintenance on all plant and equipment concerned with the control of emissions to the air; and it is good practice to ensure that spares are available on site in order to fix breakdowns quickly.

3.7.2 Construction Regulations

Building construction regulations are legal requirements aimed at achieving good standards for the construction of domestic, commercial and industrial buildings. They are laid down by parliament and are supported by separate documents containing practical and technical guidance on compliance, which are known as 'approved documents'. The London Borough of Camden website details all of the relevant Construction Regulations which will be relevant to this development.

4.0 FIRE AND EMERGENCY ARRANGEMENTS

4.1 Hospital

The nearest hospital to the site is approximately 0.8 miles south of the site:

- **University College Hospital** – 235 Euston Road, London, NW1 2BU

A route plan and driving instructions are given below:

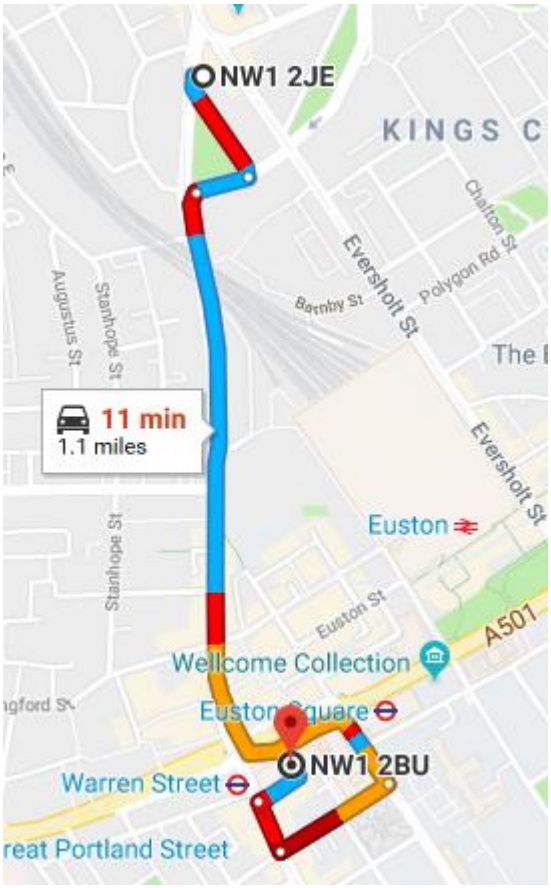


Figure 4.1 – AA Route Planner hospital directions

Distance	Directions	Total
0.0	**Start:** Head south on Harrington Square towards A400	0.0
0.1	Turn right onto Harrington Square/ A400	0.1
0.2	Turn left onto Hampstead Road/ A400	0.2
0.7	Turn right onto Graften Way	0.9
0.1	Turn right onto Tottenham Court Road/ A400	1.0
0.1	Turn right onto Beaumont Place	1.1

4.2 On-Site Emergency response procedures

4.2.1 Spill Action Check List

Quickly assess the nature and extent of the incident. If there is a fire or spillage which cannot be safely controlled:

- Evacuate the area and call the fire brigade. State the extent of the spill and chemicals involved.
- Only attempt to fight fires if appropriate equipment is available and it is safe to do so and the fire is small enough to safely tackle;
- Undertake a head count to ensure all staff and subcontractors are present and accounted for;
- Maintain a safe distance;
- Provide information to emergency services regarding the size and nature of material loss;
- Do not attempt lone rescues or rescues that may put you at harm; and
- Notify appropriate personnel as detailed within the RAMS.

If there is no fire and the spill can be safely controlled:

- Carefully assess the incident area for exact hazards present, information from signs displayed, extent of incident, danger from damaged buildings, explosions, gas, leaks etc.;
- Evacuate personnel and form a cordon to prevent persons entering the spill area;
- Prevent the spread of spilt substances using available spill kits;
- Do not attempted lone rescues or rescues that may put you at harm; and,
- Notify appropriate authorities and personnel as detailed within the RAMS.

4.3 Fire safety

Each year there are hundreds of fires on construction sites, potentially putting the lives of workers and members of the public at risk. Fire safety in construction is about preventing fires from starting and ensuring people's safety if they do.

The HSE has published a **Fire Safety in Construction** document (Second edition, published 2010). This document explains how everyone involved in construction projects can comply with their legal duties relating to fire risks. It is aimed at all those with a role for developing and managing construction sites, including clients and designers, and is relevant to all construction projects.

Appendix II of this Construction and Environmental Management Plan is a reproduction of Appendices 3 and 4 of the Fire Safety in Construction document. These appendices cover:

- Summary of basic precautions for all sites and additional precautions for higher risk sites; and,
- Who does what?

4.3.1 Fire Risk Assessment

Legislation requires a suitable and sufficient fire risk assessment to be carried out by a responsible person (the employer or persons in control).

The Regulatory Reform (Fire Safety) Order 2005 (FSO) places responsibility for compliance on the 'responsible person'. Article 3 defines the responsible person as:

- the employer (for a workplace to any extent under the employer's control); or
- A person who has control of a premises in connection with them carrying out any trade, business or other undertaking (for profit or not); or
- The owner, where the person in control of the premises does not have control in connection with the carrying on by that person of any trade, business or other undertaking.

As with assessments of risk from other hazards, the fire risk assessment should be based on the following approach:

- Step 1 – Identify the hazards;
- Step 2 – Identify people at risk;
- Step 3 – Evaluate, remove, reduce and protect from risk;
- Step 4 – Record, plan, inform, instruct and train; and
- Step 5 – Review.

4.3.2 Fire Precautions

The Fire Safety in Construction document outlines a number of precautions that should be considered within the fire risk assessment. This should be reviewed and incorporated into the site RAMS.

- Emergency signs must be clearly displayed and exit routes must be kept clear;
- Fire alarms must be fully functional with routine (weekly) checks and tests by a nominated and competent person;
- Sufficient and appropriate firefighting equipment should be available on site to deal with all potential fire hazards presented by the site.
- For a typical spread of fire hazards, the following is considered to provide a reasonable level of cover per 200 m^2 of floor area, with no fewer than two each of (a) and (b) on each floor:
  - One 9 litre water or foam; and
  - One CO2 extinguisher (at least 1.1 kg).
- Emergency escape lighting should be installed to illuminate escape routes, firefighting equipment and emergency signage;
- Fire notices should be concise and clearly displayed across the site. Notices should include as a minimum:
  - Details of how to raise the alarm (e.g. "Shout 'Fire'");
  - Contact number for fire service (day and night);
  - Location of emergency assembly point; and,
  - Name of site Fire Safety Coordinator / Fire Warden.

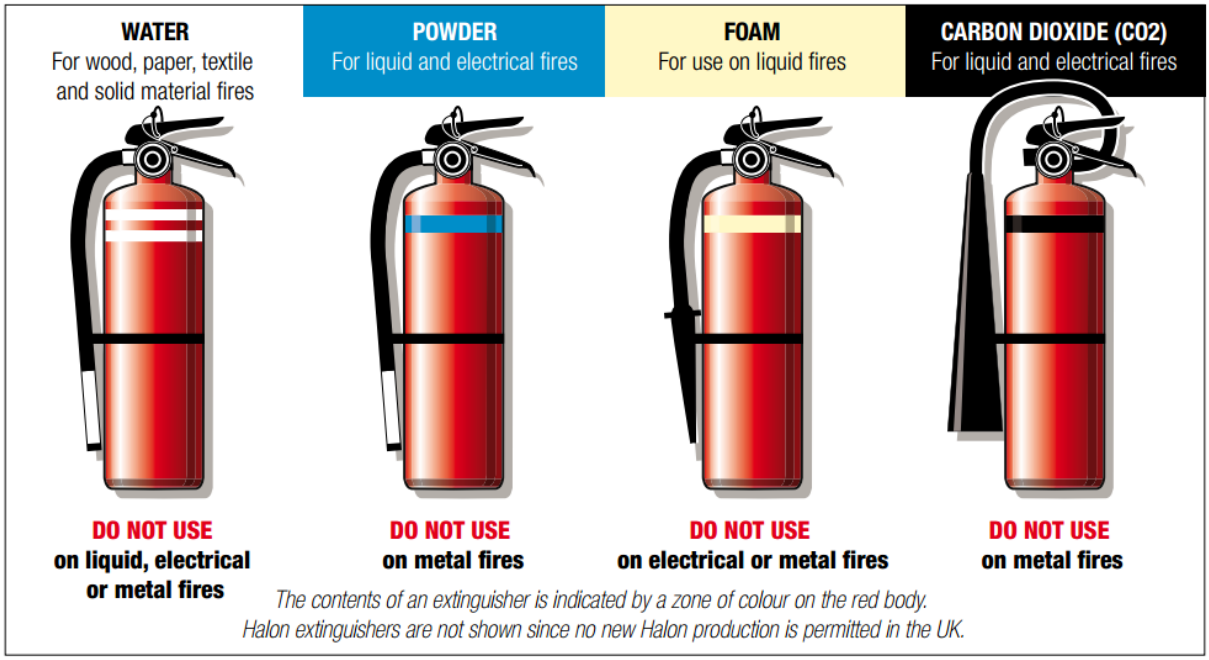


Figure 4.2 - A selection of fire extinguishers. Fire extinguishers complying with BS EN 3 are red with a coloured zone identifying the extinguishing agent (e.g. blue for dry powder)

4.3.3 Legal and enforcement responsibilities

Several pieces of legislation govern fire safety for construction sites and construction activities.

