UNIVERSITY OF LONDON

CARTWRIGHT GARDENS, UNIVERSITY OF LONDON

Cartwright Gardens Construction Management Plan

Final (Version 05 - incorporating comments from the Community Liaison Group meeting on 19th June 2014)

CONTRACT:	Cartwright Gardens
LOCATION:	1 – 26 Cartwright Gardens, London. WC1H 9EF-9FF (inc Gardens)
LANDLORD:	The Worshipful Company of Skinners as Trustee to the Sir Andrew Judd Foundation
LEASEHOLD OWNER:	University of London
CLIENT:	UPP (Cartwright Gardens) Limited
CDM CO-ORDINATOR:	Graeme Littlewood - Faithful and Gould
PLAN PREPARED BY:	Andrew Richardson – Brookfield Multiplex
START DATE:	June 2014
COMPLETION DATE:	September 2016

SCHEDULE OF REVISIONS

Revision No.	Date	Pages/Section Revised	Comment	Approved
Draft	28/01/14	First draft for information		
01a	30/01/14	For consultation		
02	10/03/14	Incorporating CLG comments		
03	07/04/14	Incorporating CLG comments		
04	27/05/14	Incorporating CLG and Camden Council comments		
05	20/06/14	Incorporating comments from CLG meeting		

Contents

Preamble

Consultation Note

1.0 Introduction

1.1 Development Proposals

1.2 Purpose of the CMP

1.3 Scope of the CMP

1.4 Technical Reports

1.5 Structure of CMP

2.0 Programme and Site Logistics

2.1 Proposed Construction Start / Completion Dates

2.2 Proposed working hours

2.3 Proposal to mitigate the potential or likely effect and impact arising from the demolition of the existing buildings.

2.4 Access arrangement for Construction vehicles

2.4.1 Proposed Construction Traffic Access and Egress Route

2.4.2 Traffic Management Scheme

2.4.3 BM Traffic Marshals

2.5 Size of Vehicles

2.5.1 Construction Vehicle Holding Area

2.5.2 Arrival and Departure times from the site

2.5.3 Drivers' Ability

2.5.4 Abnormal Loads

2.5.5 Construction Vehicle Parking restrictions

2.6 Swept Path Drawing

2.6.1 Construction vehicles less than 9.50m in length which will turn within the closed section of Cartwright Gardens

2.6.2 Construction vehicles less than 9.50m in length which will access the development via Bidborough Street and egress via Leigh Street and Judd Street

2.6.3 Construction vehicles greater than 9.50m in length which will access the development via Judd Street and Leigh Street

2.7 Details of any necessary highway works

2.8 Parking and loading arrangements and delivery of materials

2.8.1 Demolition Works

2.8.2 Construction of the Structure

2.8.3 Envelope and Fit out Works

2.8.4 Vehicle and Material deliveries

2.8.5 Use of roads for offloading other than Cartwright Gardens

2.9 Cranes

2.10 Hoists

2.10.1 Loading platforms

2.11 Parking

2.11.1 Proposed parking bays suspensions, temporary traffic management orders

2.12 Proposed overhang (if any) of the public highway

2.13 Details of Hoardings

2.14 Security of the works

2.15 Details of how pedestrian and cyclist safety will be maintained

2.16 Traffic Management

2.16.1 Other measures to reduce the impact of associated traffic

2.17 Cleaning / Preventing dirt and dust on the public highway

2.18 Large vehicles over 3.5 tonnes

2.19 Monitoring of construction traffic and informing of major operations

2.20 Other relevant information relating to traffic and transport

3.0 Construction Management Plan

3.1 Consultation on CMP

3.2 Details of any Construction Working Group

3.2.1 Communication with the Community

3.3 Considerate Constructors Scheme Working in Camden

3.3.1 24/7 Helpline

3.3.2 Complaints and compliments register

3.4 Other construction sites in the local area

3.5 The Construction Management Plan includes the statement

3.6 Adverse effects on the features of the conservation area

3.7 Site Accommodation and Welfare

3.8 Effects on the health and amenity local to the development.

3.8.1 Rodent Control.

3.9 Waste Management Strategy

3.9.1 Waste strategy for Cartwright Gardens

3.10 Design

3.11 Procurement

3.12 Construction and Delivery

3.12.1 Reuse and recycling

3.12.2 Off-site manufacturing

3.12.3 Waste efficient procurement

3.12.4 Material optimisation

3.12.5 Design for de-construction

3.13 Means of ensuring the provision of information to the council and mechanism for monitoring

3.14 Air Quality and Carbon Reduction

3.15.1 Techniques to control PM10 and NOx emissions from vehicles and plant

3.15.2 Techniques to control dust emissions from construction and demolition

3.15.3 Techniques to reduce CO_2 emissions from construction vehicles

3.15.4 Air Quality Monitoring Protocol

3.16 Techniques to reduce noise and vibration.

Appendix A – Works to the highway and public footpaths

Appendix B – CLG Comments and Responses

Appendix C – Waste Management Strategy

Appendix D – Location of Site Development

Appendix E – Environmental and Sustainability Management Plan

Appendix F – Outline Programme of Works

Appendix G – Tree Protection Proposal

Appendix H – Traffic Management Plan

Appendix I – Not used

Appendix J – Construction Noise, Vibration and Dust Management Plan.

Appendix K – Rodent Management Plan.

Appendix L – Swept Path Analysis Drawings

Preamble

An initial draft Construction Management Plan (CMP) was prepared to accompany the planning application for redevelopment of the Garden Halls.

The Section 106 requires that a more detailed plan, substantially in accordance with that draft is submitted to and approved by the London Borough of Camden before construction on the site commences.

This following revision of the CMP has been further developed by the preferred Contractor, Brookfield Multiplex (BM). The development of the plan incorporates where possible comments received by the Community Liaison Group (CLG) and Camden Council.

The plan will be continuously developed throughout the life of the construction period of the Development, with amendments recorded following the procedure as noted within the following revisions.

Revision 02 – 10 March 2014

Revision 02 of the CMP considered comments which were received from the CLG following the review of revision 01a of the Construction Management Plan.

Revision 03 – 7 April 2014

Revision 03 of the CMP includes comments received from the following groups:

- Camden Cyclist Campaign – Meeting took place on the 28th March 2014.
- Royal National Institute of the Blind – Initial meeting took place on the 31st March 2014.

Revision 03 of the Construction Management plan was issued to Camden Council on the 8th April 2014. Comments had consequently been received from Camden Council within the following e-mails:

- E-mail from Steve Cardno received on the 16th April 2014 13:48
- E-mail from Richard McEllistrum received on the 24th April 2014 15:11

- E-mail from Richard McEllistrum received on the 30th April 2014 12:10

Comments received from the above have been incorporated into revision 04 of the CMP.

The logistic strategy as detailed within revision 03 of the CMP has been presented and discussed with the following organisations:

- Camden Council Highways officers
- National Union of Teachers – Meeting took place on the 15th April 2014
- The Mabledon Arms Public House – Meeting took place on the 15th April 2014.
- Royal National Institute of the Blind – Further meeting took place on the 12th May 2014.

Revision 04 – issued 27 May 2014

Revision 04 of the CMP incorporates the changes that have been made to revision 03 of the CMP following comments received from the CLG. Comments received and associated responses are recorded within Appendix B of the CMP.

Further meetings have taken place with Camden Council Highways officers on the 16th May 2014 and the 23rd May 2014. During these meetings all available logistic options were discussed in detail. Following the meeting held on the 23rd May 2014 the logistic approach as detailed within this revision of the CMP was supported by Camden Council Highways department and the Case Officer.

During the production of the CMP and all revisions, BM has continued dialogue with the Camden Council Highways officers, the case officer, the local stakeholders and the CLG. Additionally, BM has met with Camden Council Highways officers on numerous occasions to discuss and review the proposed traffic management solutions and associated logistic strategy associated with the development.

Revision 05 – issued 20 June 2014

Revision 05 of the CMP incorporates changes that were noted at the CLG meeting of the 19 June 2014.

1) Traffic Marshals – request that we keep under review the deployment of the traffic marshals and will target them appropriately as, where and when required.

2) Delivery Times and Holding areas – strengthen the management protocol for deliveries. Confirm that vehicles will not park around side roads outside of the demarked holding areas of Bidborough Street/ hoarding line before the agreed delivery times.

3) Newsletters – Increase the frequency of newsletters to bi-monthly and requested a rolling 6 month high level programme of activities be included for general information purposes.

4) Argyle Primary School – Consultation with the local school.

1.0 Introduction

This Construction Management Plan (CMP) has been developed by Brookfield Multiplex (BM) setting out the measures to be adopted in undertaking the construction of the Garden Halls, Cartwright Gardens (planning reference: 2013/1598/P).

1.1 Development Proposals

Planning permission was granted on 28th November 2013 for redevelopment of Garden Halls, described as:

> *"…redevelopment, following the demolition of Canterbury Hall, Commonwealth Halls and part of Hughes Parry Hall, involving the retention and refurbishment of Hughes Parry Hall tower and the erection of a 5 – 9 storey building comprising new student accommodation (Sui Generis), leading to a net increase of 187 units (from 1,013 to 1,200 student bed-spaces); associated ancillary uses (including flexible space for the University of London, communal and catering areas); landscaping including two internal courtyards; together with alterations to vehicle accesses, public highway and alterations to Cartwright Gardens, including modification of access to and landscaping within the Gardens".*

The redevelopment of the site will be undertaken in a single phase with works to Canterbury Hall, Commonwealth Halls and Hughes Parry Halls and the retained Hughes Parry Tower being undertaken concurrently. The works will be divided into several main phases, these being:

- Demolition of the Canterbury Hall, Commonwealth Hall and Hughes Parry Hall.
- Construction of the new lower ground floor slab and associated sub structure works to the new student accommodation facility.

- Construction of the new superstructure works to the new student accommodation facility.
- Refurbishment of Hugh Parry Hall including the removal and replacement of the upper two floors and a new external brickwork facade
- Installation of pre-cast concrete cladding panels to the frontage of the new student accommodation building which faces the gardens.
- Erection of brickwork facade to the new student accommodation building elevations which face Leigh Street and Sandwich Street.
- Internal fit out of the retained Hughes Parry Hall (Tower).
- Internal fit out of the new student accommodation building.
- Improvement to the external hand landscaping and the existing garden. Works to the external hard landscaping will be implemented and undertaken by Camden Council through a S278. The proposed dates associated with the external hard landscaping works will be agreed with Camden Council at a later stage. Indicative dates associated with the external hard landscaping works are detailed within figure 6.

1.2 Purpose of the CMP

The principle aims of this CMP are to:

- Minimise the potential effects and impacts arising from the demolition and the building of the development on the local area
- Outline the method statement which addresses the air quality and carbon reduction measures
- Address the highway measures with the objective of minimising traffic disruption and avoiding dangerous situations
- Ensure there are no adverse effects on the features of the surrounding conservation area

- Amelioration and monitoring measures over construction traffic, to keep lorry movements to a minimum, ensure contractor vehicles do not park in the local area and keep all roads to the site clean and clear
- Inclusion of a Waste Management Strategy
- Identify means of ensuring the provision of information to the Council and there is a dedicated point of contact for the construction site.
- Ensure best practice is followed which will be further demonstrated by the appointed contractor being a member of the Considerate Constructor Scheme

The development shall be carried out in strict accordance with the requirements of the approved CMP.

As per the Section 106 (S106) BM confirm the following;

"*The agreed contents of the CMP must be complied with, unless otherwise agreed with the Council. The BM project manager shall work with the Council to review this CMP if problems arise in relation to the construction of the Development. Any future revised plan must be approved by the Council and complied with thereafter.*"

1.3 Scope of the CMP

The CMP will ensure the construction phase of the development will be carried out safely and with minimal possible impact on the surrounding environment and highway network.

During the production of this plan the requirements as detailed within the Section 106 (S106) agreement have been considered and incorporated as necessary. Particular attention has been paid to the following clauses:

- 2.14 Construction Management Plan
- 2.15 The Construction Phase
- 2.16 Council Considerate Contractor Manual
- 4.7 Community Liaison Group
- 4.8 Construction Management Plan
- The First Schedule - Construction Management Plan, Air Quality and Carbon Reduction
- The Second Schedule - Construction Management Plan, Highway Measures
- The Ninth Schedule – draft CMP submitted to accompany the planning application

The CMP recognises that the site is located in a conservation area in the centre of London and that there is a need to maintain the quality of life for people living and working within and around the development.

1.4 Technical Reports

The CMP has been prepared using information from technical reports, a review of the Planning application (and associated documents), the S106 and Camden policy documents.

The Camden policy documents which have been referenced in the production of the CMP include the following:

- Camden Core Strategy
- Camden Development Polices
- Camden Planning Guidance
    - CPG6 (Amenity)
    - CPG7 (Transport)
    - CPG8 (Planning Obligations)

1.5 Structure of CMP

The CMP responds to the requirements of the S106 and addresses the following areas;

- Management of the CMP – the CMP will be kept live until the end of the construction period, auditing, recording, site management roles and responsibilities, key contacts and their details are identified;
- Timetable/ programme – start/ completion dates, demolition dates, proposed hours, stages of development, phasing
- Vehicle arrangements – access, routing, size of vehicles swept path, highway works, parking/loading/deliveries (i.e. parts of schedule 2);
- Site establishment –. temporary arrangements, site office, hoarding
- Road and footpath closures- impact on parking and temporary traffic management;
- Considerate contractor / Community Liaison – consultation on CMP, CLG/ construction work group
- Environmental Management/ Mitigation – effects of health and amenity, waste management etc.
- Air quality and carbon reduction (i.e. first schedule)

2.0 Programme and Site Logistics

2.1 Proposed Construction Start / Completion Dates

- Start date: June 2014
- Completion date: September 2016

The following annotated drawings have been included to provide more details with regards to the timing of the following activities:

- Demolition of Canterbury Hall, Commonwealth Hall and Hughes Parry Hall.

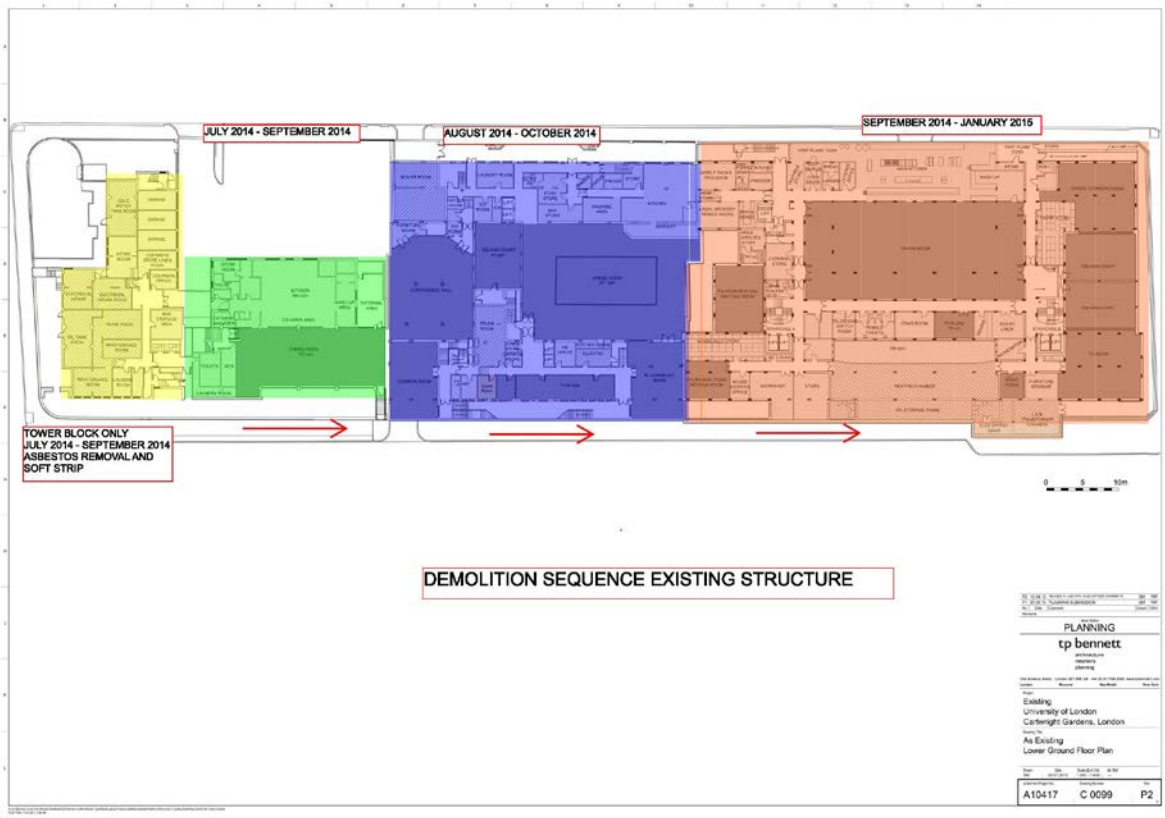


Figure 1 – Demolition Sequence

- Construction of the new lower ground floor slab and associated sub structure works to the new student accommodation facility.

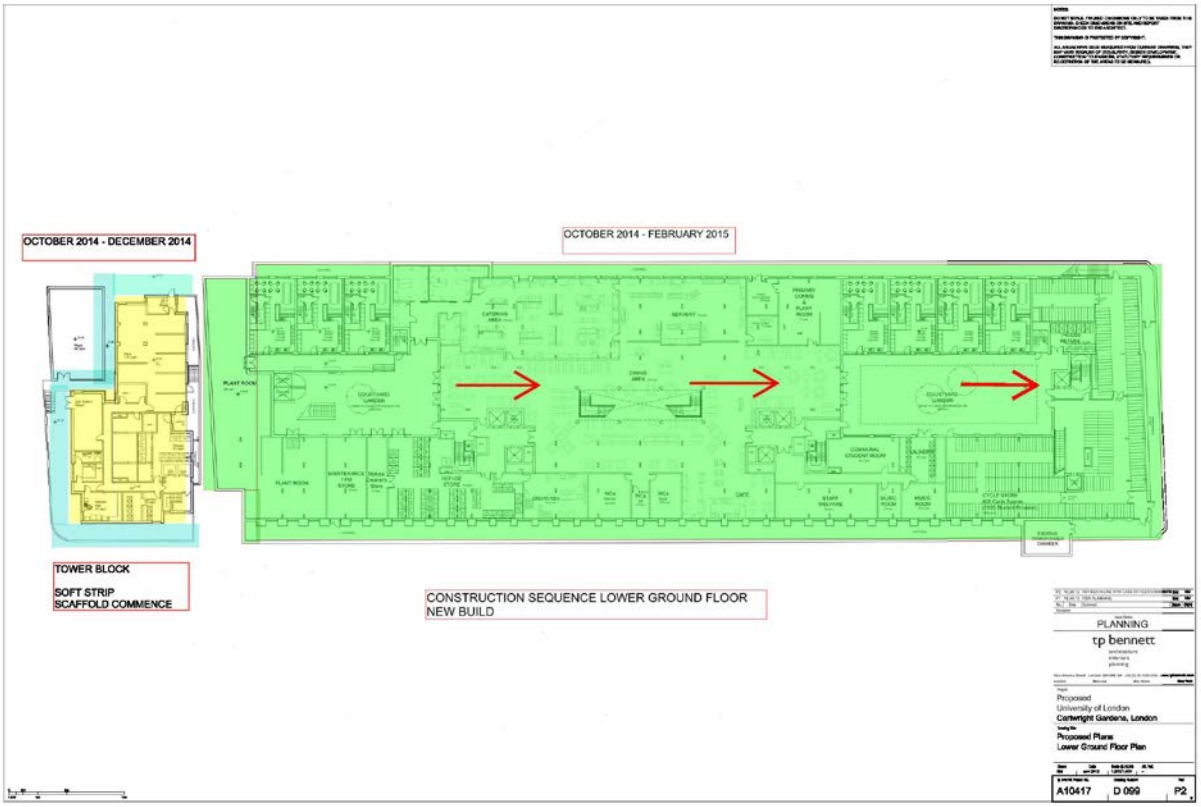


Figure 2 – Substructure Sequence

- Refurbishment of Hugh Parry Hall including the removal and replacement of the upper two floors and a new external brickwork facade
- Construction of the new superstructure to the new student accommodation facility.

- Installation of pre-cast concrete cladding panels to the frontage of the new student accommodation building which faces the gardens.

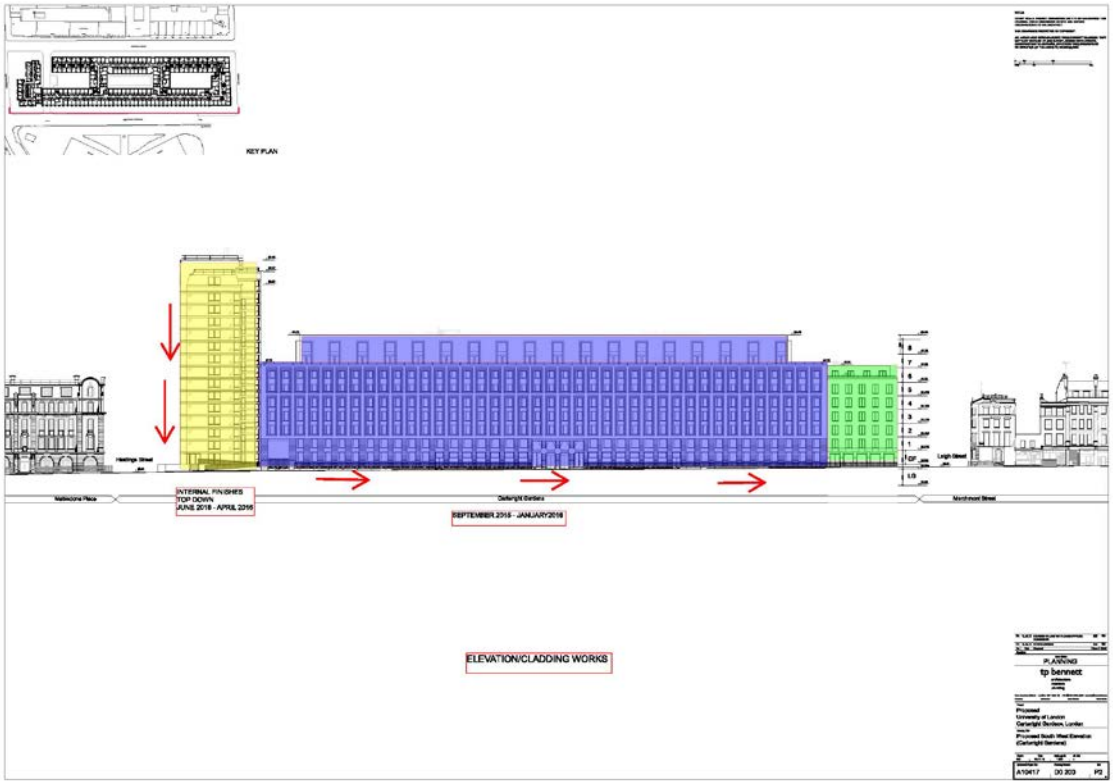


Figure 3 – Cartwright Gardens Cladding

Figure 4 – Leigh Street Cladding

- Erection of brickwork facade to the new student accommodation building elevations which face Leigh Street and Sandwich Street.

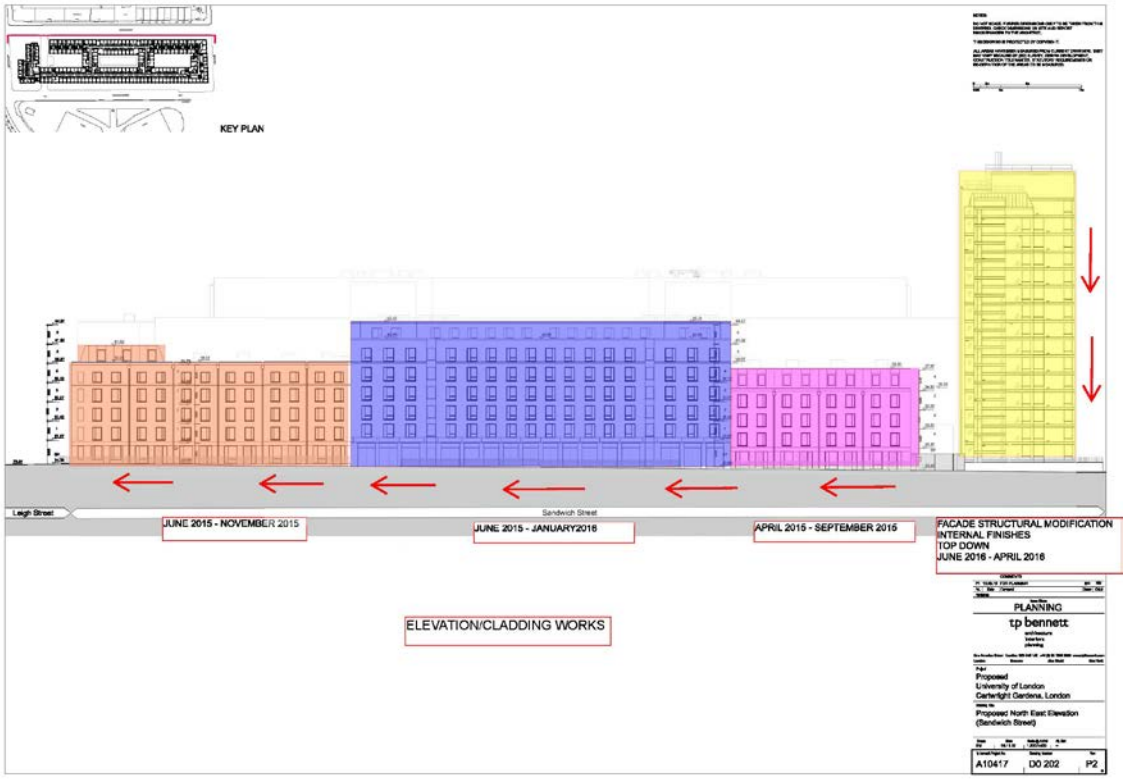


Figure 5 – Sandwich Street Cladding

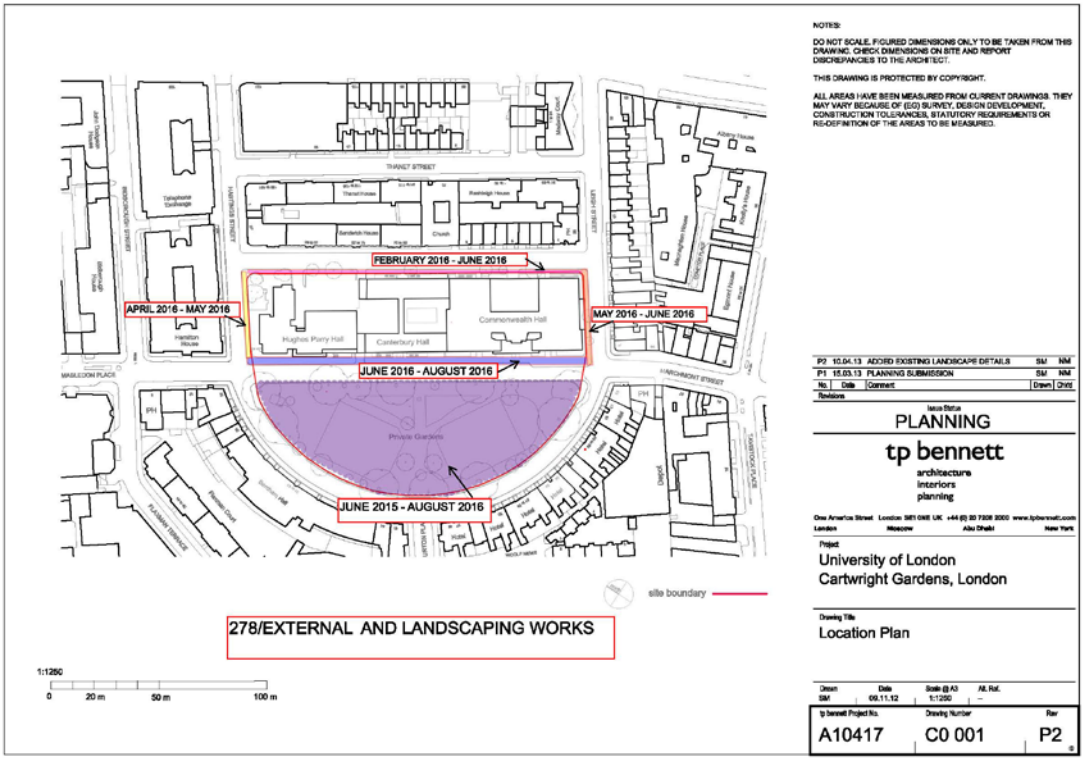


Figure 6 – External Works

- Improvement to the external hand landscaping and the existing garden.

A Gantt chart is provided with Appendix F of the CMP which provides an outline sequence of works.

2.2 Proposed working hours

The time of operations and ancillary works which are audible at the site boundary shall be carried out in line with the planning conditions and the London Borough of Camden's standard times as noted below:

- Mondays to Fridays 08.00 – 18.00
- Saturdays 08.00 – 13.00
- At no time Sundays and Bank Holidays.

The hours in which vehicles will arrive and depart will coincide with site working hours, which are 08.00 to 18.00. However, following the latest direction form Camden BM confirm that they will avoid the peak hours of traffic flow (pre 0930 and post 1630) with the exception of the vehicle movements noted at section 2.5.2.

There will be occasions when heavy/wide loads will need to be delivered and removed from site outside of these hours which will be defined by the Metropolitan Police Force in conjunction with Camden. Such deliveries would be for piling rigs and tower cranes, etc. A number of BM staff members would be in attendance at all times during these deliveries and removals.

On such occasions the local neighbours will be notified at least 4 weeks in advance via a Newsletter and the Community notice boards displayed on the site hoarding. BM will also inform the Liaison Officer of the CLG.

2.3 Proposal to mitigate the potential or likely effect and impact arising from the demolition of the existing buildings.

Within section 2.1.4 (c) of the S106, details are provided of the environmental protection, highways safety and community liaison measure that will be adopted in order to mitigate the effect and impacts of the development.

2.4 Access arrangement for Construction vehicles

Following consultation with local stakeholders and Camden Council Highways officers regarding the access and egress to the site, BM have reviewed the way in which the construction vehicles arrive, leave and are managed, so as to mitigate as many of the potential impacts during the construction phase as reasonably practicable. During the iterations of the CMP, BM have continually engaged with Camden (including TFL), the CLG and further stakeholders in the area including the RNIB, Camden Cyclists and specific local businesses for their input.

Consequently, BM have reviewed the logistic approach with Camden Council Highways officers and provided strategies which addressed a number of routes to and from the site. Camden Council Highways officers have now confirmed the following approach to the construction vehicles movements to and from the site.

2.4.1 Proposed Construction Traffic Access and Egress Route

The principal access route to the site will be off the Euston Road which is on Transport for London's Road Network (TLRN). The differing requirements associated with the access and egress routes for vehicles less than 9.5m in length and vehicles over 9.5m in length has been considered separately, along with the daily temporary road restriction to non-construction vehicles outside of peak times.

a) <u>Vehicles Less and 9.5m in Length.</u>

The principle consideration associated with the access and egress routes of construction vehicles less than 9.5m in length is to exclude the use of Judd Street and Leigh Street wherever possible and where this is not practical, to minimise the use of these roads. Through dialogue with Camden Council Highways officers, it has been confirmed that Cartwright Gardens can be closed to public road users during the following times:

- Monday to Friday 0930 to 1630
- Saturday 0930 to 1300

Construction vehicles will access Cartwright Gardens form the north (Judd Street, Bidborough Street and Mabledon Place). By closing Cartwright Gardens during the off peak period, will allow the turning of vehicles (through 180 degrees) within the confines of the site.

Performing this manoeuvre greatly reduces the construction vehicle movements on Leigh Street and Judd Street.

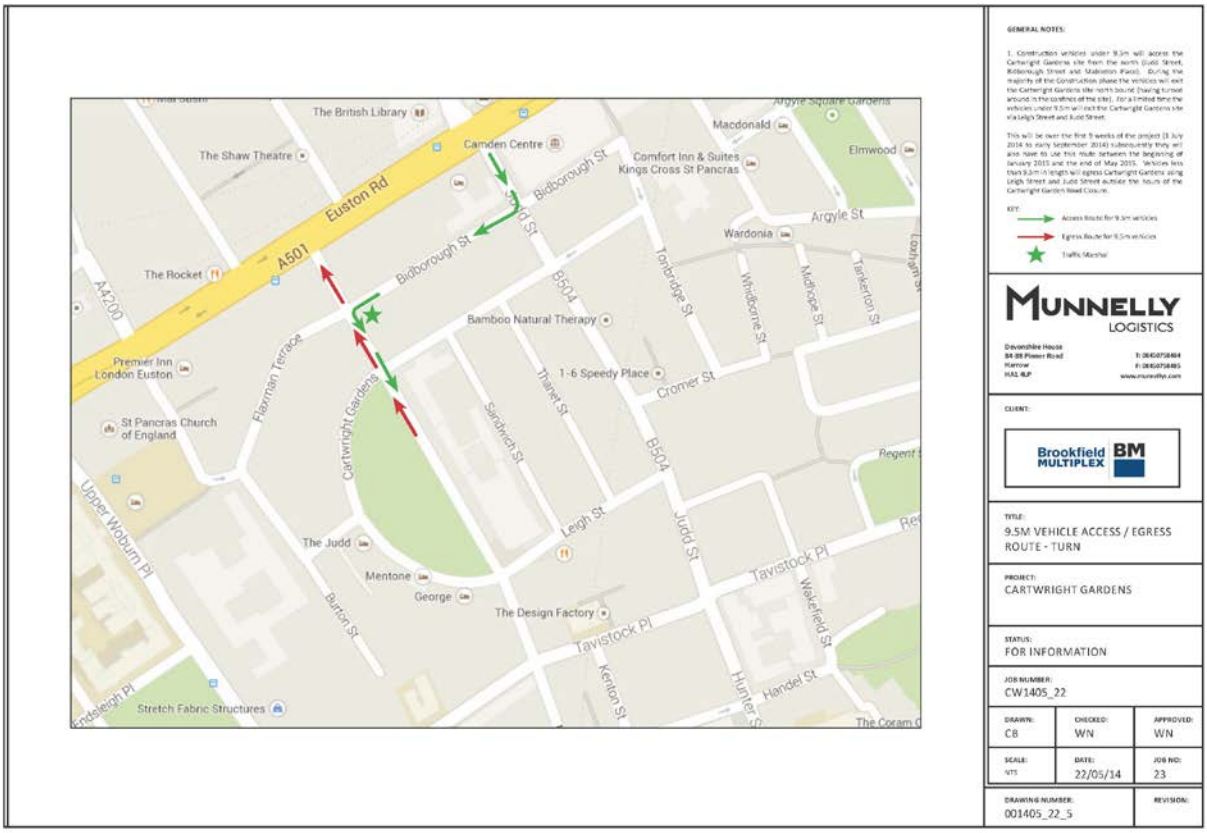


Figure 7 – Construction vehicles less than 9.50m long access/egress route.

For a limited time the vehicles under 9.5m will have to exit the Cartwright Gardens site via Leigh Street and Judd Street. This will be over the first 9 weeks of the project (1 July 2014 to early September 2014) during demolition and subsequently the beginning of January 2015 and the end of May 2015 while the new service road is being formed.

The egress route of construction vehicles less than 9.5m in length which are unable

to turn within Cartwright Gardens are shown within the figure below.

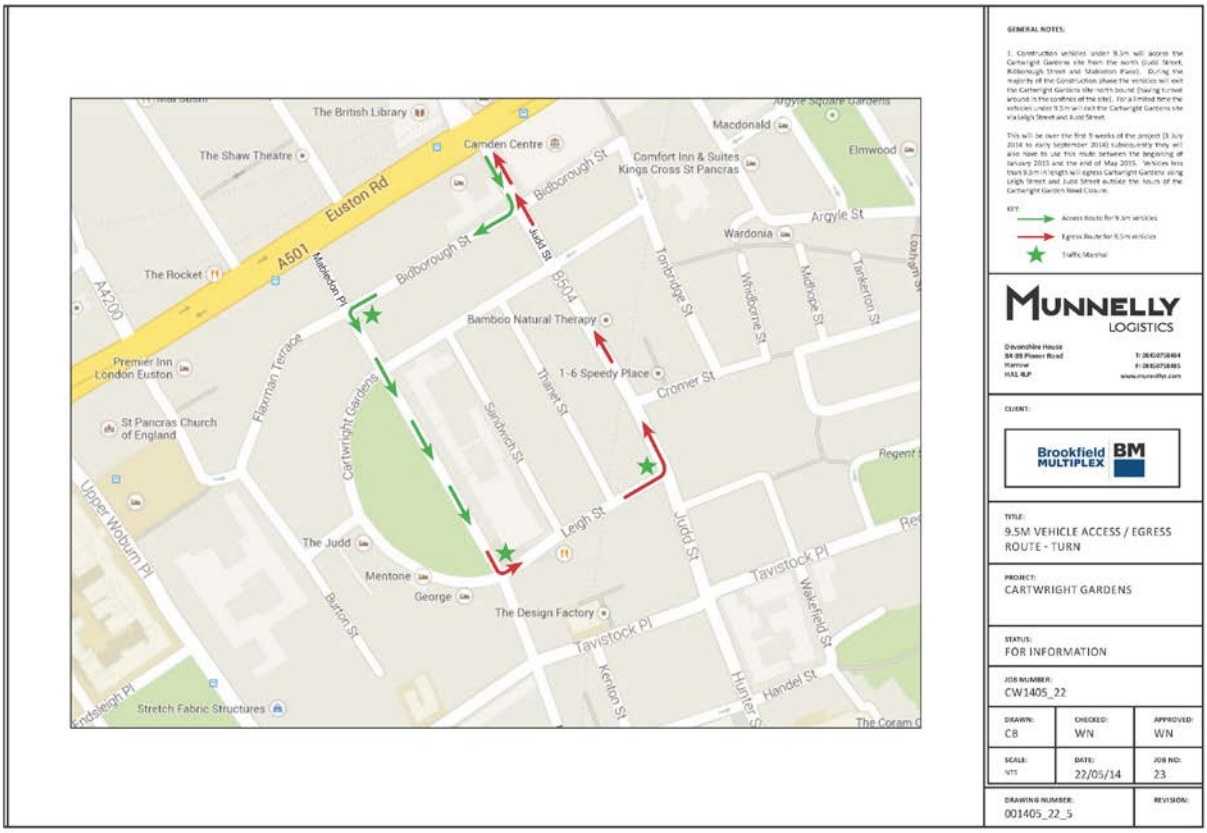


Figure 8 – Construction vehicles less than 9.50m long Cartwright Gardens access, egress route (which are unable to turn within the confines of the site).