The overarching health and safety requirements during construction work, which include fire safety, are provided by the Construction (Design and Management) Regulations 2015.

Other legislation covering fire safety includes:

- The Regulatory Reform (Fire Safety) Order 2005 (FSO) in England and Wales;
- The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR);
- Fire Safety (Employee's Capabilities) (England) Regulations 2010. (These Regulations require that employers must take account of an employee's capabilities as regards fire safety in entrusting tasks to them.)

These make detailed requirements for fire safety, which also apply to work incidental to the construction activity, e.g. provision of office and welfare facilities.

5.0 TRAFFIC MANAGEMENT

5.1 General

This section outlines the strategy put in place to control the movement of materials to and from an active building site. It is aimed at providing a plan of action to prevent hazards and control risks associated with the interface between the public and construction site traffics.

The purpose of this section is to address the impact of construction traffic to the surrounding residential area and to satisfy pre-planning conditions set by London Borough of Camden Council.

The plan includes details of the following:

- Parking for vehicles of site personnel, operatives and visitors;
- Loading and unloading of plant and materials;
- Storage of plant and materials;
- Provision of boundary hoarding behind any visibility zones;
- Waste Management; and,
- Measures to prevent the deposit of materials on the highway.

5.2 Site Access

Due to site constraints traffic arriving should access the site via Hampstead Road where a dedicated traffic marshal will control all vehicles and deliveries to ensure that the highway is not obstructed for long periods of time. Additionally the road is a red route with no stopping at any time however loading and unloading is allowed to the maximum of 20mins between 8am and 4pm.

On leaving the site traffic vehicles will proceed along Harrington Square and onto Hampstead Road.

In addition local signage will be applied to enable drivers to see the designated route.

It is expected that all site personnel, visitors and delivery vehicles will adhere to a stipulated speed limit on approach to the site. Drivers are required to drive in a manner that minimises vehicle noise, emission and to be considerate of other road users.

Make sure that all drivers and pedestrians know and understand the routes and traffic rules on site. Use standard road signs where appropriate. Provide induction training for drivers, workers and visitors and send instructions out to visitors before their visit.

All plant and vehicles to be used on site should only be operated by suitably trained and qualified personnel (e.g. CPCS card holders).

5.3 Parking

There is limited parking available on the roads directly surrounding the site. Site personnel, operatives and visitors will be encouraged to use public transport as the site is close to bus and adjacent to Mornington Crescent Underground Station.

Parking will only permitted in site designated parking areas and vehicle drivers should avoid blocking intersections or side roads on the approach to the access track. Priority should be given to local residents and any users of neighbouring facilities.

5.4 Loading and Unloading of Plant and Materials

Deliveries for plant and materials will access the site via Hampstead Road. Deliveries must only take place within the site working hours discussed in Section 3.4 unless otherwise agreed prior to commencement.

A vehicle booking system will be utilised on site to control deliveries with the drivers calling in prior to arrival. The booking system allows timings to be booked out so that deliveries do not coincide with peak times such as rush hour. All qualifying vehicles will be required to be FORS registered; rigid and smaller vehicles will be used but articulated lorries will not be allowed. All materials will be on a just in time basis and loaded from the delivery vehicle into the building.

If site personnel are directing vehicle movement they must be sufficiently trained as a banksman/signaller.

5.5 Storage of Plant and Materials

A good standard of housekeeping is required across the site, however particularly within plant and material storage areas.

Flammable materials must be stored away from other materials and protected from accidental ignition as detailed with the fire safety protocols. Despite the size of the site, deliveries should be

planned to keep materials on site to a minimum. This will aid in keeping the site clear and tidy, alongside increasing the ease of access to construction materials.

Storage of materials is to be kept inside locked containers for increased security. Movement of storage areas, and repurposing of land throughout the development for use as storage is going to be likely considering the limited space available on site. Consideration should be given to the use of multi stage and/multi-storey temporary offices and stores, for maximum land use efficiency.

5.6 Boundary Hoarding

Full height timber hoarding will be provided to all exposed elevations of the site this will include viewing for the public as appropriate with lockable access gates and a segregated pedestrian access. Any changes in public pedestrian routes will have signage deployed to highlight the new temporary route during the construction phase.

5.7 Preventative Measures for Highway Debris

Prior to construction a submission of the existing condition of the highway will be required and a commitment is recommended to make good any damages to the highways during construction.

Due to deliveries being undertaken on the highway there is no need for a wheel cleaning facility however if any debris by accident ends up on the public roads any hazards will be cleared by a dedicated Site Operative and the use of road sweepers deployed as appropriate.

Good housekeeping practice, if properly applied, will greatly reduce waste or debris littering the public road and protect conservation areas from construction dust. This in turn will reduce the need for cleaning of public areas.

5.8 Pedestrian Access

From pre-construction site enabling works through to completion, pedestrian access will be restricted to safe areas protected by proper access control measures. There will be no public access to the site and this will be enforced through adequate full height timber hoarding, a dedicated gateman and monitored CCTV for out of hours. During the works, scaffolding will be bridged over the existing footpath on Hampstead Road and will be fully hoarded and lit as appropriate to allow access to the footpath and bus stop.

Prior to any pedestrian right of way closure, proper approval will be obtained from London Borough of Camden and the Highway Agency and adequate signage will be provided to properly inform road users of any programmed sidewalk closure.

5.9 Waste Management

The principal contractor should provide a waste management strategy for handling and disposing of construction waste. Rubbish should be removed at frequent intervals and the site kept clean and tidy.

Fly-tipping will not be permitted. Loads should only be deposited at authorised tips or into designated barges. Deposition should be in accordance with the requirements of the Environment Agency, the current Environmental Legislation and Special Waste Regulations.

5.10 Vehicle Movements and Environmental Considerations

Transport accounts for 10-20% of construction costs. Construction vehicles contribute to serious road congestion, and construction sites suffer with poor reliability of deliveries.

The Considerate Constructors Scheme (CCS) considers aspects of site transport. It rewards site managers who attempt to avoid on-street car parking, ensure routes to site are well identified and keep deliveries out of rush hours or other sensitive times. Using CCS to help manage a site may result in improved transport performance.

The Building Research Establishment (BRE) offer guidance on reducing site transport, and thus cutting costs. Financial and productivity benefits of adopting a more efficient approach to transport and logistics include:

- Reduced fuel and delivery costs;
- Increased delivery efficiency and reliability;
- Reduced costs for parking; and,
- Increased profitability.

The Department for Transport (DfT) provides advice and information on staff travel plans and has recently launched industrial sector transport benchmarks.

5.10.1 Public Transport

Site personnel, operatives and visitors will be encouraged to use public transport as the site is close to bus and Underground lines. As such it is recommended that where possible, sub-contractors should be sourced locally to reduce commuting distances and times; this also helps to promote a positive work-life balance which leads to greater productivity.

5.10.2 Reducing Vehicle Emissions

As far as practicably possible, delivery vehicles and plant operating on site should be operating with low emission engines.

Delivery drivers and plant operators should be strongly encouraged to switch off engines during periods where vehicles are not being used (including throughout loading and unloading operations).

5.10.3 Reducing Vehicle Movements

The BRE suggest a number of considerations which are designed to reduce the number of deliveries which are required on site.

- Start considering transport during design and project planning:
  - Where possible, do not order surplus materials, equipment or machinery;
  - Schedule works to minimise total project time and thus reduce total number of travel days;
  - As far as is reasonable, do not hire and off-hire plant more than once per machine, thus reducing number of deliveries;
- Partnering and supply chain integration - formal or informal arrangements – can lead to multiple deliveries being condensed into one;

- For materials, use local suppliers, share deliveries and arrange with the supplier to send vehicles back full with off-cuts or other waste;
- Site waste should be disposed of as locally as possible;
- The site is in an area with other building projects ongoing. If reasonable, consider sharing deliveries with these other sites;
- Reducing waste reduces transport - for example packaging can be reduced through partnering between the contractor and supplier; and,
- Offsite construction - reduced waste, reduced workforce, and reduced transport – can reduce numbers of movements.