Two areas on the site will be constructed to facilitate the turning of the 9.5m construction vehicles. The service road and a retained section of ground floor slab will be utilised these are shown on the figure below.

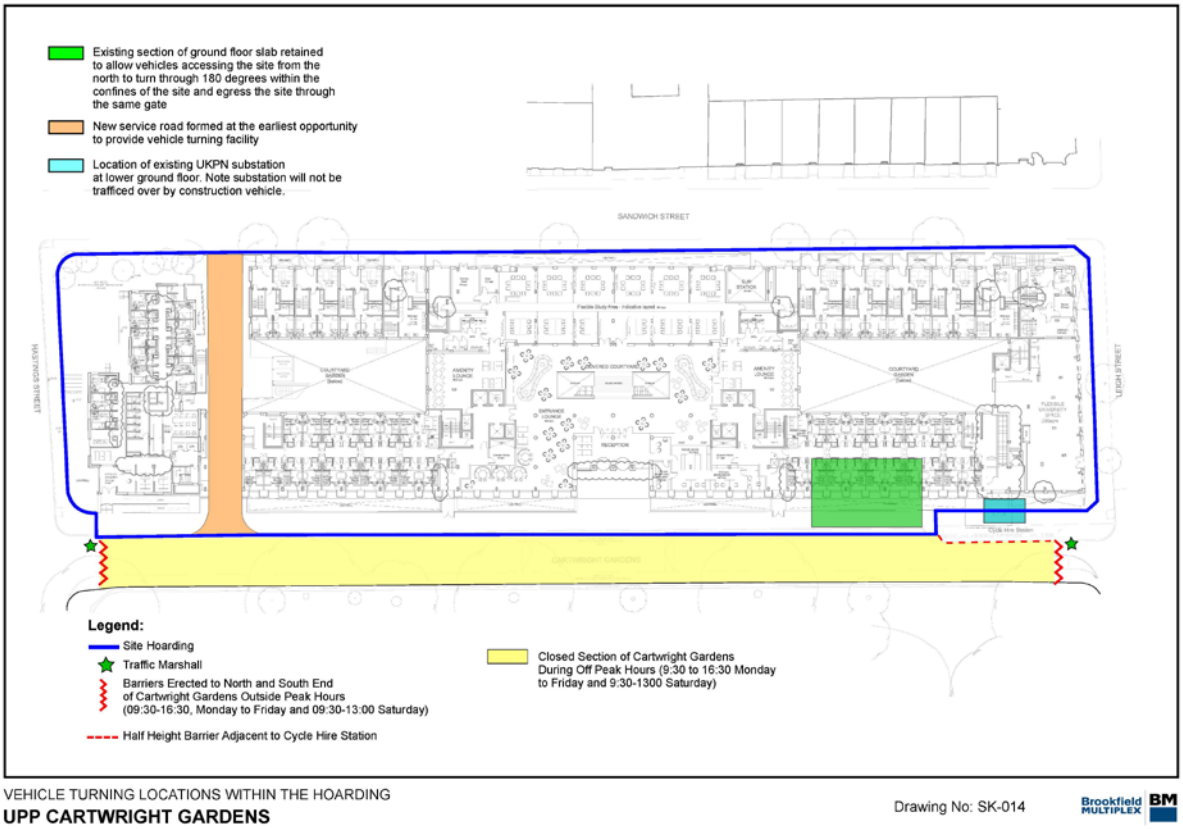


Figure 9 – Vehicles less than 9.50m turning areas within closed section

It should be noted that, outside the hours of the Cartwright Garden road closure where construction vehicles are leaving site during peak times, they will egress Cartwright Gardens using Leigh Street and Judd Street.

The ‘Cartwright Gardens site’ includes the space required in Cartwright Gardens road, when it is closed Monday to Friday 0930 to 1630hrs (Saturday 0930 to 1300hrs), in order to facilitate the turning around of the 9.5m vehicles. The road will be open to all normal road users outside of these times maintaining traffic routes for cyclists and taxis during peak times.

The proposed route for the vehicles over 9.5m follows the route as detailed within the draft CMP dated March 2013 noting that the other access road within the surrounding area are not suitable large construction vehicles and that these larger vehicles will only be required to turn right. This route is shown within the figure below.

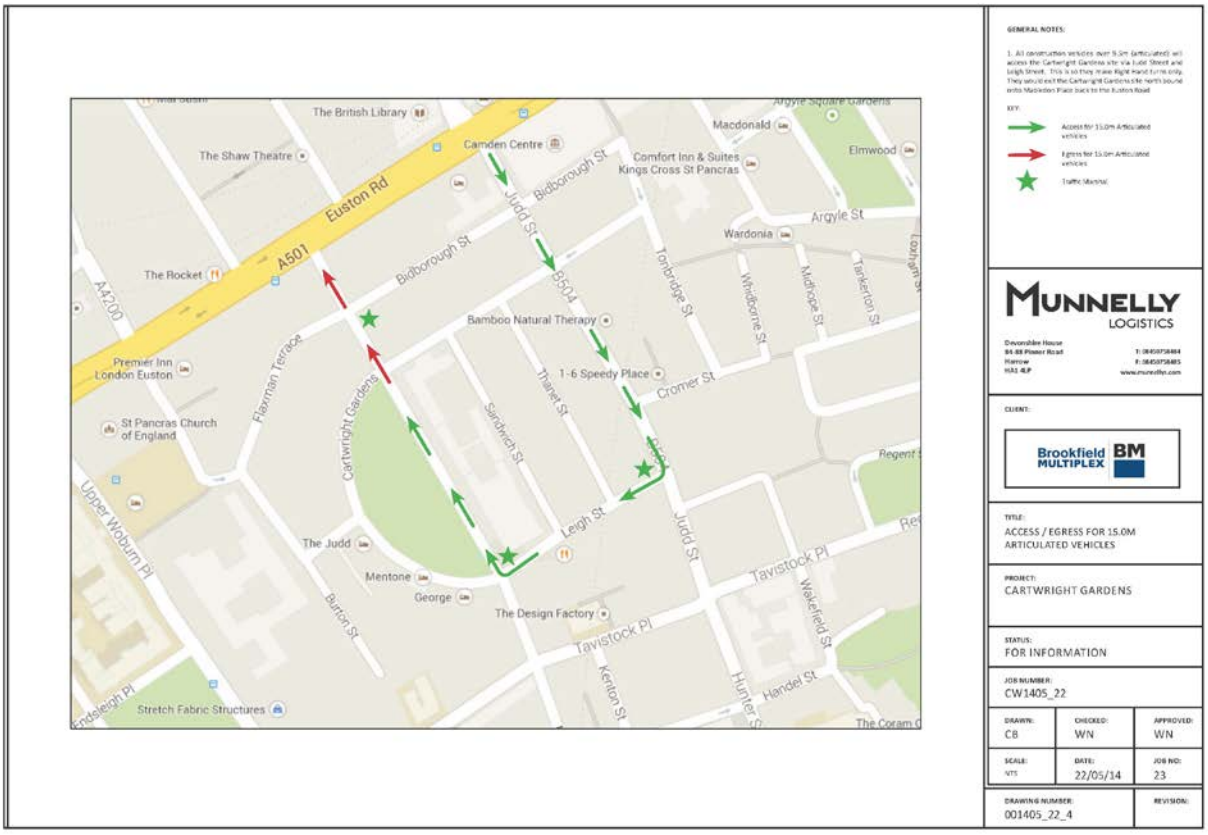


Figure 10 – Construction vehicles greater than 9.50m long access, egress route

No construction vehicle traffic associated with the development will be permitted to use the Crescent of Cartwright Gardens.

Construction vehicles less than 9.50m in length which turn within the closed section of Cartwright Gardens will leave the site as detailed below:

- All vehicles heading east will leave the site by continuing up Mabledon Place and returning onto the Euston Road.
- Vehicles heading west which are under 3.50 tonnes will leave site by continuing up Mabledon Place and turn right into Bidborough Street, before turning left into Judd Street and left again into Euston Road.
- Vehicles over 3.5 tonnes heading west will leave site by continuing up to Mabledon Place turning east into Euston Road. These vehicles will travel around the gyratory system before resuming their journey west.

Construction vehicles greater than 9.50m in length will leave the site as detailed below:

- All vehicles heading east will leave the site by continuing up to Mabledon Place and returning onto the Euston Road.
- Vehicles heading west leave site by continuing up to Mabledon Place turning east onto Euston Road. These vehicles will travel around the gyratory system before resuming their journey west.

In all cases, access/egress for delivery and removal of materials will be planned, scheduled and coordinated by the BM site based logistics manager. All vehicle movements both on and around the site will be controlled by competent and certified banks-men.

Large scale version of figures 7, 8, 9 and 10 are included within Appendix H.

2.4.2 Traffic Management Scheme

Camden Council Highway officers have confirmed the traffic management scheme has been further developed to incorporate requests made by the CLG where reasonably practicable and taking into consideration the wider community.

Noting the restrictions associated with the use of Sandwich Street and Hasting Street and the preference to, on health and safety grounds, segregate pedestrians, cyclists and public transport wherever possible from construction activates the section of Cartwright Gardens road between the development and the gardens will be closed during the times as noted within section 2.4.1 above.

The traffic diversion associated with the scheme that satisfies Camden Highways officers is identified within the plan detailed below:

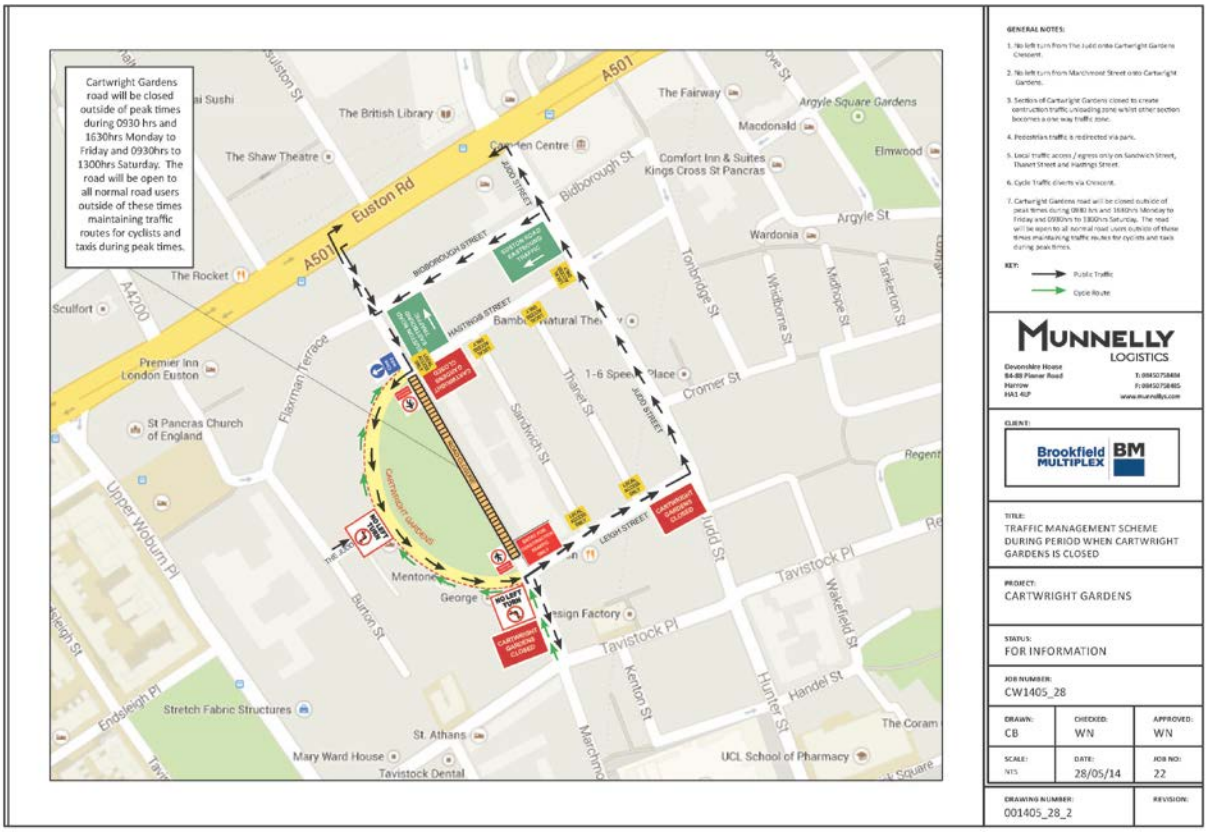


Figure 11 – Traffic Management Plan

Noting the concern associated with the two way traffic to the Crescent as recorded within CLG comment 12, the traffic to the Crescent will operate via a one way system as noted within the traffic management diagram above.

Advisory signs will be erected to either end of Hasting Street, Sandwich Street and Thanet Street noting that these roads are only to be used by local traffic only.

Following the temporary closure of the section of Cartwright Gardens adjacent to the development the pedestrian and cycle route will be maintained by the following:

- The cyclist access route north to south and south to north will be maintained by the cyclists travelling within the flow of the traffic outside the period when Cartwright Gardens is closed.

- During the off peak traffic movement period when Cartwright Gardens is closed the cycle route will be maintained by:
    - North to South: use of Cartwright Gardens Crescent with cyclists travelling with the main traffic flow
    - South to North: use a cycle contra-flow around Cartwright Gardens Crescent.

The cyclist route which will be employed during the off peak road closure of Cartwright Gardens is shown within figure 12 below.

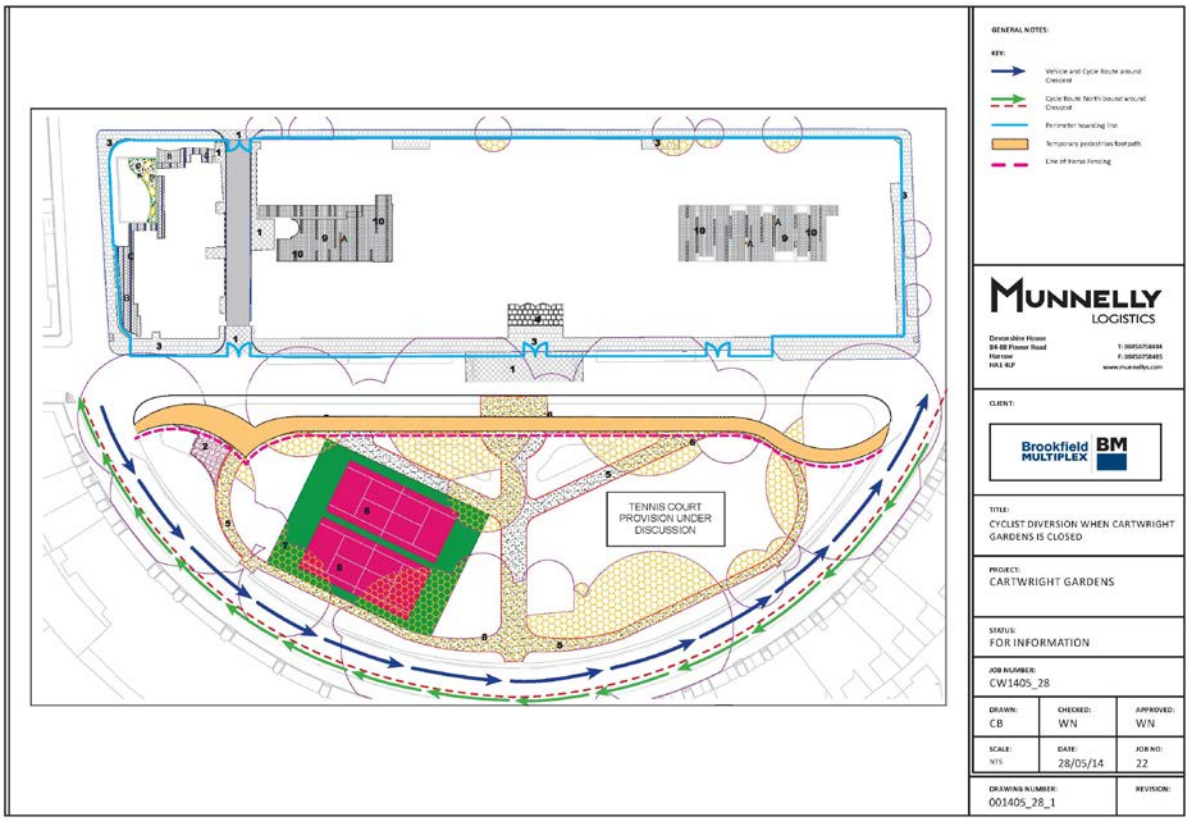


Figure 12 – Cyclist Diversion route during off peak closure of Cartwright Gardens

Further discussion has been had with regards to maintaining the existing footpath open during the construction works.

Due to the frequency of which the pedestrians would be held at the crossing points to allow vehicles and materials to move onto the development and to eradicate the risk of pedestrians being in close proximity to the construction works and vehicles, a temporary footpath will be formed though the gardens. This footpath will be used by

pedestrians for the full duration of the development. This approach will ensure the following safety benefits:

- Good working practice of segregating construction activities from pedestrians would be employed which would eradicate the risks where both construction activities and members of the public come into close proximity.
- The risk that pedestrians may become impatient at being held at the crossing point while the construction vehicle crosses the footpath, taking it upon themselves to walk down the carriageway or around the manoeuvring vehicle, would be eradicated.
- The pedestrian experience will be improved, as there will be no need for pedestrians to be held at the crossing points while vehicles and material traverse the crossing point.

The route of the temporary footpath through the gardens is detailed within the figure below.

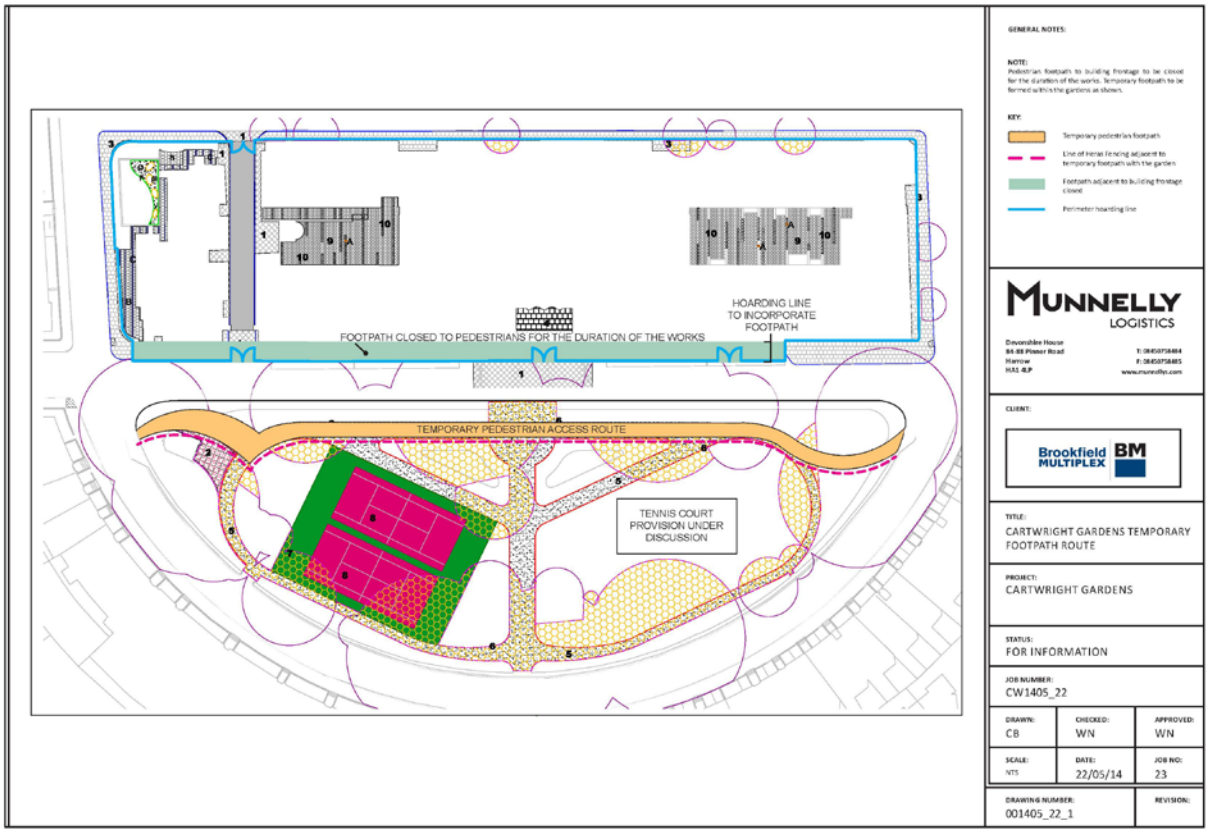


Figure 13: Pedestrian Diversion Route

A large scale version of figures 11, 12 and 13 are included within Appendix H.

2.4.3 BM Traffic Marshals

Dedicated BM Traffic marshals will be employed to aid the vehicle movements around the local vicinity to and from the site in a safe and responsible manner. If during the construction phase the deployment of the traffic marshals requires review we will target them appropriately where and when required.

2.5 Size of Vehicles

The following table indicates the proposed size, weight and frequency of vehicles and when they will be typically scheduled during the construction period.

Vehicle	Description	Weight	30 Jun 14 31 Jul 14	1 Aug 14 31 Dec 14	1 Jan 15 31 May 15	1 Jun 15 31 Dec 15	1 Jan 16 31 Mar 16	1 Apr 16 31 Aug 16
Skip Lorry (Demolition)	Roll on/roll off skips for major demolition works (approx. size 7.5m long and 2.4m wide)	Empty 16 ton Laden 30 ton	28/day	30/day	25/day	35/day	43/day	28/day
Skip Lorry (General Waste/ Recycling)	Standard 8 yard skips for waste (approx. size 7m long and 2.4m wide)	Empty 8 ton Laden 18 ton						
Ready mix concrete Lorries	approx. size 8.25m long and 2.45m wide	Empty 12 ton Laden 26 ton						
Flat-bed delivery vehicles	Various materials including scaffolding, steelwork, reinforcement, bricks/blocks, timber, roofing materials, plaster, joinery etc. (approx. size 8.5m long and 2.45m wide)	Empty 12 ton Laden 26 ton						
Articulated Lorries	Delivery of pre-cast concrete units and other cladding components (approx. size 15.5m long and 2.5m wide)	Empty 18 ton Laden 44 ton	2/day	1/day	3-5/day	8-10/day	2/day	2/day
	Cumulative/day		**30/day**	**30/day**	**30/day**	**45/day**	**45/day**	**30/day**

Table 1 – Schedule detailing expected vehicle sizes, weights and frequencies.

The vehicles attending site, utilising the access / egress route, will be managed by way of a delivery schedule. As necessary, vehicles will be held in the vehicle holding area on Bidborough Street by the BM Traffic Marshals.

2.5.1 Construction Vehicle Holding Area

A construction vehicle holding area has been identified on Bidborough Street. This will be provided so as to aid the flow of vehicles to site for unloading/loading. The parking bays at the western end will be closed for the duration of the project procured under a traffic order which has been discussed and agreed in principle with Camden at a meeting on the 25th April 2014. Any waiting vehicles will turn off their engines so as to reduce noise and emissions.

2.5.2 Arrival and Departure times from the site

Vehicles will arrive and leave the project within the works hours as detailed within the Planning Condition which are noted as:

- Mondays to Fridays 08.00 – 18.00
- Saturdays 08.00 – 13.00
- At no time Sundays and Bank Holidays.

Vehicles will be staggered over the working hours with deliveries being controlled by the dedicated BM site based logistics manager. BM will arrange for vehicles to access / egress the development outside the peak transport times of Mondays to Fridays 0800 to 0930 and 1630 to 1800 and Saturdays 0800 to 0930.

There will be some activities that will require deliveries to be made in these times due to restricted working hours. Examples of deliveries are:

- Delivery of concrete associated with the new concrete frame.
- Removal of demolition materials to ensure that a safe working environment can be provided.
- Specific Deliveries to Sandwich Street (Site Office Cabins, Demolition equipment) ensuring that the works are undertaken within the shortest period possible.
- Deliveries of materials which will be distributed by either the tower crane or temporary hoists ensuring that works are undertaken in an efficient manner thus ensuring that the overall development period is undertaken within the period as identified with section 2.1 above.

Demolition works will commence during July 2014 and will be completed by February 2015. Peak vehicle movements are expected to commence during February 2015 and will continue until February 2016.

Vehicles will be unloaded and loaded with the minimum amount of dwell time. Depending upon the type of material which is being delivered to site, the dwell time will vary. It is anticipated that typically vehicles will be at site for the following periods associated with each of the main material types, as listed below:

- Collection of materials associated with the demolition works – 60 minutes
- Scaffold deliveries – 180 minutes to 240 minutes
- Consignments of steel reinforcement – 60 minutes to 180 minutes
- Concrete delivery vehicles – 60 minutes
- Pre-cast concrete cladding panels – 240 minutes to 360 minutes
- Small single consignment deliveries such as single material deliveries of boxed items – 15 minutes
- Consignments of palletised materials such as plasterboard and interior fitting materials – 60 to 90 minutes
- Bathroom pod deliveries – 120 to 180 minutes

During this time the vehicle's engine will be switched off so as to avoid un-necessary noise and emissions. Depending upon the location where the materials will be required to be off loaded, vehicles will be marshalled to the correct location.

2.5.3 Drivers' Ability

The drivers will be provided with a clear route to and from the site that identifies the restrictions and will have undertaken a cycle awareness scheme such as the Safe Urban module through FORS or similar. Only operators that have achieved the TfL's Fleet Operator Recognition Scheme at Bronze level or similar will be permitted to deliver or pick up goods and materials to the development. Regular checks will be

undertaken to ensure the drivers meet this minimum standard.

2.5.4 Abnormal Loads

Vehicles which require specialist movement and temporary road closures will be notified to Camden and the Metropolitan Police service at least 4 weeks in advance of the requirement. The deliveries that require temporary road closure are the 3 tower cranes are programmed to be delivered mid October, November and December 2014 respectively. The removals are programmed for early 2016. Details of the proposed closures will be communicated to Camden, the CLG and local key stakeholders via newsletter and e-mail correspondence.

2.5.5 Construction Vehicle Parking restrictions

Vehicles will not be permitted to park and wait around the area, with all roads in the local vicinity being restricted to this activity (as noted in the diagram below). As stated at 2.5.1, vehicles will only be held on Bidborough Street (the approximate location in the green section on the diagram) when required, so as to aid the flow of vehicles to site for unloading/ loading.

2.6 Swept Path Drawing

The details of the construction vehicle access / egress routes for construction vehicles both less than and greater than 9.50m in length are discussed above at 2.4.

Specific swept path analysis drawings have been produced for each vehicles length and access / egress route as follows.

2.6.1 – Construction vehicles less than 9.50m in length which turn within the closed section of Cartwright Gardens.

Figure 14 demonstrates the manoeuvres relative to each junction and the turning of construction vehicles within Cartwright Gardens.

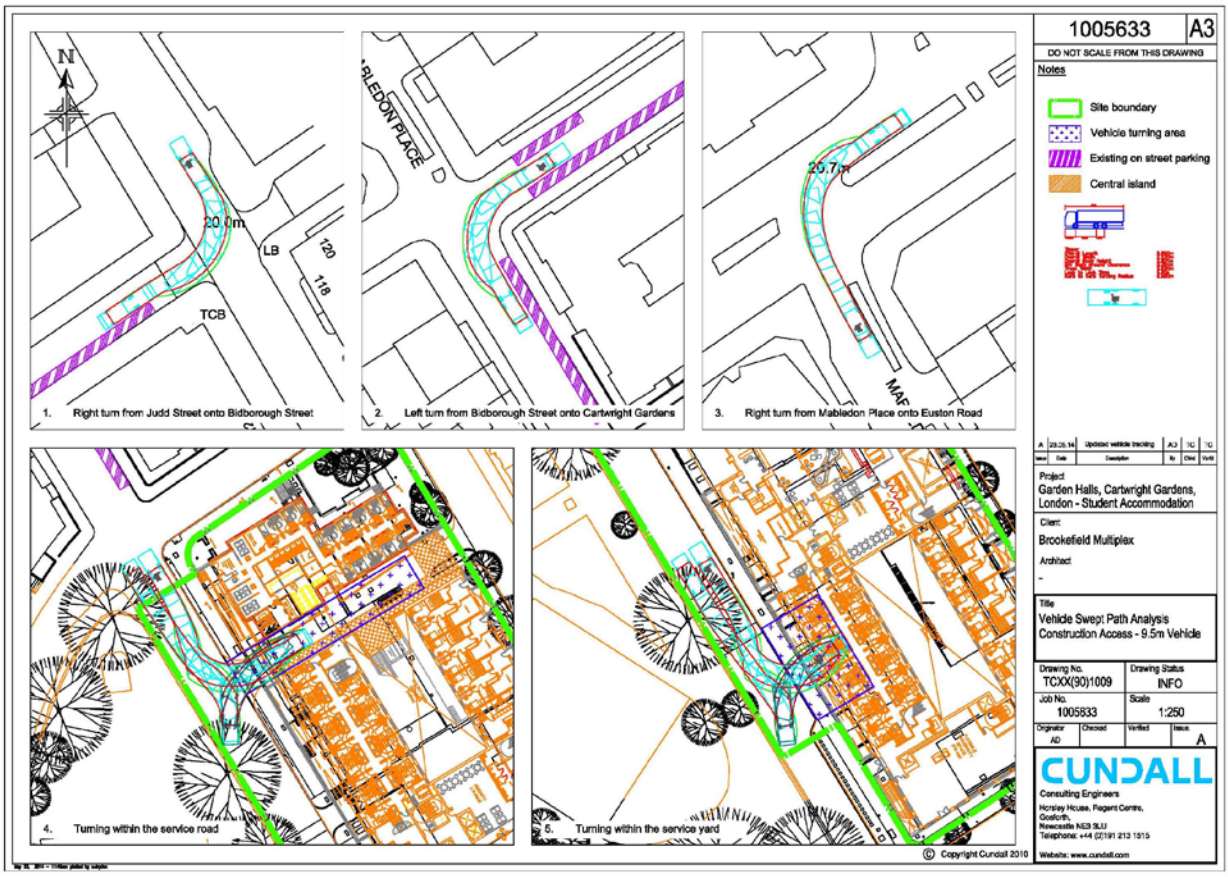


Figure 14 – Swept Path drawing of Construction Vehicles Less than 9.50m accessing and egressing via Mabledon Place.

Judd Street (B504) – Classified as District (minor local distributor). The first section from Euston Road will be utilised and vehicles will turn right onto Bidborough Street.

Bidborough Street – The two car parking spaces to the western end of Bidborough Street will be suspended to allow all construction vehicles to negotiate the turn from Bidborough Street into Mabledon Place. Six further car parking spaces will be suspended to the western end of Bidborough Street to provide vehicle holding area, noting that Cartwright Gardens will now not be closed.
As previously discussed with Camden the parking bays will be suspended for the duration of the project procured under a Traffic Order.

Mabledon Place – During the process of manoeuvring vehicles from the vehicle holding area within Bidborough Street, a dedicated Traffic Marshal will be on station at the corner of Bidborough and Mabledon Place to manage any waiting vehicles and the joining of Mabledon place across the cycle way.

Cartwright Gardens – During the process of manoeuvring vehicles from the carriageway to the unloading area a rededicated Traffic Marshall will be stationed within Cartwright Gardens to direct public traffic.
While Cartwright Gardens is closed to public traffic gate, personnel will be stationed at the northern and southern gates at either end of Cartwright Gardens.

The Barclays bike station will remain open throughout the project. Appropriate hoarding and marshalling will be provided so as to manage vehicles leaving site, especially around the junction of Leigh Street and Cartwright Gardens.

2.6.2 – Construction vehicles less than 9.50m in length which will access the development via Bidborough Street and egress via Leigh Street and Judd Street.

Figure 15 demonstrate the manoeuvres relative to each junction.

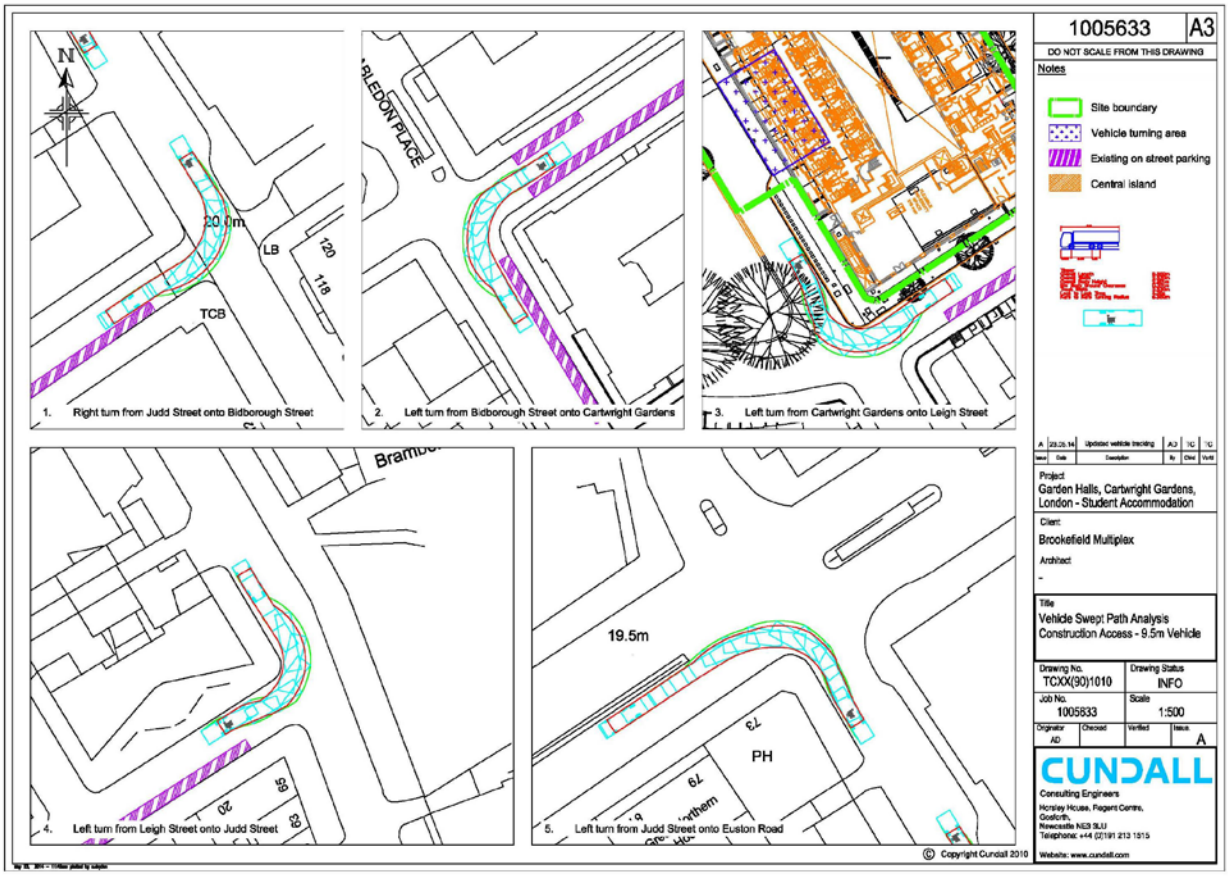


Figure 15 – Swept Path drawing of Construction Vehicles Less than 9.50m egressing via Leigh Street and Judd Street.

Construction vehicles which are less than 9.50m in length during the periods when Cartwright Gardens is not closed will egress the development via Leigh Street and Judd Street.

Vehicles less than 9.50m will access the development via Judd Street, Bidborough Street and Mabledon Place. Similar control regimes which are detailed within 2.6.1 above.

Leigh Street – The two parking spaces to the western end of Leigh Street will be suspended to allow all construction vehicles to negotiate the turn from and to Cartwright Gardens. During the process of manoeuvring vehicles from Cartwright Gardens into Leigh Street, a dedicated Traffic Marshal will be on station at the corner of this junction to manage the vehicle manoeuvre.

The parking bays will be suspended for the duration of the project procured under a Traffic Order.

Judd Street (B504) - During the process of manoeuvring vehicles from Leigh Street into Judd Street, a dedicated Traffic Marshal will be on station at the corner of this junction to manage the vehicle manoeuvre.

2.6.3 - Construction vehicles greater than 9.50m in length which will access the development via Judd Street and Leigh Street.

Figure 16 demonstrates the manoeuvres relative to each junction.

Figure 16 – Swept Path drawing of Construction Vehicles Greater Than 9.50m

Judd Street (B504) – Classified as District (minor local distributor). The first section from Euston Road will be utilised and vehicles will turn right onto Leigh Street.

Leigh Street – The two car parking spaces to the western end of Leigh Street will be suspended to allow all construction vehicles to negotiate the turn from Leigh Street into Cartwright Gardens

The parking bays will be suspended for the duration of the project procured under a Traffic Order.