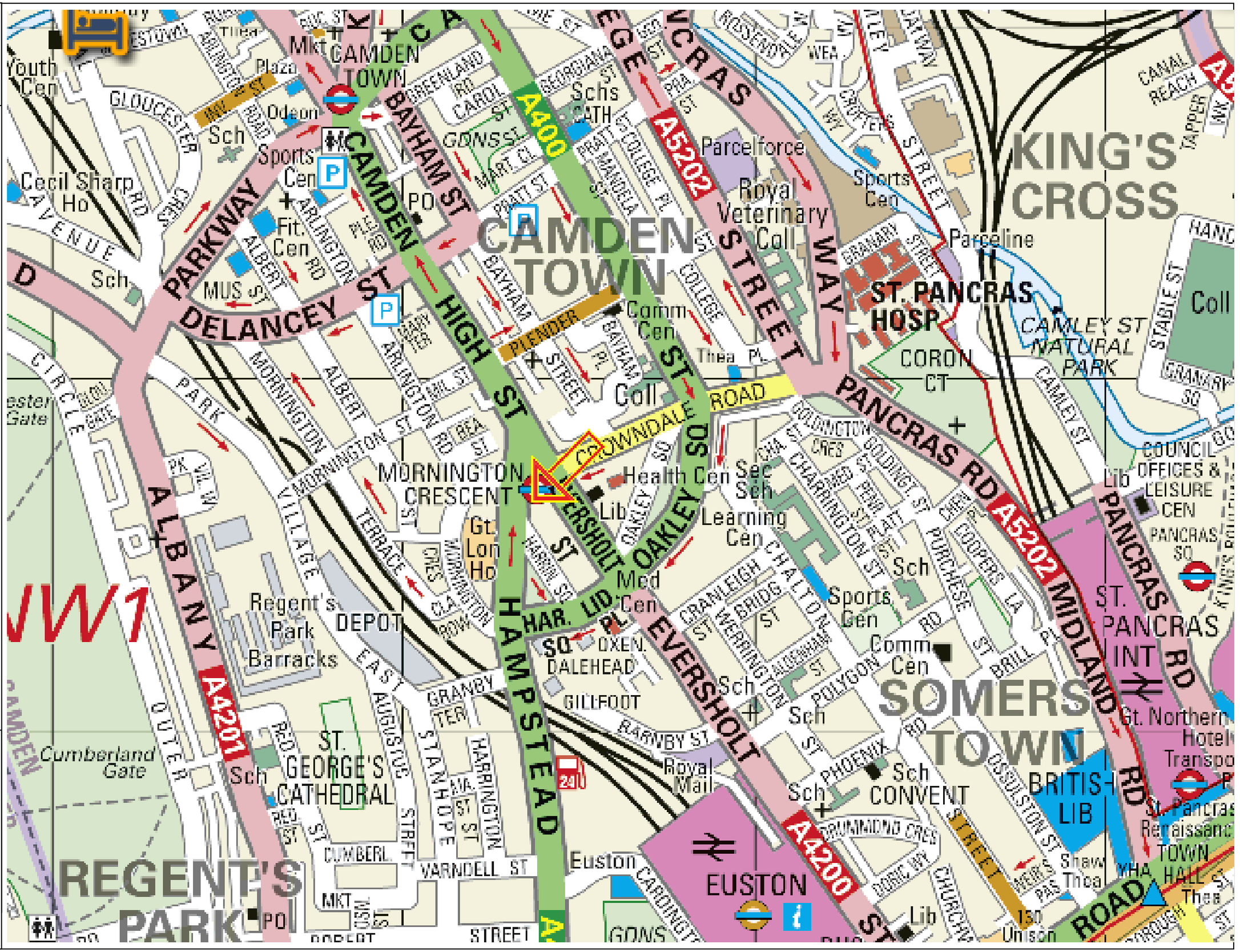
Consideration should be made that for some items it may not be possible to reduce distances, and larger loads may cause more disturbance to neighbours.

APPENDIX I

DRAWINGS

KEY:

N



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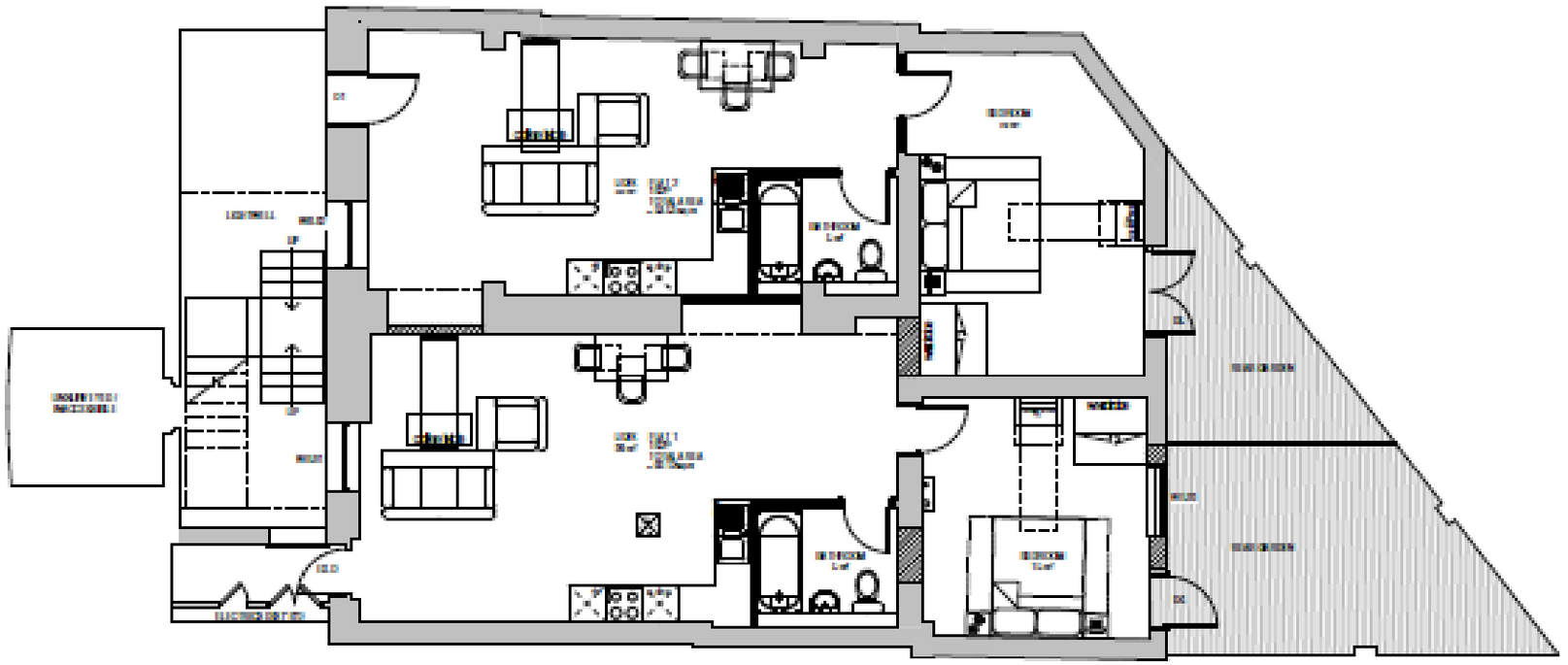
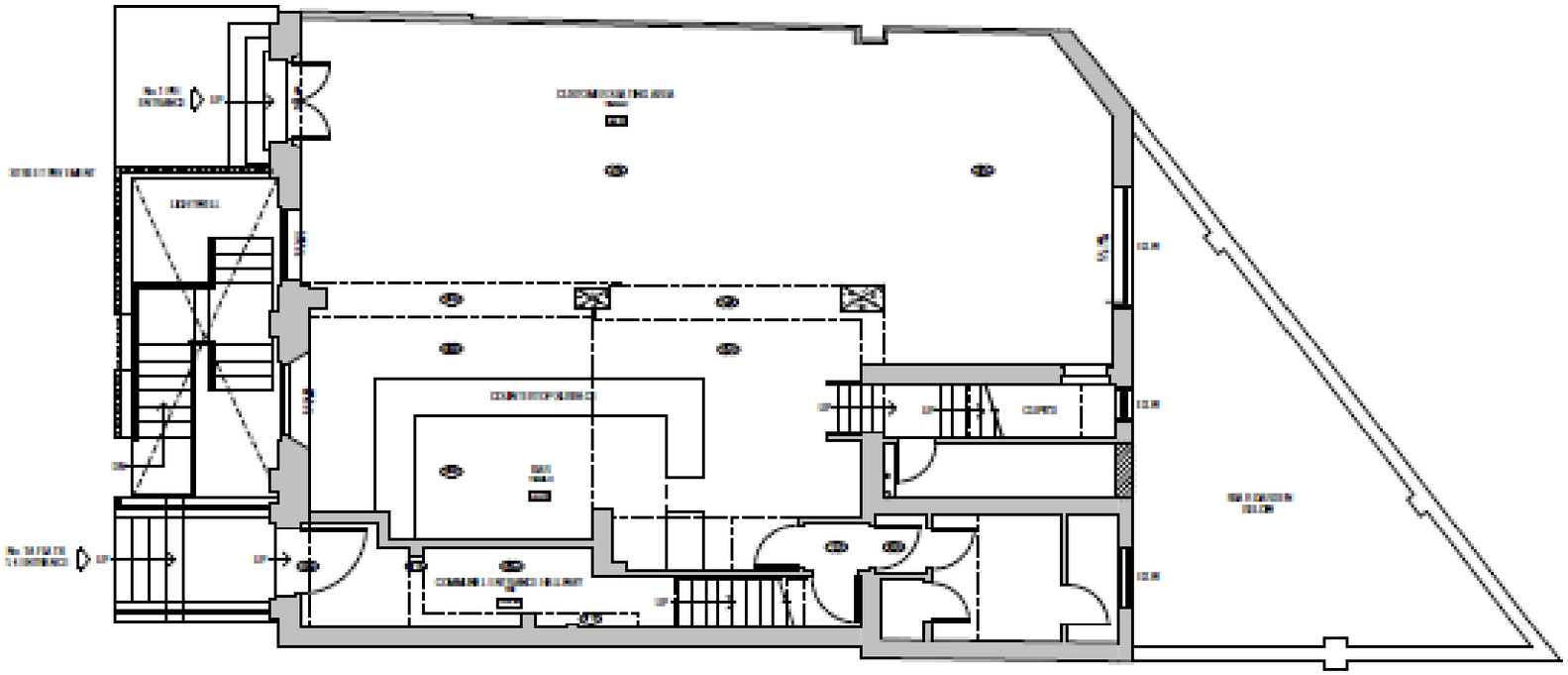
Job Title:	1 Hurdwick Place
Client:	Keystone Holdings Ltd
Job No:	1CO104730
Drawn By:	EC
Approved by:	CT
Notes:	NOT DRAWN TO SCALE
Drawing Title:	1CO104730-001 Site Location Plan