Cartwright Gardens – During the process of manoeuvring vehicles from the

carriageway to the unloading area a rededicated Traffic Marshall will be stationed within Cartwright Gardens to direct public traffic.
While Cartwright Gardens is closed to public traffic, gate personnel will be stationed at the northern and southern gates at either end of Cartwright Gardens.

Mabledon Place – Construction vehicles greater than 9.50m in length will egress the development via Mabledon Place rejoining Euston Road.

A large scale version of figures14, 15 and 16 is included within Appendix L.

2.7 Details of any necessary highway works

The abstract of the MacFarlane Wilder drawing number 1488-MW-T301 below details works associated with the highway and surrounding footpaths. A larger version of this drawing is included within Appendix A.

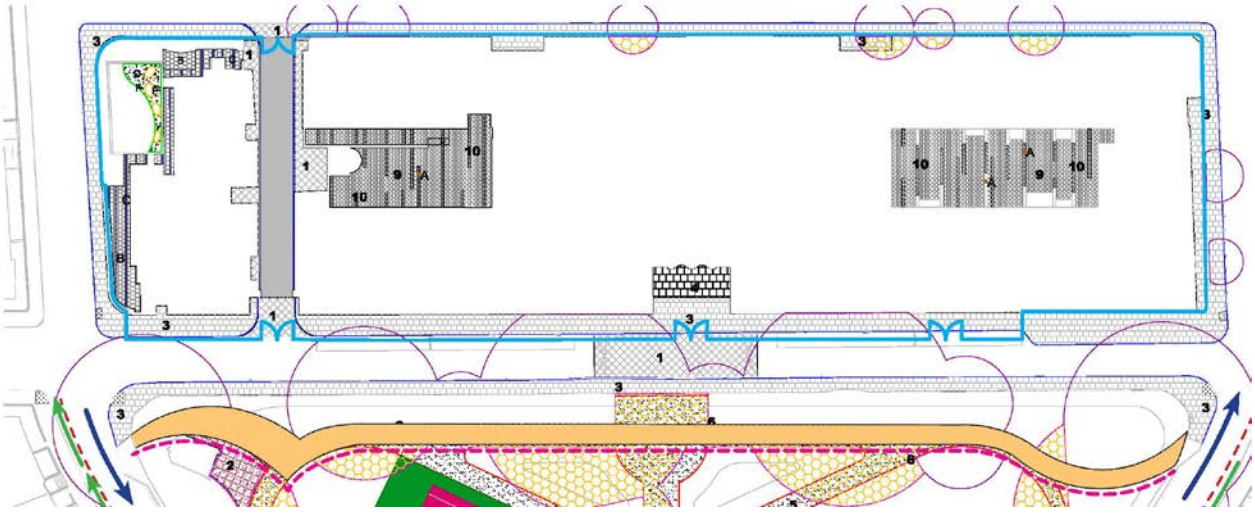


Figure 17 – Works to the highway and public footpaths

Works associated with any statutory service will be provided following receipt of details from the service provider and liasion with Camden Council.

Below is a figure which give dates when the works to the perimter footpath and highway works will be undertaken, noting that these works will be designed and implementated by Camden Council.

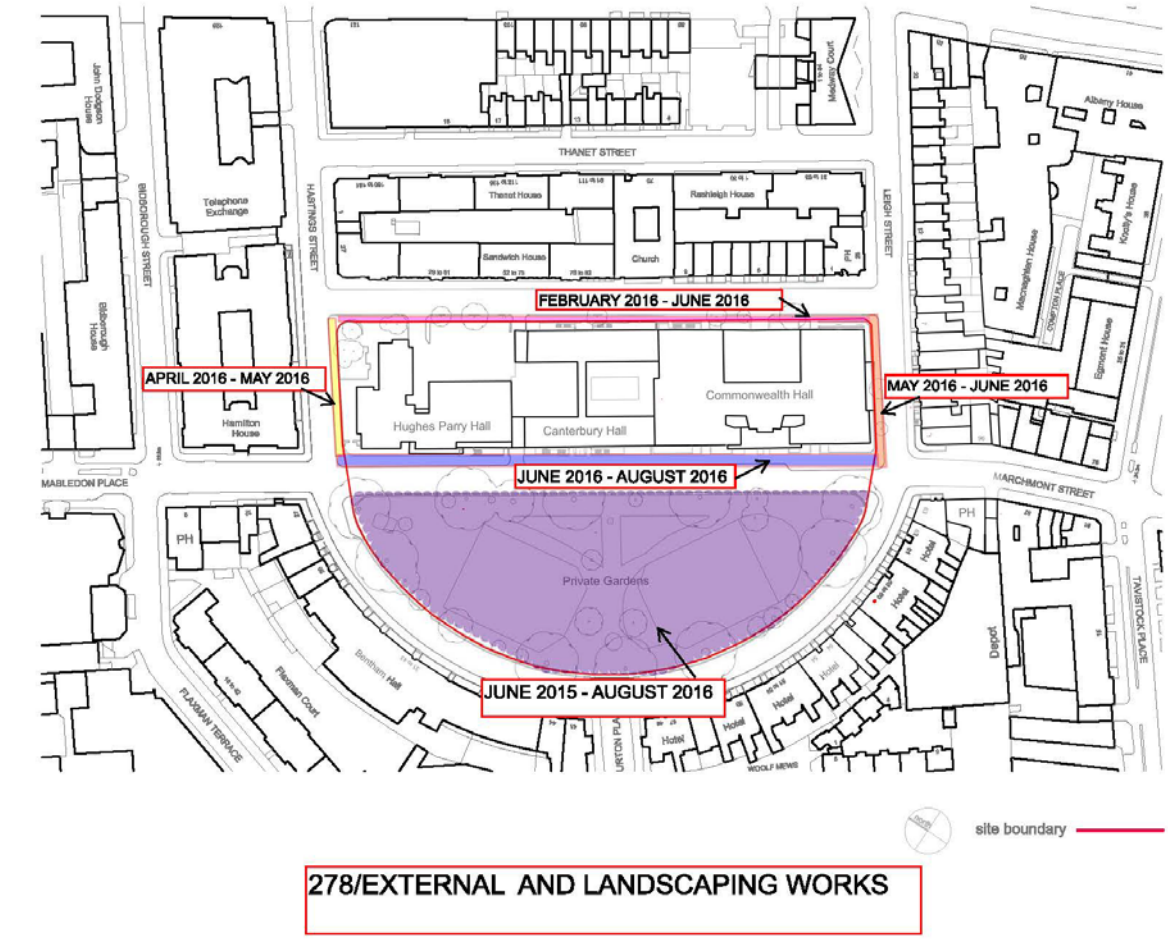


Figure 18 – Works to the highway and public footpaths

2.8 Parking and loading arrangements and delivery of materials

2.8.1 Demolition Works

Vehicles associated with the demolition works of Hughes Parry Hall, Commonwealth Hall and Canterbury Hall will enter the site at one of the three gates which will be formed along Cartwright Gardens. The initial delivery of demolition equipment will be made via Gate 1, off Sandwich Street. This gate will only be used for five main deliveries of construction equipment. The location of the access gates are shown within the diagram below.

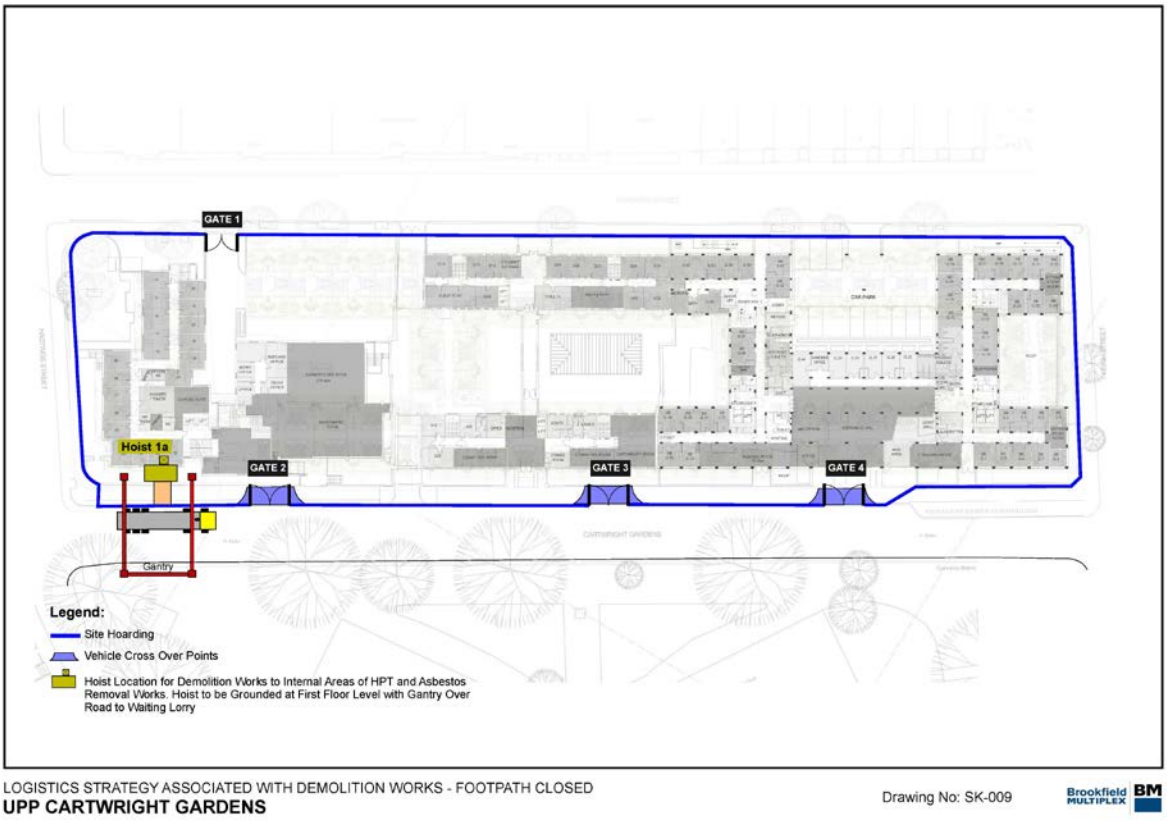


Diagram 19 – Gate locations associated with the demolition works

The removal of the demolition materials associated with Hughes Parry Hall will be facilitated by the use of goods hoist 1A and an elevated gantry which will be located on the west face of this building. As materials are removed from the building they will be brought to the gantry at first floor level in readiness to be loaded into the waiting vehicle as shown. Appropriate screening will be utilised to mitigate noise and dust being generated by this activity.

2.8.2 Construction of the Structure

Following the completion of the demolition works to the northern end of the development the reconstruction of the structure will commence. The sequence and approximate timings of these works are shown within the diagram below.

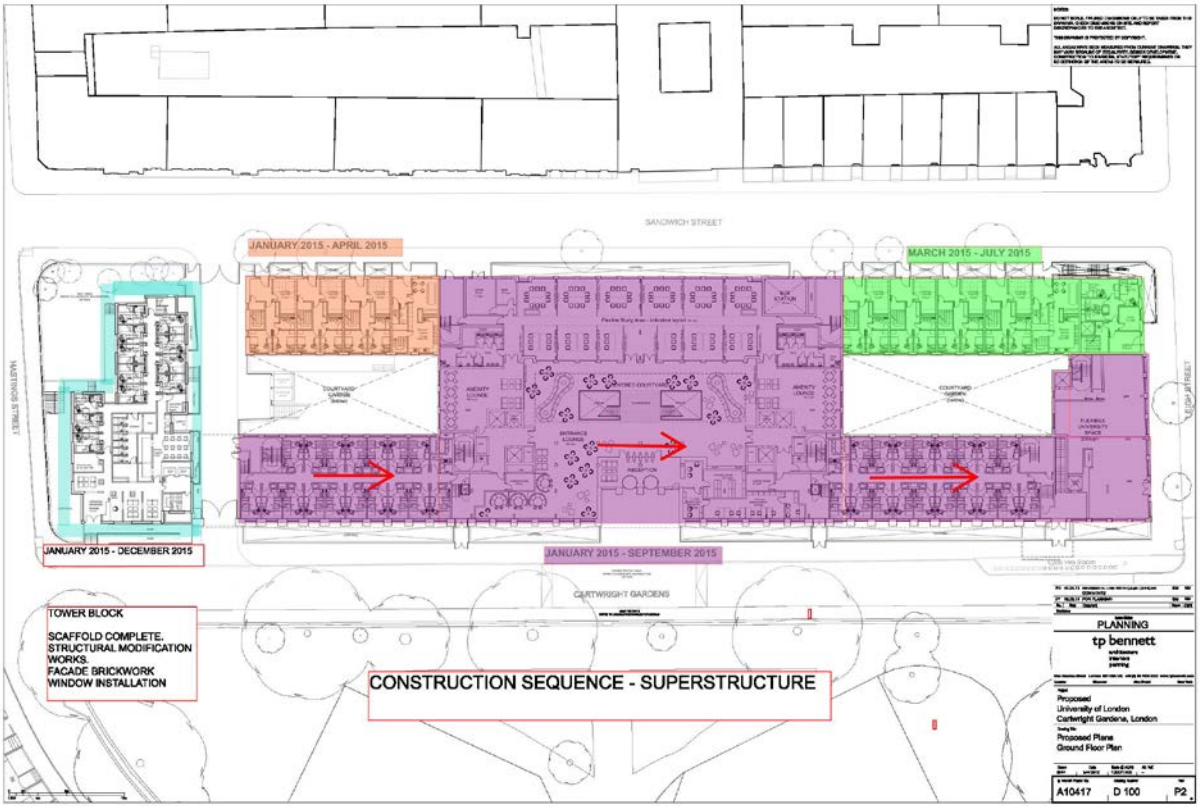


Figure 20 – Detailing sequence and timing of works associated with the superstructure works.

Materials associated with these works will be delivered to, and off loaded, within the suspended parking bays within Cartwright Gardens.

The concrete will be placed by the use of concrete pumps which will be located adjacent to the access gates as shown below.

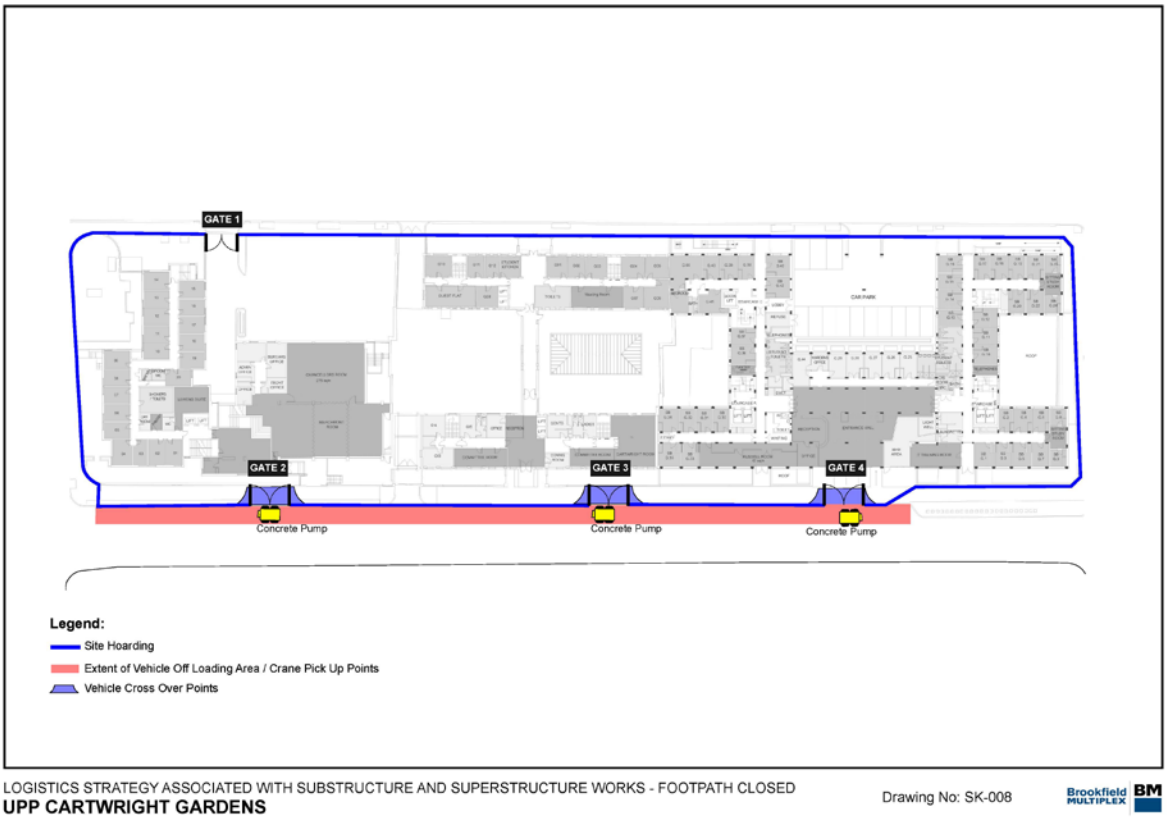


Figure 21 – Concrete pump location associated with the reconstruction of the structure

Steel reinforcement, underground pipe work, formwork and ancillary materials will be delivered to the suspended car parking bays within Cartwright Gardens and lifted to the required location by means of the tower cranes.

The location of the tower cranes are shown within the diagram below.

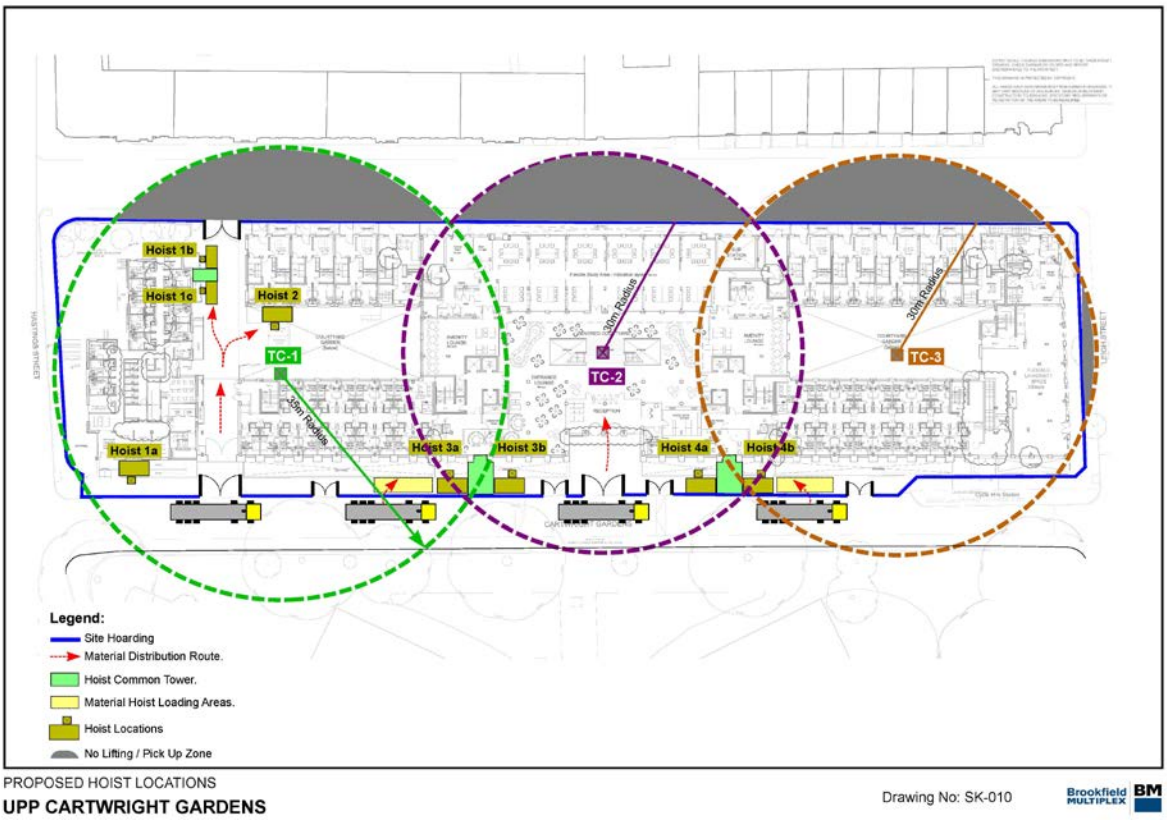


Figure 22 – Crane and hoist location and material distribution regime.