KEY:

N



1 BASEMENT FLOOR GA PLAN
1 : 50



2 GROUND FLOOR GA PLAN
1 : 50

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Keystone Holdings Ltd

Job No:	1CO104730
Drawn By:	EC
Approved by:	CT

Notes:

Drawing taken from 452-20-001 A1

NOT DRAWN TO SCALE

Drawing Title:

1CO104730-002
Site Development Plan

APPENDIX II

FIRE SAFETY IN CONSTRUCTION (HSE)

Appendix 3

Summary of basic precautions for all sites and additional precautions for higher risk sites

Left column – For all construction

Right column – Additional for high risk such as timber frame (ie take precautions listed in the left and right columns)

Process fire safety: How to stop fire occurring during the construction phase	
For all construction (including high risk)	*Additional for high risk such as timber frame*
Planning	
Precautions should be considered at the design stage and before work starts. On notifiable projects the CDMC needs to co-ordinate between designer and other dutyholders. Materials, methods of construction and site processes should be selected to minimise fire risk and work planned in an order that is practical but also minimises risk. For example, alternative specifications for materials which are fixed together using mechanical rather than hot means can reduce risk. Sites involving higher risk materials and processes will need higher standards of general fire precautions. Any design and specification changes which can be made to reduce the fire risk will reap benefits in the extent and nature of required GFPs. Reducing the risks is particularly important when there are constraints which cannot be removed such as location of site and space available. A detailed fire risk assessment and required controls need to be developed from the outset identifying the stages and activities which give rise to critical risk points and which, therefore, will need highest levels of control. Process fire risks must be considered in conjunction with the general fire precautions required at particular stages. A high degree of communication and co-operation is required between all parties, including principal and sub-contractors, to ensure adequate controls are in place at all times.	The fire plan and precautions will need to remain under review as the project progresses. The principal contractor will need to liaise closely with sub-contractors – particularly the timber frame supplier – to make sure the necessary fire precautions and emergency arrangements are in place and understood before they start work on site. Serious consideration should be given to the use of timber and/or materials that have received an appropriate fire protection/retardant treatment. The stage when buildings are at their most vulnerable to fire spread from one to another must be well thought out and minimised as part of the fire risk assessment. Adjacent properties outside the site perimeter should also be considered and, where necessary, the risk controlled. In situations where fire spread from a construction site might endanger the lives of people in adjacent properties, and effective precautions to reduce this risk to an acceptable level cannot be identified or implemented, alternative build methods with a lower fire risk must be adopted.

Reduce amount of combustible material	
Substitute with less combustible or fire-resisting materials. Soft landing system bags should be fire retardant. Reducing presence of protective coverings can contribute to the overall fire load. Install vulnerable features as late as possible and ensure coverings are to flame-retardant specifications wherever reasonably possible. Ensure discarded coverings disposed of correctly.	Consider the use of timber and/or materials that have received an appropriate fire protection/retardant treatment for timber buildings. This is particularly important for high-risk buildings.
Storage	
Plan to reduce storage of combustible materials (just-in-time ordering etc). Keep combustible material away from TAU and buildings being constructed, and escape routes. Control access to stores to prevent materials being distributed across site.	Storage of flammable materials on high-risk sites must be especially considered and all necessary controls put in place.
Rubbish disposal and housekeeping	
Good housekeeping is essential – untidy sites are usually unsafe sites. Flammable materials such as timber become a lot more vulnerable if waste materials, such as timber shavings, paper and flammable materials, are left lying around. Regular disposal of rubbish from the active areas of construction will help to prevent an accidental fire starting or stop an arsonist. Keep rubbish away from TAUs, buildings being constructed and any escape routes. Control disposal points, secure and empty regularly. Organise regular removal off site. It is good practice to use metal or fire-resisting rubbish containers.	High standards of good housekeeping are essential.

LPG, acetylene or other fuel types	
There is always a risk of fire, therefore tight controls are needed. Highly combustible materials must not be stored in a building under construction. See paragraph 132 for storage guidance. Acetylene or oxidising materials should be stored and secured in a separate facility. (It may be units are permitted during normal working hours but then removed from site.) Fuels for generators etc should be dispensed in a safe area away from combustible material.	On all high-risk or timber-frame sites, where possible, storage areas must be at least 15 m from any building. Containers and drums must not be stored within 6 m of any building or boundary fence unless the boundary is a wall that will resist fire for at least 30 minutes. Petrol-driven generators should not be used within a timber-framed or high fire risk building.
Hot works	
Avoid hot work as far as possible and have the work done off site (eg alteration of any structural steel) or with other methods of construction (eg push-fit services instead of soldered). If hot work cannot be avoided, ensure that a hot work permit system is in place. Find a safe area for hot work (keep combustible materials away from any hot work). Any area of hot work must be actively monitored for at least one hour after completion and the area should be revisited two hours later. This means that hot work cannot be carried out near the end of the day (within at least two hours of the site being vacated).	The aim of all dutyholders, such as designers, principal contractors and sub-contractors, should be to design out any hot works in any vulnerable areas of high-risk buildings. If hot work cannot be avoided, ensure that a rigorous hot work permit system is in place. Any area of hot work must be actively monitored for at least one hour after completion and the area must be revisited two hours later. This will mean that any hot work cannot be carried out near the end of the day (within at least two hours of the site being vacated).
Ignition sources	
Smoking	
Should only be allowed in safe, designated areas that are a good distance away from the building.	All timber-framed and high-risk developments must be ‘no smoking’ sites and a smoking ban must be more vigorously enforced by the principal contractor. There must be a high standard of discipline to ensure that any smoking materials are kept safely away in a locker room and areas where smoking is permitted is safely away from the structure or any combustible materials.

Plant and equipment	
Has the potential to increase the risk of fire (causes sparks, heats up or has flammable fuel), therefore each risk needs addressing. Mobile plant should be fitted with an appropriate fire extinguisher.	It is common for contractors to be on site before arrangements have been made to provide a suitable power supply. Often they use large stationary generators (these must be included in the risk assessment and consideration should be given so they are positioned away or protected from combustible structures and materials and refuelled in a safe manner). Portable plant must be maintained, used and refuelled safely (eg a safe external refuelling area). A petrol generator should not be used within an unprotected timber building. In addition, it is recommended that a vulnerable building must be protected from any heat generated by working plant.
Electrical	
Fixed and portable electrical equipment should be used and maintained to control fire risk. Installation and maintenance should be carried out by a competent person.	
Security/arson	
Arson is a regular cause of fire. Therefore, security has to be appropriate for the location of the site (both in terms of preventing arson and the consequence of a fire on any property adjacent to site and its occupancy, eg a petrol station or hospital). Good combustible material storage practices on site away from the secured site perimeter in secured compounds and containers can help deter opportunist vandals/arsonists.	Security can range from: ■ as a general rule, timber frame sites must be kept secure at all times with access ladders or stairs to upper levels made secure at the end of the day to prevent potential arsonists getting further into the building. Other possible access points such as windows should also be made secure as early as practical in the construction programme; ■ in small sites in low-risk areas, the safe storage of materials and site staff training; ■ on larger sites in higher risk areas may require out-of-hours security, CCTV and overnight lighting; and ■ early plaster boarding and fire proofing of the ground floor level to reduce risk.
Site fires	
Avoid burning waste materials on site. Never use petrol or similar accelerants to start or encourage fires.	On high-risk builds, site fires should be prohibited.

Temporary accommodation	
As fire certificates are no longer issued by either HSE or fire authorities, the onus is placed on the firm (responsible person) to carry out a risk assessment, which defines the necessary precautions and ensures these precautions are in place. TAUs should be located away from the building work (no less than 6 m) in the open air. If TAUs have to be located closer, the risk of a TAU fire spreading can be reduced if either the TAU or the part of the building adjacent to it is fire resisting. TAUs should be included in emergency plans. Litter skirts can be installed to stop extraneous material, such as combustibles, from accumulating under the units. The skirts also stop ignition sources, such as cigarettes, from blowing under the unit.	On timber-frame and high-risk sites, temporary accommodation, such as site offices, should be separated from the building under construction by 20 m to establish a fire break. If this is not possible, other measures must be put in place to make sure the risk is controlled. TAUs should not be placed within high-risk buildings.
General fire precautions: What is needed in the event of a fire?	
For all construction (including high risk)	*Additional for high risk such as timber frame*
These need to be considered at the design stage and in conjunction with the assessment of fire risk from the processes, materials and build sequences to be followed. General fire precautions need to be planned at the design stage and considered for all stages of the project, including those where fire risks will be at their most critical. The emphasis should be on reducing the risk as far as possible. However, general fire precautions will always be needed to mitigate the effects of a fire occurring and ensuring the safety of anyone who might be affected by it. The complexity of GFP required will depend on the site-specific risk assessment. A key principle should be to maximise the use of the finished building fire precautions to protect people during the construction work: ■ on new-build install finished building fire precautions as early as possible; and ■ on refurbishment maintain as much as possible of existing building GFPS for as long as possible.	Where timber-frame or high-risk sites are close to neighbouring properties you will need to consider how a major fire would affect your neighbours' existing emergency and evacuation arrangements. You will need to co-operate with them to ensure that the risks from fire are properly controlled. Particular care will be needed when neighbouring properties are used for residential purposes or by vulnerable groups, for example, schools, hospitals or care homes.

Means of escape	
Need to consider the spread of smoke for all types of construction. Travel distances to safety should be reduced to a minimum (see Table 1 – refer to paragraphs 190–196). The distances given are from the place of work to an exit from the structure, typically a door leading to the outside at ground level; or to a stairway or compartment protected against fire. Remember that routes in and out of the build may be incomplete and obstructions may be present. Make sure that, wherever possible, there are at least two escape routes in different directions: ■ Ladders may be suitable for simple projects for small numbers of able-bodied, trained staff. ■ On complex or multi-storey projects temporary proprietary stairwells should be used if reasonably practicable. It may be possible to sequence the building to commission early the permanent stairs to be used as an escape route. ■ Exit onto scaffold, if deemed part of escape plan, should be easily accessible, ie not through a window opening unless it is designed for the purpose, with easy access, or full height with the panel removed or balcony opening. ■ Escape routes and exits should be kept clear and clearly signed (never locked when people are on site). ■ Emergency lighting should be installed, if necessary, to enable escape. This is very important in enclosed stairways if normal lighting fails during a fire. ■ An assembly point should be identified where everyone can gather and be accounted for.	In high-risk buildings, this should be based on travel distances given in Table 1 (refer to paragraphs 190–196). But, more importantly, must reflect the risk. The speed of fire spreading through a timber or other high-risk structure means that there is a need to have very clear and effective emergency exit arrangements. If possible, stairs should be installed as the build progresses to give an internal exit route. This may not be achievable when sacrificial cassettes or crash decks are used. As such, the only means of escape is via the external scaffolding. Consideration needs to be given to compliance with the travel distances above. Protected stairways may be necessary in many high-risk buildings to ensure safe travel distances are maintained. Timber engineered ‘I’ beams are susceptible to structural collapse at an early stage and this risk will need to be reflected in the fire risk assessment.

Fire alarms – giving warning and detection	
Fire warning systems are needed on all sites other than very small sites. The type of alarm needed can range from manual bells or klaxons to sophisticated automatic systems, including visible warning devices. Whatever system is chosen, make sure that: ■ it is appropriate for the size of the building, number of storeys and complexity; ■ it can be heard by everyone working on site over normal background noise; ■ it is located so it can be activated immediately (delay can be fatal); ■ manual bells or klaxons are only used on very small sites if they can be operated away from danger; and ■ on complex or multi-storey buildings, the alarm has an appropriate interconnected alarm (by protected cables or wireless) to enable all to hear (to BS 5839 temp alarms). Detection may be needed in TAUs and other areas where fire could start and go unnoticed.	In all but very small, high-risk buildings, alarms should be interconnected (by protected cables or wireless) to enable all to hear (to BS 5839 temp alarms). Detection in high-risk building may well form part of the overall strategy, especially where fire could start and go unnoticed.
Fire-fighting equipment	
Fire extinguishers should be: ■ located at identifiable fire points at each storey exit; ■ appropriate for the risk (for wood a combination of water or multi-foam is necessary); and ■ serviced and maintained by a competent person. Those carrying out hot work should have appropriate fire extinguishers with them and know how to use them.	The fire-risk assessment may indicate that additional extinguishers are required, especially near escape routes. In high-rise buildings where there is a need for fire protection consideration should be given to installing equipment such as dry rises as the building progresses.

Compartmentation/stopping spread	
If fire safety (safe travel distances and preventing internal and external spread) cannot be achieved from a single fire zone (ie the whole structure), then consideration must be given to appropriate levels of internal compartmentation to protect escape routes and limit fire spread. A building can be sub-divided by fire-resisting walls and floors (ceilings).	The early installation and completion of compartments can provide protection during the construction phase. Any openings need to be protected to an equivalent standard of fire resistance to the rest of the compartment. This means that if doors are needed through the compartment they need to be fire resisting. Work activities also need to be carefully monitored to ensure that any holes or gaps remaining after services are installed are correctly filled in (fire stopped). The final cladding should be put in place as soon as is reasonable to prevent external fire spread.
Emergency procedures	
An emergency fire plan should be prepared for every site. Small- and low-risk sites only require very simple plans, but higher risk sites will need more careful and detailed consideration, including: ■ an emergency plan, which should be available before work starts; ■ a responsible person to ensure that fire precautions are in place; ■ an up-to-date plan that is appropriate for the circumstances and that makes clear who does what during a fire; ■ staff who know what they need to do if there is a fire; ■ managers who need to make sure that everyone (including visitors) on their sites knows what to do. On larger high-risk sites, fire drills may be appropriate; ■ fire drills, which are an important check for the principal contractor on whether induction and fire safety plans work, and training for site workers; ■ fire action notices, which should be clearly displayed where everyone on site will see them, for example at fire points, site entrances or canteen areas; ■ on larger or more complex sites, fire wardens to ensure process and GFP controls are in order; ■ arrangements to liaise with fire services; and ■ arrangements to ensure instruction, information and training is given to all involved with work on the site.	Higher risk sites will need more careful and detailed consideration. It is crucial to make arrangements to liaise with the fire service during the pre-construction phase regarding access and water supply. If fire does occur, the fire service will need to know how the site is organised. It is useful to liaise with them beforehand so that they are aware of the site structure.

Appendix 4
Who does what?

Summary of duties under the CDM Regulations under CDM 2007 – (Construction (Design and Management) Regulations 2007)

1 The CDM Regulations place duties on all those who can contribute to the health and safety of a construction project. For notifiable projects (those that last more than 30 working days or involve more than 500 person days), additional duties are placed upon clients, designers, CDM co-ordinators, principal contractors and contractors, and documents known as the construction phase plan and the health and safety file must be produced.

	All construction projects (Part 2 of the Regulations)	**Additional duties for notifiable projects (Part 3 of the Regulations)**
Clients (excluding domestic clients)	Check competence and resources of all appointees. Ensure there are suitable management arrangements for the project welfare facilities. Allow sufficient time and resources for all stages. Provide pre-construction information to designers and contractors.	Appoint CDM co-ordinator.* Appoint principal contractor.* Make sure that the construction phase does not start unless there are suitable welfare facilities and a construction phase plan is in place. Provide information relating to the health and safety file to the CDM co-ordinator. Retain and provide access to the health and safety file. * There must be a CDM co-ordinator and principal contractor until the end of the construction phase.

CDM co-ordinators		Advise and assist the client with their duties. Notify HSE. Co-ordinate health and safety aspects of design work and co-operate with others involved with the project. Facilitate good communication between client, designers and contractors. Liaise with principal contractor regarding ongoing design. Identify, collect and pass on pre-construction information. Prepare/update health and safety file.
Designers	Eliminate hazards and reduce risks during design. Provide information about remaining risks.	Check client is aware of duties and CDM co-ordinator has been appointed. Provide any information needed for the health and safety file.
Principal contractors		Plan, manage and monitor construction phase in liaison with contractor. Prepare, develop and implement a written plan and site rules (initial plan completed before the construction phase begins). Give contractors relevant parts of the plan. Make sure suitable welfare facilities are provided from the start and maintained throughout the construction phase. Check competence of all appointees. Ensure all workers have site inductions and any further information and training needed for the work. Consult with the workers. Liaise with CDM co-ordinator regarding ongoing design. Secure the site.

Contractors	Plan, manage and monitor own work and that of workers. Check competence of all their appointees and workers. Train own employees. Provide information to their workers. Comply with the specific requirements in Part 4 of the CDM Regulations. Ensure there are adequate welfare facilities for their workers.	Check client is aware of duties and a CDM co-ordinator has been appointed and HSE notified before starting work. Co-operate with principal contractor in planning and managing work, including reasonable directions and site rules. Provide details to the principal contractor of any contractor whom they engage in connection with carrying out the work. Provide any information needed for the health and safety file. Inform principal contractor of problems with the plan. Inform principal contractor of reportable accidents, diseases and dangerous occurrences.
Workers/ everyone	Check own competence. Co-operate with others and co-ordinate work so as to ensure the health and safety of construction workers and others who may be affected by the work. Report obvious risks.	

Clients

2 Clients and the decisions they take can have a major influence on the health and safety of a project and play a key role in helping deliver a safer and healthier industry. Clients can create the vision, provide the commitment and establish the culture of a project, demonstrating their respect for the health and safety of others.

3 Among other duties the client must take reasonable steps to ensure that those they appoint to undertake the work are competent. They should ask questions where fire is an important issue, for instance construction work at a fuel storage depot or partial refurbishment of a heavily occupied city centre office block. Other questions should be asked about:

- previous experience of similar work;
- internal arrangements already existing to address fire issues;
- how candidates suggest dealing with the particular project's fire problems; and
- how will general fire precautions be addressed (eg may need additional arrangements if existing fire escapes are unavailable).