2.8.3 Envelope and Fit out Works

As noted above the material distribution associated with the envelope and fit out works will be provided by the use of the tower crane and hoists (diagram 14).

Vehicles associated with the envelope and fit out works will deliver materials to the suspended parking bays within Cartwright Gardens. Materials will then be transferred to their point of use by means of the hoists and tower cranes.

Materials which will be distributed via hoists 1B, 1C and 2 will be off loaded by forklift from vehicles located within the suspended parking bays adjacent to Hughes Parry Tower, as detailed within the drawing above (figure 22).

Below is a larger scale diagram (figure 23) which details the configuration of the hoists relative to the material delivery point. This principle will be utilised while materials are delivered to hoists 3A and 3B.

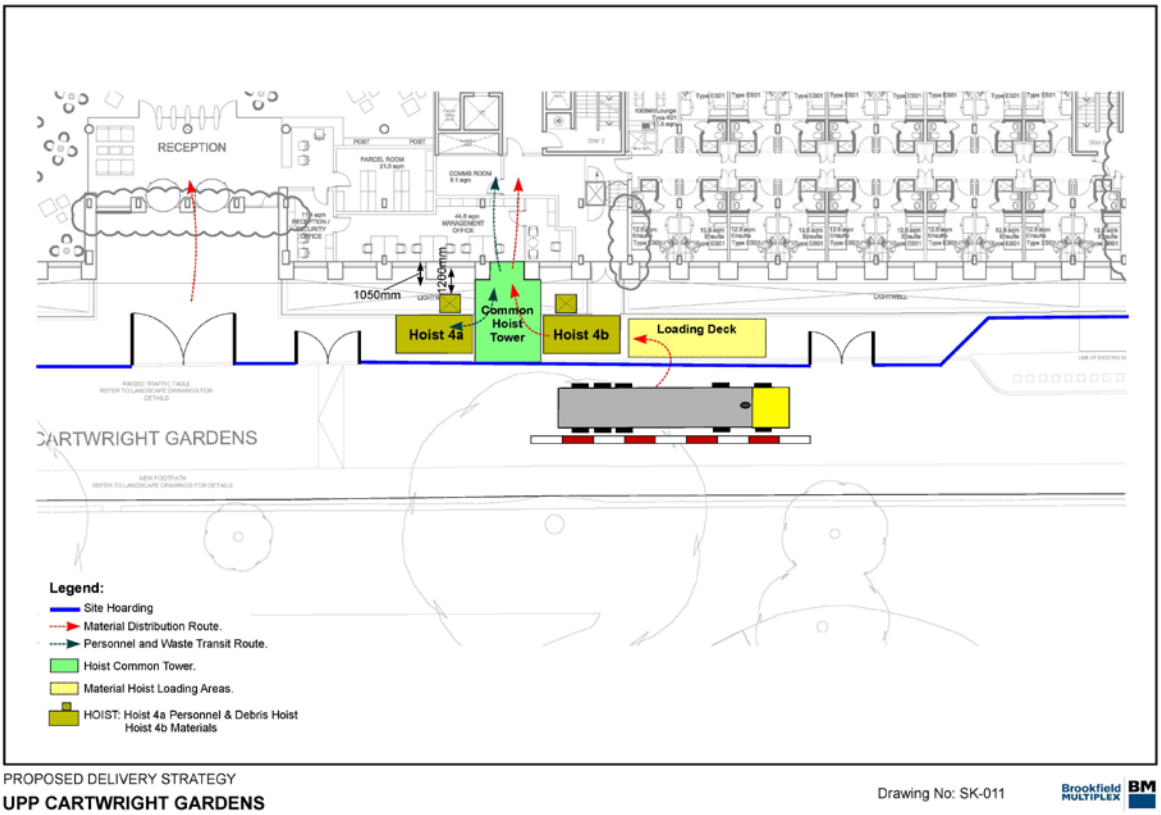


Figure 23 – Detail layout of hoisting to Cartwright Gardens

2.8.4 Vehicle and Material deliveries

The table below details the expected vehicle and materials movement and associated duration which will cross the closed pedestrian footpath during the course of the development.

Construction Activity	Period During Development	Expected crossings per day	Expected crossing / unloading duration
Demolition works	July 2014 to March 2015	60	5 minutes
Substructure works	Oct 2014 to June 2015	20	5 minutes
Superstructure works	Feb 2015 to Nov 2015	30	5 minutes
Fit out works	March 2015 to August 2016	500	2 minutes

By providing a dedicated delivery, unloading and loading area within the confines of the closed section of Cartwright Gardens a fully secure area will be provided during the off peak traffic period, which will allow the development to be undertaken in the safest and most practical means possible. This will ensure that the traffic flow to the surrounding area is maintained by means of the clearly identified route and provides a secure and segregated area for the construction operations to be managed.

2.8.5 Use of roads for offloading other than Cartwright Gardens.

Save for the following exclusions, access and egress associated with the development of the student accommodation will only be provided via Cartwright Gardens. Construction traffic will not access the site via Sandwich Street.

Activity	Programme intention
The initial delivery of demolition and sheeting piling equipment which will be delivered directly to the existing hard standing area adjacent to Hughes Parry Tower via Sandwich Street	These activities will take place during July or August 2014.

The erection and removal of the perimeter hoarding to Sandwich Street.	The erection process will commence during July 2014 and will take approx. 4 weeks to complete. The removal of the hoarding will commence during the latter stages of the project and will be undertaken to suit the final construction activities of the project.
The erection and removal of the scaffold protection screens.	The erection of the perimeter scaffold associated with the Sandwich Street elevation of Canterbury Hall and Commonwealth Hall will commence during July 2014 and will take approx. 6 weeks to complete. The removal of the demolition scaffold will be undertaken in a phased manner to follow the sequence of the demolition works.
	It is expected that the removal of the scaffold to Hughes Parry Tower will be completed by January 2016.
	The erection of the scaffold screens associated with the re-construction works will commence during December 2014 with the removal being undertaken in a phased manner to suit the completion activities. It is expected that the scaffold removal will commence during January 2016.
The works associated with the public footpaths to Sandwich Street as detailed within figure 7 above.	These works will commence during the latter stages of the project and are expected to take 8 weeks to complete.
The works associated with the metal railing and finishing activities associated with the Sandwich Street elevation.	These works will be undertaken during the latter stages of the project.
Connection to the public sewer within Sandwich Street.	Date and duration when these works will be undertaken will be advised following confirmation from Thames Water.

Installation and removal of office accommodation to the northern side of Hughes Parry Tower	The installation of the cabins will take place during September 2014 with the removal being undertaken during July 2016. Access to allow the installation and removal of the cabins will be provided via the western end of Hastings Street.

Exact dates and durations associated with the activities as noted above will be communicated to Camden, Sandwich Street residents and the surrounding community via the CLG Meeting, newsletter and notice board which will be provided on the site hoardings. At least 4 weeks' notice will be provided and wherever possible temporarily parking bay suspensions (typically 1 to 2) will not run into Sundays.

During the period of these works being undertaken, single delivery vehicles will be parked within Sandwich Street to allow the efficient unloading and loading of materials.

2.9 Cranes

The project intends to employ three tower cranes. These cranes have been positioned and sized to erect the pre-cast panels to the west elevation of Cartwright Gardens and to provide access to the four loading towers. In addition the cranes will service the development by unloading materials from the closed section of Cartwright Garden as noted within figure 24 below.

Tower crane 1 – Northern courtyard

Tower crane 2 – Central courtyard

Tower crane 3 – Southern courtyard

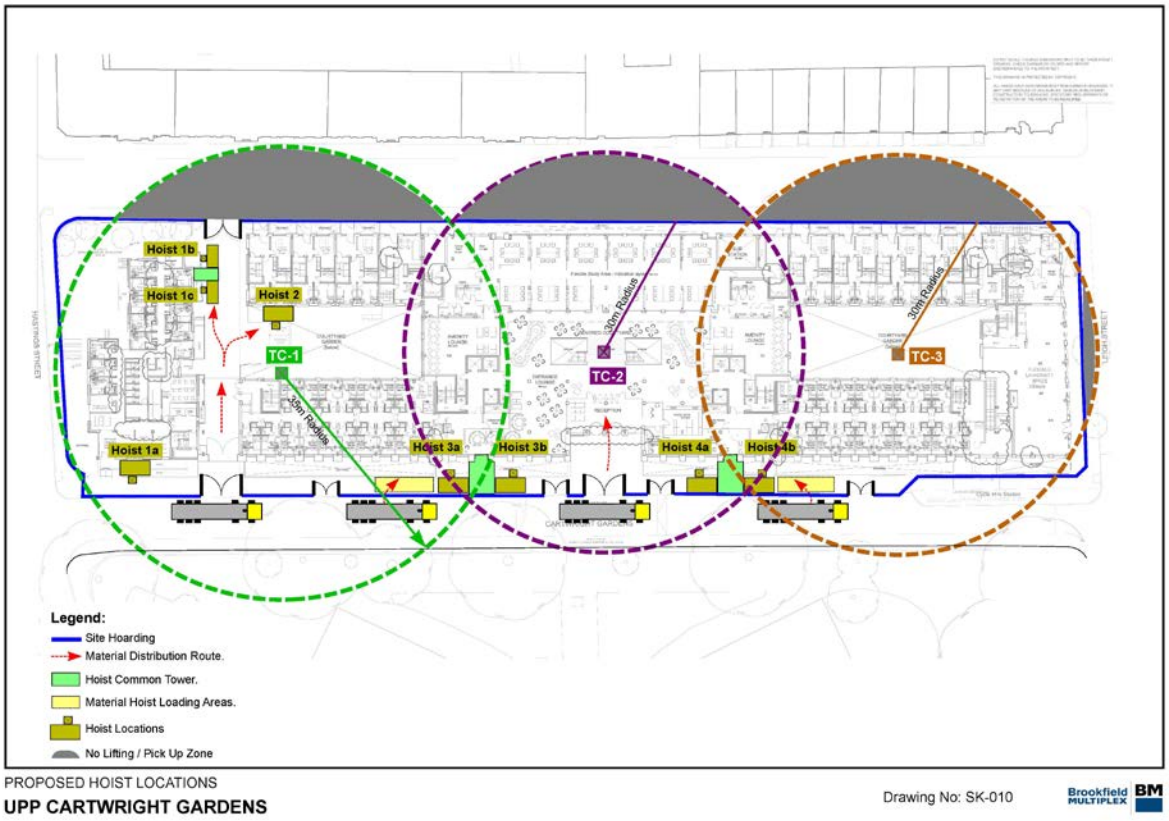


Figure 24 Crane and Hoist locations

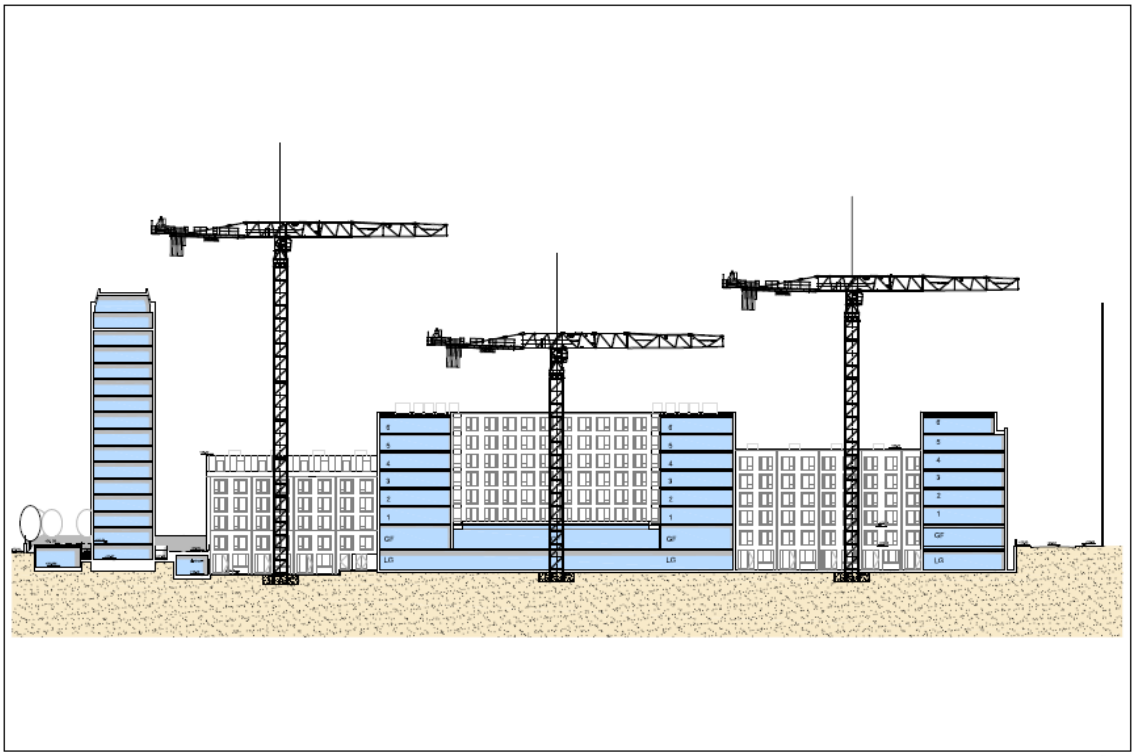


Figure 25 Tower Crane elevations

The cranes have be positioned and sized to ensure that the tower cranes will not over sail any neighbouring properties.

The erection and dismantling of the tower cranes will take place from Cartwright Gardens as shown within figure 26 below:

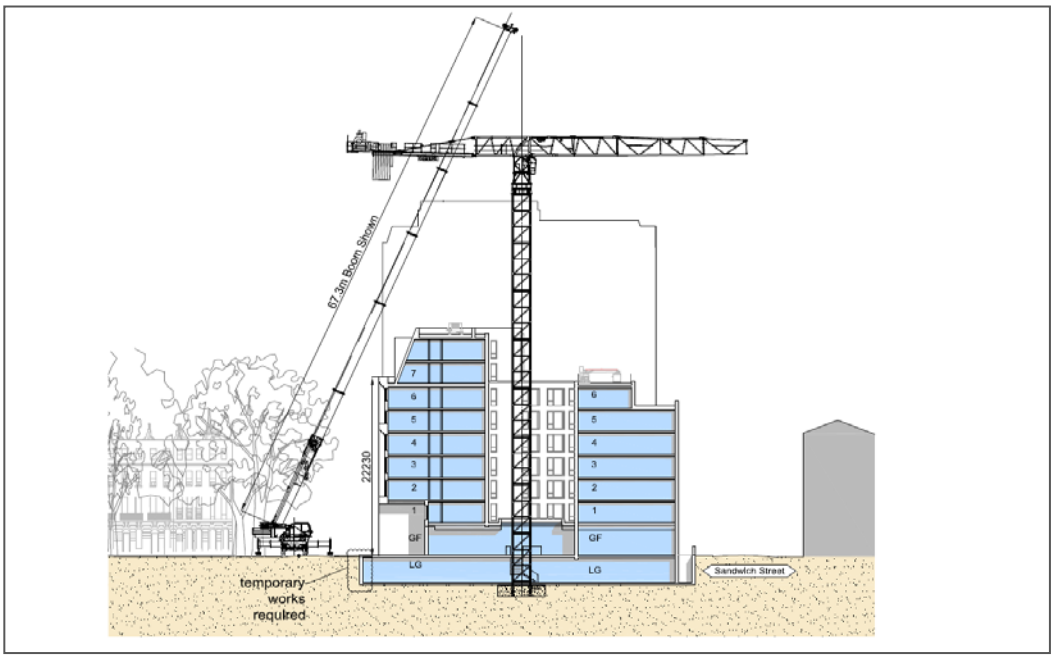


Figure 26 Tower Crane Erection and Dismantle

2.10 Hoists

As the superstructure develops, five hoists will be erected to assist in the movement and distribution of men, materials and plant. The locations of the hoists are shown within figure 24 above. Each hoist has been positioned within either the site demise or the closed section of Cartwright Gardens to ensure that any disruption associated with materials delivery and unloading is mitigated and will not impact the surrounding traffic infrastructure.

This approach ensures that no material deliveries with the exclusion of the activities noted above within section 2.8.5 will be made to Sandwich Street, Leigh Street or Hastings Street.

2.10.1 Loading platforms

Material access associated with construction of the façade to Sandwich Street and Leigh Street will be provided by the use of four loading platforms - three will be located to Sandwich Street and one to Leigh Street. These loading platforms will be progressively erected as part of the scaffold erection to suit the progression of the brickwork. Materials will be distributed to the loading platforms by the tower cranes with no vehicular access being required within Sandwich Street. The locations of the hoist and loading platforms are detailed within figure 24 above.

2.11 Parking

Save for the agreed holding areas, Delivery vehicles and personal cars will not be permitted to park within the surrounding streets. This requirement will be made clear and accepted by all sub-contractors who will be tendering for any of the works associated with the development. This requirement will also be rigorously enforced. All sub-contractors will be encouraged to use public transport wherever and whenever possible.

2.11.1 Proposed parking bays suspensions, temporary traffic management orders

Suspension of parking bays will be kept to an absolute minimum. Parking bays to the west of the development will be suspended as part of the road closure. Additional car parking bays will be suspended to both Bidborough Street and Leigh Street as detailed within the construction vehicles swept path drawings included within section 2.6. During the period when works are to Sandwich Street are undertaken as noted above, individual parking bays will be suspended to allow the work activities to be undertaken. Currently it is not anticipated that any additional suspensions will be required.

To ensure that the traffic movements to the surrounding area are not disrupted signage will be displayed on the approach roads detailing the alternative routes. BM has consulted with both Camden Council Highway officers and a specialist traffic management consultant to identify the signage scheme. Details of the proposed

traffic management scheme which will be employed during the times when Cartwright Gardens is closed is detailed within figure 11.