4 Clients should co-ordinate their work activities with those of their project team so that all parties can work safely and effectively throughout the project. The client must ensure that their actions and decisions do not impinge on the ability of others to comply with their duties or instruct them to do something which is unlawful. Where the clients' activities overlap with those of a contractor, they might need to become involved in the operational management of site activities. However, the principal contractor has the main responsibility for co-ordinating site safety in these circumstances.

5 The client should provide pre-construction information relevant to health and safety, which they either possess or can reasonably obtain. This could be information about the site, the premises, work processes or activities where the construction work is to be carried out. For example, provide information on:

- site rules on fire safety standards at occupied premises;
- proximity of site to other occupied buildings and the nature of their use (eg residential property, school etc);
- location of buried services;
- previous contents of tanks;
- previous uses of site and flammable materials likely to be present as a result;
- special precautions required for fire-sensitive activities nearby, eg chemical processing;
- limits on-site storage areas; and
- arrangements for, or limitations on, rubbish disposal.

6 The client must take reasonable steps to ensure that the contractor has management arrangements in place for all projects, as well as ensuring that the principal contractor has prepared a construction health and safety plan for notifiable projects.

7 During the earliest planning stages for higher risk projects such as large timber-frame structures careful consideration will need to be given to both the on-site and off-site fire risks. In built up areas, designers and contractors will need to evaluate the risk to surrounding premises. The risk will be greatest when the structure is erected but the protective measures are not yet installed. This period of maximum vulnerability, during which fire may spread quickly, must be considered in detail and minimised as part of the fire risk assessment. Where sites are close to residential property, schools or similar premises, or near higher fire risk sites such as petrol stations, the risk should be discussed with the fire service at the earliest design stage. In situations where fire spread from a construction site might endanger the lives of people in adjacent properties, and effective precautions to reduce this risk to an acceptable level cannot be identified or implemented, alternative build methods with a lower fire risk must be adopted.

8 Ignition sources on site during the construction phase are largely outside the control of the client, so you may not have much relevant or useful additional information to provide to CDM co-ordinators or contractors. In some cases, you may wish to specify operational constraints to take into account the risks to your own employees who may be affected by the construction work, especially if the work is in high-risk areas such as in a chemical plant.

9 Providing general fire precautions on site is often outside your control so you will have little role in providing them.

10 If during the construction phase existing precautions installed in your building need to be maintained, you should provide the contractor or, for notifiable projects, the CDM co-ordinator, with relevant information. This might include:

- location of dry and wet risers;
- installation diagrams of the fire alarm system;
- operational status of equipment, eg are the sprinklers still connected?
- existing means of escape provision.

11 If you share occupied premises with construction workers, provide information on existing emergency arrangements to the CDM co-ordinator (or main contractor if not notifiable). This could include information on the following:

- when you will have fire drills;
- existing fire escape routes;
- limitations on the location of assembly points; and/or
- existing arrangements with local fire services.

12 If there is a need for the occupier and construction emergency arrangements to be integrated, to achieve this you should co-operate with the contractor on non-notifiable work and, for notifable contracts, CDM co-ordinator and the principal contractor.

13 If you provide site accommodation, co-operate with the principal contractor so that the appropriate standards are met, especially if the accommodation is within the building or structure being worked on.

14 Contractors may need to provide sleeping accommodation for construction workers. If so, let the contractor know of any restrictions on where sleeping accommodation can and cannot be sited. It is important that no one sleeps within the building under construction or refurbishment.

The role of the CDM co-ordinator

15 The CDM co-ordinator is considered to be the client's key adviser on notifiable construction projects, offering assistance with health and safety matters and compliance with the CDM Regulations.

16 Pre-tender plans may need to consider site-wide fire issues and provide relevant information on fire risks, eg:

- location and nature of flammable substances on site;
- location of gas services;
- nature of nearby activities, especially if they are sensitive to site-generated fire risks or pose fire risk to the construction work;
- details of any likely continued occupation of the site (especially in office or residential projects); and
- details of any intended construction processes or methods which lead to high fire risk.

17 It may also be possible and appropriate at the pre-tender stage to set out generally applicable site standards. This is more likely where premises are shared with occupiers and their needs have to be considered in the site arrangements. For example, there may be constraints arising from the occupiers' needs on rubbish removal and clearance. There may also be a need to co-ordinate the general fire precautions such as alarms and emergency exits. This does not detract from the principal contractor's duty to develop the subsequent construction phase plan, but it is legitimate for the CDMC to describe the general limitations within which the construction phase plan has to be drawn up.

18 Where the client chooses a design with a particular build method or type of structure with a higher fire risk, the CDM co-ordinator will need to advise the client about its suitability, taking account of the site location and its surroundings. An example would be where the client has specified a higher fire risk build method such as timber frame. In heavily built-up urban areas, careful consideration will need to be given to the risk of a fire spreading to neighbouring properties, putting the people who use them at risk. In situations where fire spread from a construction site might endanger the lives of people in adjacent properties, and effective precautions to reduce this risk to an acceptable level cannot be identified or implemented, alternative build methods with a lower fire risk must be adopted.

Where the risks can be controlled to an acceptable level, the pre-tender information should contain details of the precautions which will need to be adopted. CDM co-ordinators should take advice from specialists where this is appropriate.

19 CDM co-ordinators must also check that designers are providing additional information on any health and safety hazards that are not obvious from the standard design documents to the relevant people, for example, incomplete or absent fire-engineered solutions or incomplete compartmentation of the structure may lead to a very rapid spread of smoke and flames. Fire-engineered elements of design may differ from what site staff perceive as the 'norm' and their performance in the overall fire strategy depends on their correct installation.

20 Successful control of ignition sources is largely dependent on detailed day-to-day site control, but some site-wide constraints may be appropriate for inclusion in the pre-construction information, especially where such matters arise from constraints placed by the client, for example, the need for hot work permit-to-work systems for certain high-risk circumstances.

21 The CDM co-ordinator does not have to set out the general fire precautions for the site. The CDM co-ordinator has to provide the information on existing fire precautions and any requirements made by the client, ie where there is overlap with their activities or where the client stipulates a particular standard to be achieved. It is the principal contractor's duty to establish the fire precautions for the site.

22 Information on design conclusions relevant to construction phase fire safety should be included in the pre-construction information. Principal contractors need this information to arrange for appropriate construction sequences so that, for example, in multi-storey buildings protected stairways are installed at an early stage. You will also need to engage with designers in planning precautions throughout the project.

23 Pre-construction information should include information available that would influence the development of the construction phase plan by the principal contractor, for example:

- available access for fire services;
- available areas for assembly points; and
- existing emergency arrangements on occupied sites.

24 Consider temporary accommodation needs in the pre-construction information. The CDM co-ordinator will not usually be concerned with the practical details of operational TAU requirements. However, pre-construction information should normally contain information on:

- any limitations on where TAUs can be sited;
- any information from designers on TAU location; and
- any requirements or restrictions on the use or siting of sleeping accommodation provided by principal contractors.

The designer's role

25 Designers are in a position where they can contribute to the elimination of health and safety hazards in construction from the earliest stages of a project.

Who are designers?

26 Designers are organisations or individuals who carry out design work for a construction project, including temporary works design. Designers may include

architects, consulting engineers, quantity surveyors, interior designers, temporary work engineers, chartered surveyors, technicians, specifiers, principal contractors and specialist contractors. **Anyone who specifies or alters a design may be considered a designer.** In certain circumstances, this can include clients. Designers have duties under CDM regardless of the size, duration or nature of the project.

27 The term 'design' is a wide term under the CDM Regulations and includes drawings, design details, specifications and bills of quantity.

28 In new buildings and refurbishments, fire-engineered solutions are sometimes used to meet building regulation requirements in completed buildings. In this case, during construction the building and personnel within may be at higher risks; for example, compartmentation may be incomplete, smoke vents or sprinklers non-operational.

29 Incomplete fire-engineered solutions or compartmentation of the structure may lead to a very rapid spread of smoke and flames. Fire-engineered elements of design may differ from what site staff perceive as the 'norm' and their performance in the overall fire strategy depends on their correct installation. Designers should eliminate or reduce fire risk in their designs and ensure that issues are identified and integrated into the overall design process to develop appropriate provisions, primarily to ensure that the building can progress while protecting workers or others. It may be necessary to put in temporary compartmentation or other fire-engineering solutions. It is also very important to pass any relevant information to the contractor to enable them to commission early the engineered solutions or put in place temporary measures to ensure the safety of site personnel in the event of a fire. Designers should provide sufficient and relevant information to those who will need it; this could be in the form of notes on drawings, written information provided with the design, or suggested construction sequences.

30 During the planning phase for higher risk projects such as large timber-frame structures careful consideration will need to be given to both the on-site and off-site fire risks. In built up areas, for example where sites are close to residential property or schools, designers will need to evaluate the risk to surrounding premises. In situations where fire spread from a construction site might endanger the lives of people in adjacent properties, and effective precautions to reduce this risk to an acceptable level cannot be identified or implemented, alternative build methods with a lower fire risk must be adopted.

31 To reduce potential fuel sources designers should consider proposals in terms of the amount of flammable materials that are specified. If they are used only in small amounts the risk may be insignificant, but as the amount and variety of potentially flammable substances involved in a project increases, the designer's role in their selection becomes increasingly important in controlling workplace risks.

32 Designers need to know if the materials they are specifying are flammable or not and, if they are, to what extent. If it's not known, find out from manufacturers or suppliers. If less flammable alternatives are available, specify them unless there is a particular design reason why a more flammable one has to be used instead. Particular attention needs to be paid to the selection of:

- paints;
- solvents; and
- adhesives.

33 Consider if the use of such substances is really necessary. For instance, is it necessary to paint the wall of an underground car park at all?

34 The sequence of construction may have implications for fire loads. For example, if vulnerable internal fittings are designed for installation last, the need to protect them with potentially flammable coverings will be reduced.

35 Provide relevant health and safety information with your design for those who may need it during subsequent construction work. This could include:

- highlighting where significant amounts of flammable materials are specified; and/or
- information on intended installation sequences.

36 Pre-construction information will need to consider existing on-site and off-site fire risks and provide relevant information on fire risks, for example:

- location and nature of flammable substances on site;
- location of gas services;
- nature of nearby activities, especially if they are sensitive to site-generated fire risks or pose fire risks to the construction work;
- details of any likely continued occupation of the site (especially in office or residential projects); and/or
- details of any design assumptions or suggested construction processes or methods which lead to high fire risk.

37 It may also be possible and appropriate to set out in the pre-construction information, generally applicable site standards. This is more likely where premises are shared with occupiers and their needs have to be considered in the site arrangements. For example, there may be constraints arising from the occupiers' needs on:

- rubbish removal and clearance; and/or
- the nature and location of flammables storage.

38 This does not detract from the principal contractor's duty to develop the construction phase plan.

39 Ignition sources are usually on site more as a result of the way contractors carry out their work rather than the designs that they are attempting to construct. However, you can reduce the need for hot work in your designs. Ask the following questions:

- Can steel components be fabricated off site rather than being welded on site?
- Can steel sections be bolted rather than welded together?
- Can you specify push or thread-fit plumbing connections rather than soldered jointing?

40 You will have little influence on the provision of temporary precautions provided solely during the construction phase, such as hand-held fire extinguishers. You have more potential in providing design features to improve general fire precaution standards during construction. The following matters can usually be considered. Many of them will be required anyway as part of the specification for the completed building. It should often be straightforward providing them for the benefit of construction workers as well as the final occupants. These are matters in which you should engage with the CDM co-ordinator.

41 When addressing fire risk in the design it may be necessary to arrange for wet and dry risers to be installed early in the construction sequence. This is important in high-rise projects.

42 Arrange for compartmentation to be introduced at as early a stage as possible. This may not always be easy to achieve, but can substantially reduce the spread of fire and smoke where it is feasible and should be considered in higher risk projects.

43 Internal stairways are usually a fundamental part of the design and can generally be installed at an early stage to provide protected means of escape. They also have the operational benefit of easing movement about the site.

44 If stairs are to be used as emergency exits (protected stairway escape routes) during the construction phase, arrange for self-closing fire-resisting doors to be installed at an early stage. Temporary doors can be specified during the construction phase, if necessary, to avoid damage to the final items.

45 Consider installing permanent alarm systems at the start of the fit-out stage or before.

46 The above guidance contains some basic construction phasing issues. For instance, installation of primary stairways is dependent on, and affects, other design features. It is, therefore, important that you liaise with other designers and members of the project team on such matters.

47 Fire service access may be easy once the building is finished, but you should consider the building footprint in relation to the access that will be available during construction, eg when roads will not be completed and the site will be obstructed by materials, plant, temporary site accommodation etc. In higher risk projects, such as tall structures with large numbers of contractors at work, you should consider this in more depth.

48 In most cases, you will be concerned with the finished building rather than the temporary accommodation during the construction phase. Even if you have no direct involvement with the design of TAUs, you should allow space for them when considering the general layout of the structure. Ideally, designs should allow space for TAUs to be sited outside the structure. If this is not possible, consider suitable locations for internal accommodation and inform the CDM co-ordinator of your conclusions.

49 If you are involved in the specification of cabins or sleeping accommodation for construction workers, you will need to make sure that your proposals meet high fire safety standards. More detailed advice is available from fire prevention officers.

Principal contractors

50 A ‘principal contractor’ has to be appointed for projects which last more than 30 days or involve 500 person days of construction work. The principal contractor’s role is to plan, manage and co-ordinate health and safety while construction work is being undertaken. The principal contractor is usually the main or managing contractor for the work.

51 The significant findings of the fire risk assessment, along with the action taken and the emergency procedures, should be incorporated in the construction health and safety plan prior to work commencing on site. The plan should cover the off-site risks from fire as well as the on-site risks. For higher risk build methods such as timber frame, careful consideration should be given to the possibility that a major fire could spread to neighbouring properties, and the risks to people who use them should be fully considered and addressed. The plan and precautions will need to remain under review as the project progresses. The principal contractor will need to liaise closely with sub-contractors – particularly on high fire risks (eg the timber frame supplier) – to make sure the necessary fire precautions and emergency arrangements are in place and understood before they start work on site.

52 Site rules within the plan can be a particularly important part of controlling the accumulation of flammable materials. Site rules can include standards to be followed including:

- frequency of rubbish clearance by contractors;
- location and nature of rubbish storage facilities to be provided;
- frequency of emptying communal skips;
- bringing flammable substances onto site; and/or
- storage arrangements for any flammables brought onto site.

53 Make sure that contractors' and individuals' responsibilities in implementing fire precautions are clearly identified. Also those with the responsibilities are competent to implement them.

54 Make sure site workers are familiar with site rules and procedures. Prominent display of notices and/or inclusion of rules with pay packet slips are effective means. On larger sites involving higher risks and large numbers of contractors, site induction training will be more appropriate.

55 Whenever necessary, give the construction health and safety plan, and rules contained in it, to sub-contractors during the tendering process. Usually it is simpler for contractors to build agreed fire safety standards into their tender proposals at this stage rather than later on when it becomes more difficult to amend developed proposals.

56 Make sure parties are complying with the plan. Mere drafting of site rules in themselves will not ensure adequate standards are achieved on site. Arrange for positive inspection of fire safety standards. You can either do this yourself or delegate monitoring responsibilities to other competent parties.

57 Inspection regimes may vary from site to site. Where fire risks are low, such as during the frame erection stage of a steel-frame building, inspection for fire matters will be a low priority compared to potential falls during steel erection. However, fire safety will, for example, require much closer monitoring during the fit-out stage of an office refurbishment contract. If poor fire safety standards or non-compliance with site rules are found during inspection, you will need to resolve such matters. Where risks are high, a formal and systematic approach for resolving shortcomings may be needed to ensure that action is taken. This is especially significant where many different contractors are present on the same site.

58 The construction health and safety plan and site rules arising from it are a primary means of managing ignition risks. This is especially significant in situations where there are many trades on site requiring tight management control to ensure that they all comply with appropriate standards. The detail required in the plan will depend on the level and extent of risks on the individual site concerned. Construction health and safety plans can usefully consider the following:

- Permit-to-work systems. Are the high-risk activities necessary? If they are:
  - Who will administer and control their implementation?
  - What sort of work will they apply to?
  - Where on the site will they apply?

- Details of any smoking policy. If designated smoking areas are to be provided, where will they be?
- Scrutiny of proposals for high-risk work in detail, eg high fire risk structures, tank demolition etc. Subsequent agreement with the contractor concerned with a detailed safety method statement and confirmation of clear and specific rules relating to the work.
- Specification of any banned or restricted equipment or activities, for example:
  - unauthorised additions to electrical system;
  - use of blowlamps;
  - possession of lighters; and
  - lighting of fires.

- Nomination of specified electrical contractor and clarification of their role.
- Details of site security arrangements and the allocation of clear authority to security staff to carry out their work.

59 You may need to amend site rules as circumstances change during construction. Make sure that there is active monitoring for compliance with site rules. Allocate clear responsibilities for this and ensure that on-site managers are provided with the necessary authority to demand that shortcomings are rectified. You may wish to specify disciplinary action to deal with persistent breaches of site rules.

60 The construction health and safety plan and any site rules should be disseminated to contractors and the workforce.

61 Principal contractors will need to address general fire precautions in the construction health and safety plan. Underlying design assumptions (such as phasing of stairway installation) should already have been made clear and indicated to you in the pre-construction information and health and safety plan from the CDM co-ordinator. You will need to ensure that those criteria are reflected in construction sequences and methods. Provide relevant information to the contractors concerned with those parts of the project. Both you and the contractor should be clear about who is doing what and when so that you can comply with design decisions.

62 The construction health and safety plan also needs to address detailed operational matters as well as the implementation of design criteria. Items could include:

- management organisation to manage fire safety for construction phase;
- nature, amount and location of fire points;
- arrangements for inspecting and maintaining fire-fighting equipment;
- clarification of the arrangements for alarm and checking that it is effective;
- any arrangements for provision of emergency power and lighting – what is to be provided and by whom?
- work on protected means of escape requiring openings to be made in them – can this be done at weekends or during slack times so that the minimum number of people are at risk if a fire occurs when the fire resistance of the escape route is compromised?
- clarification of the role of scaffolding as a means of escape; and
- specific site rules, eg:
  - keep means of escape clear;
  - no horseplay with extinguishers; and
  - inform management if extinguishers are used.