2.12 Proposed overhang (if any) of the public highway

There will be no scaffold overhang to any public highways outside the hoarding line as detailed within figure 27 below.

The tower cranes have been positioned to ensure that there will be no over sailing on neighbouring properties. The tower crane overhang associated with the public highways is shown within figures 24 and 25 above.

2.13 Details of Hoardings

Save for temporary road closure barriers to Cartwright Gardens, the site perimeter will be fully enclosed with 2.40m high painted solid timber hoarding which will afford both a security barrier and provide a visual screen of the site to the neighbouring residents and businesses. The hoarding will not provide any recessed areas and will comply with Camden Council requirements.

The hoarding will be erected in advance of the demolition works being undertaken. BM will fully enclose the development area with heras fencing in advance of the hoarding being erected.

The hoarding will be utilised to provide information and images associated with the development including two notice boards which will provide further information to the CLG. One notice board will be provided to the north of the development adjacent to Hastings Street with the second being provided adjacent to Leigh Street. The exact location of the notice boards will be agreed with the CLG.

The hoarding will be fixed on timber posts which are supported upon concrete blocks along the line of the existing metal railing to Sandwich Street, Leigh Street and Hastings Street. The location of the hoarding and access gates are shown on figure 27 below.

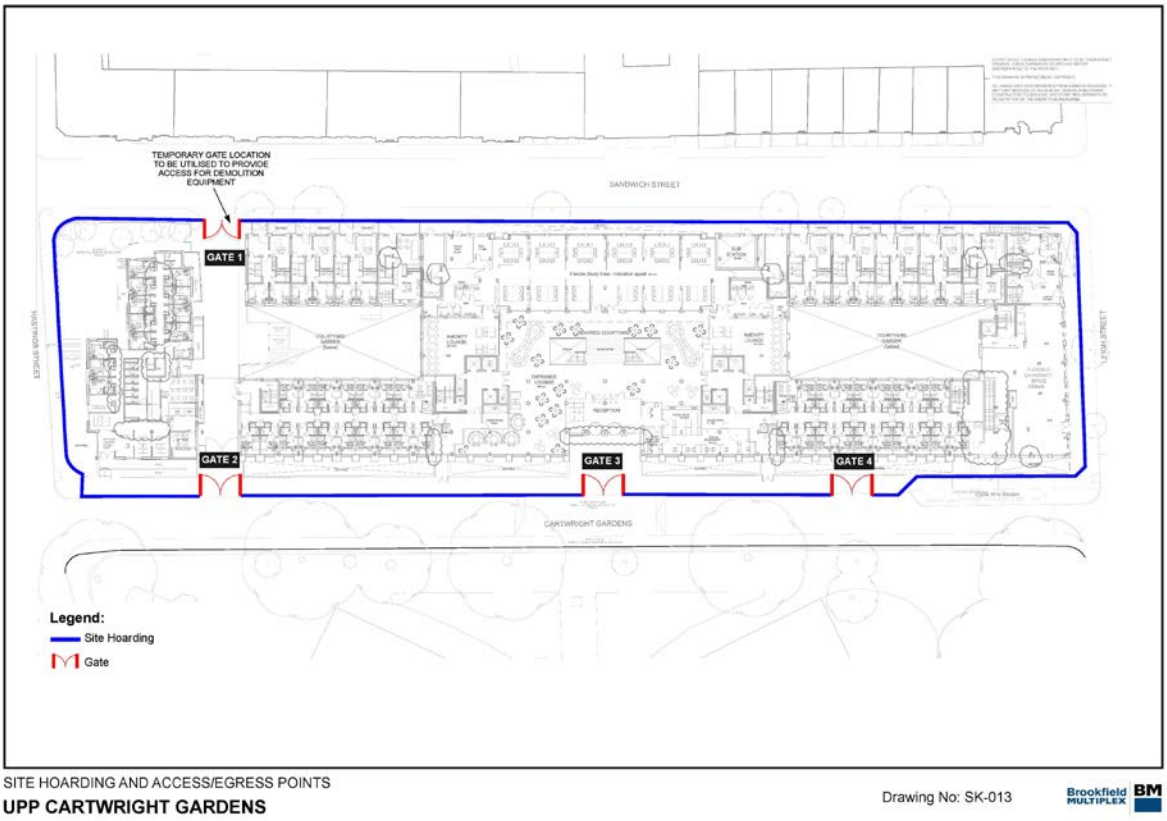


Figure 27Hoarding and Access Gate Locations

The hoarding will be kept in a good state of repair and any Graffiti will be removed or over painted the following working day.

The view of the Gardens from Cartwright Gardens crescent will be maintained as no solid hoarding will be erected around the tennis courts or garden areas. In conjunction with the use of heras type fencing the existing metal railings to the perimeter of this area will be utilised as the perimeter boundary fence.

2.14 Security of the works

BM will engage a security firm to provide on-site security services, in accordance with our standard security brief that exists on all of our projects. The guards provide protection to the building site as well as providing additional monitoring to the entry and exit for all personnel and vehicles. Guards will be based on site during the day and patrols will conduct frequent visits outside of normal working hours.

All access / egress points to the development including the gardens once the works start to this area will be secured outside of normal working hours.

Temporary fixed lighting which will provide both security and safety lighting will be erected to the perimeter of the development. The proposed location of the lights will be discussed with the CLG in advance of to the lights being erected.

2.15 Details of how pedestrian and cyclist safety will be maintained

By implementing the measures as identified above BM will ensure that the safety of pedestrians and cyclists are maintained through the duration of the development.

All deliveries will access the site following the routes as identified within section 2.6 above with banks-men stationed at the junctions of Bidborough Street and Mabledon Place, Cartwright Gardens and Leigh Street, and Leigh Street and Judd Street. The careful manoeuvring of vehicles by traffic marshals and banks-men at these junctions with further traffic marshals stationed within Cartwright Gardens will ensure that the cyclists and pedestrian safety will be maintained.

Additionally the pedestrian safety will be further protected by a temporary footpath being formed within the adjacent garden which will allow the permanent footpath to the frontage of Cartwright Gardens to be closed for the full duration of the works.

As noted within sections 2.5.3 above and 2.18 below TfL's Fleet Operator Recognition Scheme at Bronze level or similar will be a mandatory requirement. Additionally drivers will be required to undertake a cycle awareness training scheme such as the Safe Urban Driver module through FORS or similar.

2.16 Traffic Management

The management of logistic operations and planned delivery of construction materials as with any inner city development is of key importance. To ensure this function is managed effectively and without affecting the surrounding businesses a dedicated site based logistic manager will control all materials deliveries. The

logistic manager will have direct control over the two access / egress barriers to the North and South of Cartwright Garden as identified within figure 8 above.

The logistic manager will ensure that all deliveries are received in an efficient manner and that the operations of the surrounding businesses are not compromised in any way. He will be responsible for the control and coordination of all aspects of material deliveries and movement. Specialist trade contractors who will be working on behalf of BM will provide material delivery requests to the logistic manager who will ensure that suitable space and time is available and that the delivery vehicle can be accepted within the hoarding in readiness for off-loading. Waiting vehicles will turn off their engines when not in use. Vehicles entering or leaving the site will be supervised by our banks men. No delivery vehicle will be permitted to wait outside the hoarding perimeter with the exclusion of the vehicle waiting area which will be formed within Bidborough Street.

Vehicles will be unloaded by cranes or using forklifts from Cartwright Gardens.

A strict delivery procedure will be implemented to ensure the surrounding area is not congested with site and delivery vehicles. Depending upon the nature of the delivery sufficient road marshals will be deployed to ensure that traffic flow on the surrounding streets is maintained at all times.

During the period when Cartwright Gardens is closed the barriers will be kept closed. Only when deliveries are made to the site will the barriers be opened to allow vehicles to enter or leave.

2.16.1 Other measures to reduce the impact of associated traffic

Additional measures which will be implemented to reduce the impact of associated construction traffic will include the adoption of modern construction techniques which will be employed to reduce vehicle movements. This initiative will include the modularisation of components which will be delivered to the development in a completed state. This approach will reduce the number of individual components being separately delivered to the development, reducing the number of required traffic movements. Additionally, this approach will reduce the number of operatives needing to access the project.

Examples of components which will be substantially manufactured off site include:

1) Bathroom pods
2) Pre-caste concrete façade to the Cartwright Gardens elevation.

As part of the S106 Fourth Schedule – Local Procurement Code, BM will engage with local suppliers and construction staff in an effort to procure materials and services from within the London Borough of Camden.

2.17 Cleaning / Preventing dirt and dust on the public highway

The appointed logistics manager will ensure that the external perimeter of the site is regularly patrolled to ensure that any debris is kept clear of the pavements. Should any debris be discovered on the footpaths or public highways this will be immediately removed.

In addition the perimeter of the development will be kept clear of rubbish and will be inspected and cleared on a daily basis.

Mud and debris on the road is usually one of the main environmental nuisances and safety problems arising from construction sites. BM will make the following provision to minimise this issue.

- In the early stages of the project when demolition and ground works are being carried out, jet washers will be used to wash down all vehicles that enter/leave the construction site.
- Prior to Cartwright Gardens being opened following the off peak closure of Cartwright Gardens the roadway will be cleared of any rubbish or debris.
- The wash bay area will be impermeable and isolated from the surrounding area by a raised kerb or roll over bund to contain solids, with effluent directed to the foul sewer (subject to discharge consent)
- BM will also make provision for cleaning of the road if required by an approved road sweeper.
- BM will insist on all vehicles being fully sheeted to minimise the risk of any

spoil or debris over-spilling onto the highway.

BM will utilise spraying a fine spray to suppress dust on the following:

- Structures and building during demolition
- Unpaved areas that are subject to traffic or wind
- Sand, spoil and aggregate stockpiles
- During loading/unloading of dust generating materials

2.18 Large vehicles over 3.5 tonnes

BM will ensure that all contractors and sub-contractors delivering goods and materials to the development via vehicles larger than 3.5 tonnes will comply with the following requirements:

1. Operators to be a member of the TfL's Fleet Operator Recognition Scheme or similar, at the Bronze level or similar.
2. Drivers to undertake a cycle awareness training scheme such as the Safe Urban Driver module through FORS or similar.
3. Vehicles associated with the development will:
    a. Have side guards fitted, unless it can be demonstrated to the reasonable satisfaction of BM, that the vehicle will not perform the function, for which it was built, if side guards are fitted.
    b. Have a close proximity warning system fitted comprising of a front mounted, rear facing CCTV camera (or Fresnel Lens where this provides reliable alternative), a Close Proximity Sensor, an in-cab warning device (visual or audible) and an external warning device to make the road user in close proximity aware of the driver's planned manoeuvre.
    c. Have a Class VI Mirror
    d. Bear prominent signage on the rear of the vehicle to warn cyclists of the dangers of passing the vehicle on the inside.

These requirements will form part of the information provided to the tendering

contractors and will be enforced by the BM development delivery team.

2.19 Monitoring of construction traffic and informing of major operations

BM prides themselves on minimising disruption during construction and keeping local residents and businesses informed of site activities. With our extensive experience of working Central London, BM understands that the key to creating a successful working environment is communication. BM knows the more information made available to people, the more understanding they are likely to demonstrate.

From the earliest stages of a project BM make a point of:

- Forming relationships with surrounding residents and occupiers, including through the community liaison group
- Communicating through regular newsletters and updates
- Establishing dialogue with the London Borough of Camden to help minimise potential nuisances such as noise, dust and vibration
- Maintaining regular contact with police and other local groups and committees to support them in addressing issues that affect daily life in the area.

Close collaboration with the CLG, residents and commercial neighbours from project inception ensures an effective working relationship where neighbour satisfaction increases, as root causes are identified and strategies are developed to meet expectations.

At Cartwright Gardens BM will maintain the standards of the surrounding area and provide the following:

- To prevent vehicles from parking on local roads the gate men will also act as vehicles banks men marshalling traffic entering and leaving site. The gate men will ensure any dust or debris is immediately removed and the surrounding area is kept clean
- To keep the local area tidy, litter collections on the periphery of the site will be undertaken along with cleaning of the perimeter hoarding and lighting
- To keep our neighbours informed during the works, BM will erect a notice board

adjacent to the site entrances and issue newsletters to the local residents.

To ensure neighbours and surrounding businesses are informed, BM will issue newsletters providing details of any activities which may affect the surrounding areas. The newsletters will contain the following information:

- Details of contact names and numbers
- 2/47 helpline number
- Forthcoming activities on site
- Planning and design related activities
- Highlighting any mitigation measures relevant to forthcoming activities
- Anticipated completion date for the project

These newsletters explain when future planned works are proposed to take place.

2.20 Other relevant information relating to traffic and transport

There is currently no other areas relevant to the traffic and transport section.

3.0 Construction Management Plan

3.1 Consultation on CMP

The draft CMP was initially provided as part of the planning application and as such laid out the principals as to how the contractor would approach the project and manage the items identified within. Following a successful tender process BM have been selected as preferred contractor with the view to constructing the scheme in line with the planning application.

The S106 has called for the contractor updated CMP to be discussed and consulted with people who have a direct interest in Cartwright Gardens and to include a ward councillor, Local Residents, hotel owners (from among those premises directly fronting Cartwright Gardens), local business or business organisations and local community groups The CLG has been set-up to facilitate this.

This updated CMP is being circulated to Camden and the CLG for review and comment. Following an appropriate number of iterations the CMP is issued to the planning case officer for formal discharge prior to the scheme commencing on site.

It is important to note that the CMP is a live document which shall be updated as required to respond to any future requirements of the CLG. Comments received and their responses can be found at Appendix B.

3.2 Details of any Construction Working Group

BM, in addition to being a member of the Considerate Contractor Scheme, will be contactable to discuss any issues arising through the on-site Project Director. During the construction phase the Project Director and team will be accessible via email and phone throughout the duration of the project. BM has an impeccable record in dealing with local neighbours and key stakeholders on their projects. BM approaches this by embracing the work which is being developed through the CLG. In addition, BM can be consulted at any time during the construction phase.

The Liaison Officer of the CLG will be permitted through the constitution to invite members to the CLG meetings as required by its members. Any issue arising outside of those dealt with in the CMP can be addressed and resolved with BM and

will be reported to the CLG.

The contact person on behalf of the developer will be the Liaison Officer Dave Berry – URSL Regional Director.

3.2.1 Communication with the Community

BM will produce a newsletter that will be made available bimonthly to the Community and any person or group who would like to receive a copy. The newsletter will provide all relevant information about the project for the specific upcoming period. It will also include a rolling 6 month high-level programme that will show the key programme activities along with general and relevant information.

Further to the Newsletter, BM will liaise with key parties in the local vicinity to ensure that vulnerable people, such as the RNIB and the Argyle School are fully aware of activities happening throughout the course of the construction phase.

Also, the BM logistic manager will liaise with the local businesses within Leigh Street in relation to deliveries to the site and to the business premises to ensure that when deliveries happen concurrently they are carried out in an ordered and appropriate manner.

3.3 Considerate Constructors Scheme and Guide for Contractors Working in Camden

Following formal appointment, BM will register the Cartwright Gardens scheme with Considerate Contractors Scheme (CCS) at the earliest opportunity. BM will ensure that our specialist trade contractors and supply chain partners also comply with these requirements.

BM operates award winning sites and have previously received Performance Beyond Compliance, Silver and Gold awards from both National Considerate Constructors Scheme.

All contractors working on site will be instructed to work to the ‘Guide for Contractors Working in Camden’ also known as ‘Camden’s Considerate

Contractors Manual'. Along with our own procedures this will be referred to throughout the tendering process with our subcontractors. In addition the site team will use the manual as a reference throughout the construction process.

3.3.1 24/7 Helpline

BM will provide a 24/7 helpline service that is efficient, professional, courteous and customer focussed. The helpline will operate 24/7, 365 days per year, managing all calls received from the neighbours and the public. All calls taken by the helpline will be recorded and reported to the project lead for action. BM will record all calls received and close-out details including the action taken on a weekly register.

The 24/7 helpline contact details will be communicated widely to all neighbours and advertised on:

- Internet
- Newsletters
- Hoardings
- Letters issued to neighbours

The manned 24/7 helpline will receive all calls and those non-urgent will be reported to the project lead on the next business day.

Should a call outside of business hours require immediate action, the helpline will escalate the concern. By engaging a multi-level response system, BM will ensure they provide an efficient and comprehensive 24/7 response.

3.3.2 Complaints and compliments register

All calls, emails and notifications will be logged, actioned, recorded and closed out in a suitable timeframe. This will align with the register which will be established for the project.

3.4 Other construction sites in the local area

BM is aware of two other construction sites within the local area of the developments - both adjacent to the Euston Road. BM have been in contact with both projects with details as noted below:

Clifton House

Contractor	Shepherd Construction
Contact:	Richard Lake
Address	Clifton House, 101 Euston Road, NW1 2RA.
Completion Date:	June 2014.

One Mabledon Place

Contractor	McLaren Group
Contact	Karl Taylor
Address	Euston Road, London, WC1H9AJ.
Completion Date:	August 2014.

Noting that Clifton House will be completed by June 2014 and One Mabledon Place will be completed by August 2014 neither of these projects will affect the proposed works associated with the Development

3.5 The Construction Management Plan includes the statement

The statement as required in the section 106 is included within the introduction at 1.2 and repeated here for clarity; "*The agreed contents of the CMP must be complied with, unless otherwise agreed with the Council. The BM project manager shall work with the Council to review this CMP if problems arise in relation to the construction of the Development. Any future revised plan must be approved by the Council and complied with thereafter.*"

3.6 Adverse effects on the features of the conservation area

The development of the student accommodation also includes the redevelopment of the adjacent gardens. Works to the gardens will be progressively completed during the main development and will be completed by August 2016. Discussions are taking place with the UoL endeavouring to allow the gardens and all tennis courts to remain open for at least 12 months of the development period. Appropriate measures will be taken to protect the statue located at the entrance to the gardens.

3.7 Site Accommodation and Welfare

BM will take possession of the existing student accommodation facility on the 30th June 2014 and will commence the installation of the site accommodation from this date.

The CLG had requested if an alternative location of the site office can be found to that which was shown in CMP revision 3 and suggested that the accommodation could be located within the central section of the closed portion of Cartwright Gardens Road.

Through further review locations have been proposed which provide office and welfare facilities within the footprint of the site.

Initially temporary office and welfare facilities will be provided within the existing car park adjacent to Sandwich Street. It is expected that the office and welfare facilities will be located within the car park from 30th June 2014 until mid-August 2014.

Temporary office and welfare facilities will be formed within the retained Hughes Parry Tower. It is expected that this facility will be used from early August 2014 to mid June 2015.

Dedicated office accommodation units will be installed upon a steel support gantry within the foot print of the development to the northern end of the site. These offices will be stacked three high and form the main accommodation facility for all BM staff. It is expected that this facility will be used from mid-September 2014 to mid July 2016

Further temporary office and welfare facilities will be formed within the basement of the new student accommodation building to the southern end of the site. It is expected that this facility will be used from mid June 2015 to mid July 2016.