63 Make sure parties follow the construction health and safety plan. Take positive action if they are not doing so.

64 As principal contractor you should devise an adequately detailed emergency plan (taking into account the risks involved) and ensure it is incorporated in the construction phase health and safety plan. The following elements should always be included:

- location of assembly points;
- instructions on what to do in the event of fire; and
- identification of who is in charge if there is a fire and a description of their role.

65 In low-risk situations, the contents of emergency plans may be very simple indeed. Where, if there is a fire, higher risks are involved, the following items may also need to be included in construction phase plans:

- regular fire drills;
- special arrangements for evacuation from high-risk areas, eg the LPG store;
- appointment of specialist fire wardens;
- regular liaison with local fire services;
- liaison with occupiers of shared premises; and
- fire-fighting training for those carrying out high-risk work.

66 If the nature of the site changes significantly, the emergency arrangements relating to fire will need to be revised accordingly. For example, what is required during a steel frame erection will be much less and very different from what is needed during the fit-out stage. Make sure that everyone on the site is familiar with the emergency arrangements.

67 The construction phase plan should set out the arrangements for TAU provision. TAU arrangements are one of the first elements to be decided in the construction phase plan, since they are provided right from the start of construction.

68 Where large or higher risk TAUs are involved, construction phase plans should normally consider:

- where the accommodation will be sited;
- the standards it needs to meet;
- necessary fire precautions; and
- who is responsible for providing satisfactory accommodation (eg principal contractor or nominated contractor).

69 Tell contractors about any site rules concerning TAU fire precautions. Contractors will especially need to know any limits or controls on storing materials inside TAUs to plan their work. Inform contractors of these matters at an early stage, preferably during the tendering process.

70 With regard to sleeping accommodation, specify the detailed requirements for sleeping accommodation in the construction phase plan. If you are not sure what the standards should be, get specialist advice. The local fire prevention officer can help.

71 Monitor compliance with those requirements.

72 Make sure that the contractors know what the requirements are before their employees arrive on site and that employees know them when they arrive. This could be in the form of ‘site’ rules for the sleeping accommodation.

73 Under no circumstances must anyone sleep in the building under construction or refurbishment.

Contractors and workers

74 A ‘contractor’ is a business who is involved in construction, alteration, maintenance or demolition work. This could involve building, civil engineering, mechanical, electrical, demolition and maintenance companies, partnerships and the self-employed.

75 A ‘worker’ is anyone who carries out work during the construction, alteration, maintenance or demolition of a building or structure. A worker could be, for example, a plumber, electrician, scaffolder, painter, decorator, steel erector, as well as those supervising the work, such as foreman and chargehands.

76 For all contracts, whether notifiable or not, contractors should plan, manage and monitor their own work and that of workers and check the competence of all

their appointees and workers. Contractors should train their own employees and provide information to their workers. Contractors should comply with the specific requirements in Part 4 of the CDM Regulations.

77 For notifiable work, contractors should provide principal contractors with relevant information on fire safety matters. In particular, inform principal contractors where there are difficulties in complying with the health and safety plan or where fire safety issues are discovered that are not addressed by the existing plan. For example, inform principal contractors if:

- you need to bring significant amounts of flammable materials onto the site that were not envisaged in the health and safety plan;
- rubbish skips are not being emptied; and/or
- flammable material is discovered during work, eg ground workers discover drums of buried waste or unforeseen gas services during excavations.

78 Contractors should consider information and standards provided in tendering proposals. Make sure that you and any of your employees are familiar with site rules and comply with them.

79 If you are carrying out work involving particular ignition risks, such as welding or plumbing, make sure your employees are familiar with the risks involved and competent to deal with fire if it breaks out. For instance, welders and plumbers should be familiar with the nature of permit-to-work systems, and the basic precautions required. You may need to co-operate with principal contractors in achieving this by providing information and training at sites.

80 Both you and your employees should inform the principal contractor of any relevant matters which arise during the work. For example:

- poor or damaged electrical installations or equipment;
- occurrence of any minor fires; and/or
- difficulties met in complying with site rules, for example if a need to use blowlamps develops but the site rules ban their use.

81 Contractors should make sure that you and your employees comply with site rules and other elements of the construction phase plan. Are you and your workers aware of relevant parts of the plan? In practice, this may often be achieved through the principal contractor informing your employees directly, but you should not merely assume this will happen. For example, if you think that site induction training will be provided, check that this is the case. Inform the principal contractor of any problems in complying with the plan, non-compliance with it or shortcomings noted in it. It is especially important that anyone installing design features such as stairways, who anticipates or finds problems in complying with the standards or times specified in the plan, should tell the principal contractor.

82 Contractors and staff need to be familiar with the emergency arrangements. Often, this will be achieved by the principal contractor providing information (you should assume that this will happen and should clarify with the principal contractor). This will normally be achieved during the tendering process.

83 Make sure that you and your employees co-operate with the principal contractor, eg attending induction training and participating in fire drills where required to do so. Report any shortcomings to principal contractors, eg if any employees have not attended site induction training.

84 Contractors make sure that you and your employees know and comply with site rules and standards concerning TAUs. In practice, this may be achieved by

instructions and information provided directly by the principal contractor, but you should not merely assume this will happen. If there is any doubt, liaise with the principal contractor to check that the necessary information or instruction has been provided.

85 Provide principal contractors with any relevant information. This could include information on:

- damage to the fire-resistant integrity of accommodation;
- non-compliance with site rules;
- a need for additional TAU material storage space; and/or
- damage to fire alarms or fire-fighting equipment.

86 If you have specific responsibilities for providing TAUs, you should provide them in accordance with both the principles in this guidance and requirements in the construction phase plan and the fire risk assessment.

APPENDIX III

PHOTOGRAPHS

PLATE 1: FRONT OF 1 HURDWICK PLACE WITH RESTAURANT

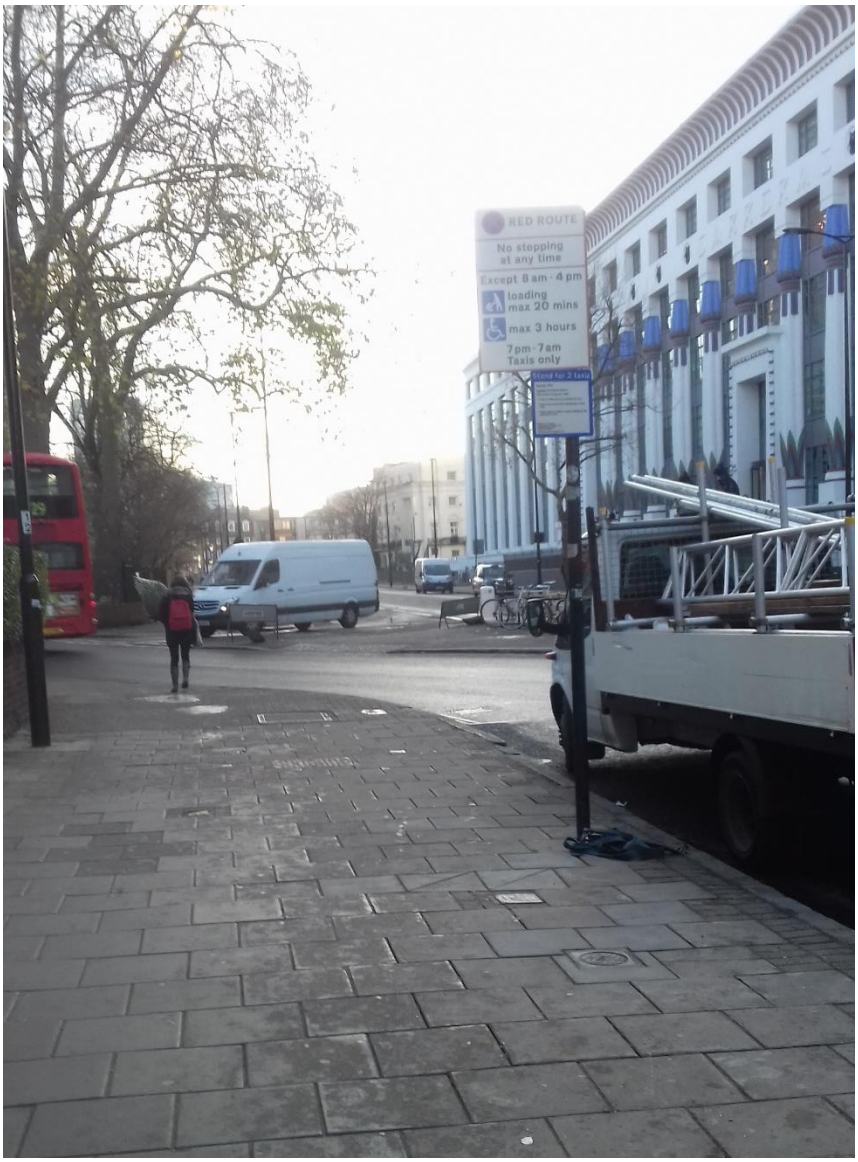

PLATE 2: LOOKING SOUTH ALONG HAMPSTEAD ROAD

PLATE 3: LOOKING TOWARDS THE REAR OF 1 HURDWICK PLACE

PLATE 4: LOOKING NORTH ALONG HAMPSTEAD ROAD BY THE BUS STOP