The location of the accommodation units is detailed within figure below.

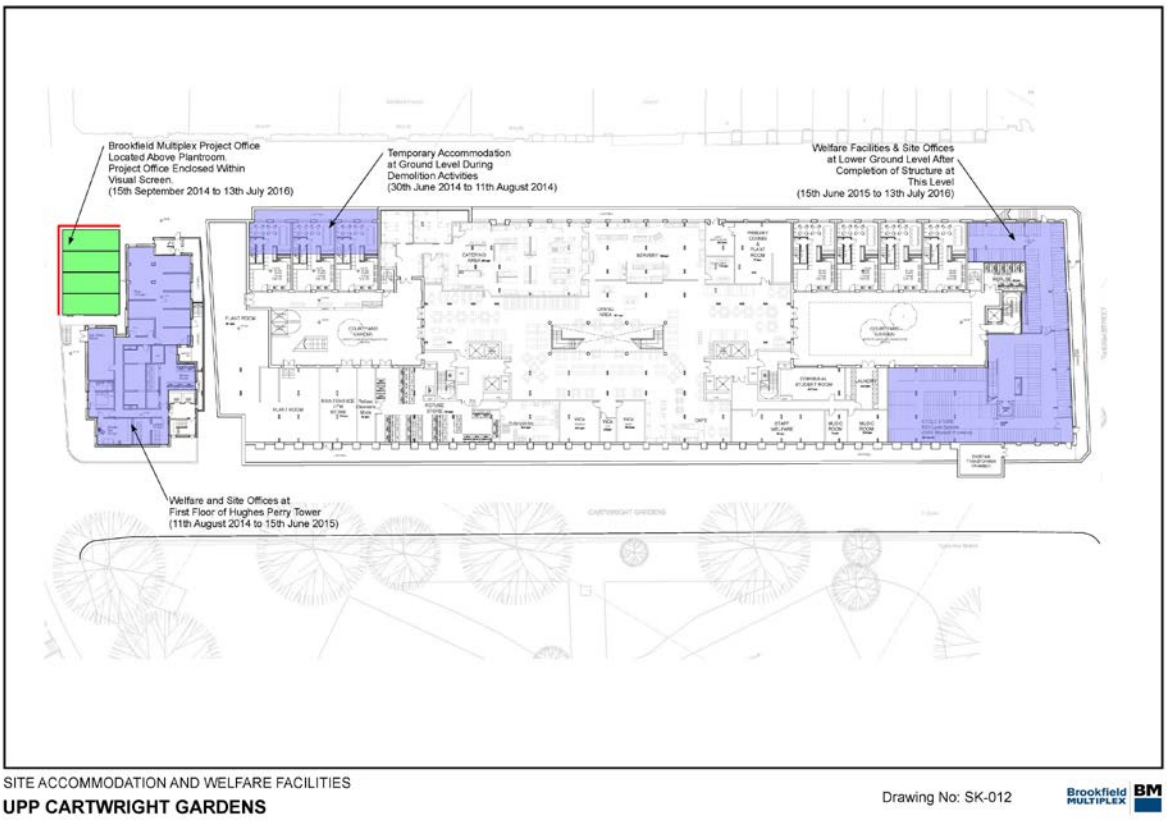


Figure 28 – Site Accommodation and Welfare Facilities

No member of the construction team will be allowed to use the tennis courts, public gardens or adjacent streets to consume food or beverages during break time.

BM discourage any members of the construction team gathering outside the development and will specifically referenced within the site rules, which will form part of each contractor's appointment. This requirement will be further highlighted during the BM site induction which every person working on the development will attend. The BM logistic manager will rigorously enforce this requirement with the support of the BM delivery team. Persistent offenders will be removed from the project.

As part of the welfare facility BM will provide a dedicated canteen and will encouraging all construction staff to utilise this facility rather than eating food within the surrounding streets. BM will also provide a smoking shelter adjacent to the welfare facility within the site demise and encourage all staff associated with the

development to use this area rather than smoking within the surrounding streets.

The existing pedestrian access routes to Sandwich Street, Leigh Street and Hasting Street will be kept clear at all times. All operatives and visitors accessing the construction site area will do so via southern and northern end of Cartwright Gardens, therefore negating the need for operatives to access the development via Sandwich Street.

3.8 Effects on the health and amenity local to the development.

By adopting the measure as outlined within this document and providing a self-contained unloading area within the hoarding to the closured section of the Cartwright Gardens the development works will be undertaken in a manner which will not detract from the surrounding area or cause inconvenience to the local residents and businesses.

Through dialogue and consultation with the CLG and Camden Council the plan will be further developed to ensure that the works are completed in a manner which will have the least impact to the function of the neighbouring community.

3.8.1 Rodent Control.

28 days prior to any demolition works being carried out the a method statement detailing how the dispersion of rodents will controlled during demolition works will be provided. Appendix K of this CMP provides the statement detailing how rodents will be dispersed and controlled during the demolition works.

The method statement shall be forwarded to Local Authority Building Control Services for their approval. (Regard shall be had to Part ‘H’ of the Building Regulations (Drainage & Waste Disposal).

3.9 Waste Management Strategy

BM's philosophy is that a tidy site is a safe site and they will maintain this principle throughout the development.

A waste management strategy will be established in accordance with the environmental commitments to allow for recycling of waste. The objective of this site waste management strategy is to reduce waste sent to landfill by reduction, redirection and management of waste materials.

Details of the BM Waste Minimisation and Management Procedure are included within Appendix C.

On site, storage of all waste will be accommodated within the ground floor area adjacent to the main entry. Small wheeled rubbish bins will be provided for subcontractors to dispose of their rubbish and stored in this designated area adjacent to the working area within the site hoarding. These bins will be emptied on a daily basis by a specialist waste contractor for further recycling off site.

BM also requires its primary subcontractors to prepare and implement their own respective Environmental and Waste Management Plans pertaining to all items including waste minimisation and management. Secondary subcontractors will comply with BM Environmental and Waste Management Plan.

3.9.1 Waste strategy for Cartwright Gardens

Waste minimisation is part of BM's innovative waste policy and involves continuous improvements as well as overall compliance with environmental requirements. This project this will be no exception and waste will be minimised. Our programmes are constantly reviewed to ensure that any advances in technology, be it materials or re-use of materials, are captured in our procedure at this project. This will eliminate unnecessary construction costs, reduce the carbon footprint and the impact of traffic and achieve high scores for the Considerate Constructors Scheme, necessary for BREEAM Excellence.

BrookfieldMetrics, which is based on BRE's SMART Waste site waste management plan, will be used for the development. This online platform allows BM to create a

robust set of data. BM have outperformed the targets set in 2009, as part of the commitment to WRAP, for Halving our Waste to Landfill and BM have now set even higher targets.

BM recognise that waste materials put a strain on all three aspects of sustainability; environmental, economic and social. For this reason, BM have developed and will implement programmes for reducing waste at source and diverting any remaining from landfill sites.

BM are also aware of the fact that for reducing and eliminating waste BM need to work with our design teams, our suppliers and our subcontractors. BM has therefore embedded waste and materials-related sustainability considerations in every step of the way (as demonstrated by Figure 13 below).

3.10 Design

BM will work in conjunction with the design team and hold workshops. BM will build on the work already carried out and will ensure all the sustainability actions are captured and recorded.

3.11 Procurement

Environmental screening will be carried out to ensure our supply chain shares our sustainability targets and will contribute in meeting them, by describing how, through interviews and presentations.

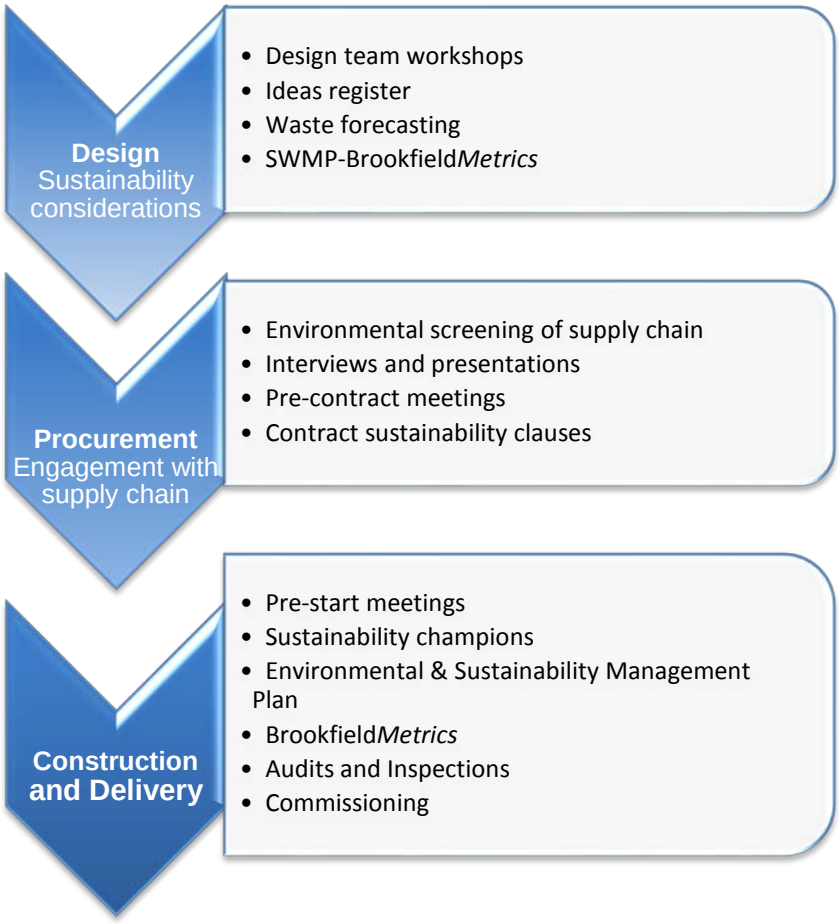


Figure 29: Zero waste process on Cartwright Gardens from Design to Construction and Delivery

3.12 Construction and Delivery

The development will have a BM manager that will meet regularly at the project's Sustainability meetings with our Waste Champion and Environmental Manager, as part of our Environmental & Sustainability Management Plan.

Our proposals for waste minimisation consider waste prevention at source as well as waste diversion from landfill. BM categorise our ideas following the five Design-out waste ideas categories in accordance with guidance issued by the government-backed WRAP (Waste and Resources Action Programme).

For this project BM's proposals include;

3.12.1 Reuse and recycling

BM will ensure reuse and recovery of the waste in accordance with our 95% target, as a minimum.

3.12.2 Off-site manufacturing

BM will maximise the opportunities for off-site manufacturing:

- Bathroom pods
- Pre-caste concrete cladding panels.

3.12.3 Waste efficient procurement

Engaging with our supply chain to ensure damage of materials is prevented through a dedicated off-loading area, just-in-time deliveries, and take back schemes for any surplus materials.

Minimise packaging through re-usable packaging options and mobile storage solutions that allow transferring materials to the work interface without packaging

3.12.4 Material optimisation

Materials will be ordered according to the dimensions necessary to reduce off-cuts, e.g. plasterboard to match floor-to-ceiling heights, rationalise the number of wall

types on Cartwright Gardens, etc.

3.12.5 Design for de-construction

Use of natural materials that can be reused or recycled, modularisation for easy future de-construction.

3.13 Means of ensuring the provision of information to the council and mechanism for monitoring

All amendments as revisions to the CMP will be discussed with all interested parties and provided to the CLG, Camden Council and other interested parties and recorded within Appendix B. The CMP will be reviewed periodically during the development works to ensure compliance is maintained.

The points listed within sections 3.14 and 3.15 below have been considered and incorporated into the Construction Noise, Vibration and Dust Management Plan which forms appendix J of revision 04 of this Construction Management Plan.

3.14 Air Quality and Carbon Reduction

The following addresses the first schedule regarding air quality and carbon reduction.

This method statement was prepared and adopted as part of the CMP to minimise gaseous and particulate matter emissions generated during the construction phase of the Cartwright Gardens Halls project. The method statement identifies the specific measures which will be implemented to control air pollution emissions during each of the following stages of the construction phase: (a) demolition; (b) earthworks; (c) construction/build; and (d) trackout.

- Timetable for the start and finish dates of each phase, including dust generating activities and PM10 monitoring (subject to finalisation);

i. Demolition – June 2014 to March 2015
ii. Earthworks / Substructure – September 2014 to July 2015
iii. Superstructure Construction – February 2015 to August 2016

- A plan identifying the location of the development boundary is shown within the TP Bennett drawing A10417 C0 050 Rev P1, as included within Appendix D below. Dust generating activities and plant equipment associated with emissions to air and PM10 monitors will be contained within the development boundary.

- The sources of stationary and fugitive dust, PM10 and NOx emission sources with an explanation of how these will be mitigated in accordance with the London Council's Best Practise Guidance are given below. They are categorised in:
  - A - Techniques to control PM10 and NOx emissions from vehicles and plant
  - B - Techniques to control dust emissions from construction and demolition
  - C - Techniques to reduce CO_2 emissions from construction vehicles
  - D - Air Quality Monitoring protocol

- In addition to the measures listed below BM will engage with the local community through newsletters to all those that may be potentially affected and let them know of our forthcoming activities.

- The Environmental and Sustainability Management Plan for Cartwright Gardens (Appendix E). This document contains the measures which will implemented at the development. The plan is currently in draft format and will be developed following further dialogue with Camden Council.

- BM is certified according to the ISO14001 for its Environmental Management Systems. All control measures are subject to internal monitoring and external audits.

3.15 Mitigation strategy

The construction phase shall be carried out in accordance with the Best Practise Guidance Note “Control of dust and emissions from construction and demolition” published by London Councils, 2006.

The risk rating of the site is defined in accordance with the Air Quality Assessment report for Cartwright Gardens (Air Quality Consultants, March 2013) and determined using the risk assessment methodology in the Best Practise Guidance. According to the report the risk rating for the site is “Medium”.

Techniques to control dust from construction activities and emissions from vehicles and plant, and undertake air quality monitoring, conform to the ‘medium’ risk categories outlined in the Best Practice Guidance.

The following best practise mitigation measures shall be implemented as a minimum on the Cartwright Gardens development:

3.15.1 Techniques to control PM10 and NOx emissions from vehicles and plant

a) Low emission plant fitted with catalysts, diesel particulate filters or similar devices shall be used;
b) Plant shall be well maintained, with routine servicing of plant and non-road mobile machinery (NRMM) to be completed in accordance with the manufacturers recommendations;
c) The use of diesel or petrol powered generators is to be avoided and use mains electricity or battery powered equipment preferred;
d) Non-road mobile machinery (NRMM) shall use ultra low sulphur tax-exempt diesel and be fitted with appropriate exhaust after-treatment such as catalysts, diesel particulate filters as stated on the approved list managed by the Energy Saving Trust. Specific details of plant and equipment and associated control measures will be provided following formal appointment on BM and the specialist trade contractors who will be undertaking the works.

e) All construction vehicles shall comply with the Euro 4 emissions standard and where possible use low emission fuels and alternative technology.
f) Plant and vehicles shall be located away from the closest receptors where possible.

3.15.2 Techniques to control dust emissions from construction and demolition

a) Keep site fencing, barriers and scaffolding clean using wet methods;
b) Buildings to be demolished shall be wrapped.
c) Provide easily cleaned hard standing for vehicles and clean using wet sweeping methods;
d) Provide the use of wheel-wash facilities near the site exit and ensure that accumulated dust and mud is dislodged prior to leaving the site to avoid carrying dust or mud off the site;
e) Inspect internal haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
f) Routinely clean the public highways and accesses using wet sweeping methods especially during dry periods;
g) Impose and signpost maximum speed limits of 10 mph on surfaced haul routes and work areas within the Site;
h) Ensure all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted;
i) Store materials with the potential to produce dust away from site boundaries;
j) Sheet, seal or damp down stockpiles of excavated material held on site;
k) Any loose materials bought onto the site shall be protected by appropriate covering
l) The site shall be dampened down during the working day and again at the end of the day to reduce the amount that is re-suspended dust.
m) Ensure water suppression is used during demolition operations;
n) Ensure mobile crushing and screening plant and cement batching plant which are regulated under the Local Air Pollution Prevention and Control regime operate in compliance with a Part B Permit. This shall be submitted to the local authority prior to operation.

o) Site personnel shall be trained in dust mitigation and a manager shall be present for managing dust on site.
p) Where mitigation measures rely on water, only sufficient water will be applied to damp down the material. Excess water will not be allowed to contaminate the local watercourses.

3.15.3 - Techniques to reduce CO_2 emissions from construction vehicles

Vehicles involved in construction and demolition work will adopt 'green fleet management practices' that will aim to provide a 10% reduction in tail-pipe CO_2 emissions over the duration of the construction phase.

3.15.4 - Air Quality Monitoring Protocol

a) Throughout the construction phase continuous particulate matter (PM10) monitoring shall be undertaken. Two instruments will be deployed at the site boundary in a transect orientated to the prevailing wind direction, with a third monitor located at the nearest sensitive receptor. One monitor shall be co-located with an anemometer.
b) Adequate quality assurance/quality control procedures shall be in place including monitor maintenance and calibration as well and data checking. PM10 data shall be collected automatically on an hour basis.
c) A trigger action level for PM10 concentrations of 200µg.m^{-3} (15 minute average) shall be used to identify incidences of elevated dust emissions at the site boundary. The development site shall comply with the trigger action throughout the demolition and construction phases.
d) An on-site alert system (email or SMS) shall be in place to notify appropriate staff that the trigger action level has been reached. Immediate and appropriate measures can be put in place to rectify abnormal particulate emissions. A procedure shall be established to deal with abnormal dust emissions. All incidences of abnormal particulate emissions leading to breaches of the trigger action level, shall be documented in the site log book (date and time), with details of the action take to remediate dust emissions.

e) An e-mail specifying details of any alert to be sent out to Camden Council's air quality officer as soon as practicable following any breach of the site trigger action level.

f) An electronic report shall be submitted to Camden Council's air quality officer every three months summarising the following information from each monitoring site – 24 hour average PM10 concentration, date and time of any breach of the trigger action level with the 15 minute mean concentration, prevailing wind direction and details of the cause of elevated dust emissions and mitigation measures.

g) The Council shall be notified of any changes to the location and operation of dust PM10 monitoring instrumentation.

h) A 24-hour phone hotline shall be set up so that residents can complain about high dust or PM10 levels directly to the developer.

3.16 Techniques to reduce noise and vibration.

The quietest and newest vehicles/plant machinery shall be used at all times. All vehicles and mechanical plant used for the purpose of the works shall be fitted with effective exhaust silencers, shall be maintained in good and efficient working order and operated in such a manner as to minimise noise emissions.

The Best Practicable Means (BPM), as defined in Section 72 of the Control of Pollution Act 1974, shall be employed at all times to reduce noise (including vibration) to a minimum, with reference to the general principles contained in British Standard BS5228: 2009 'Noise and Vibration Control on Construction and Open Sites'.

BM shall carry out prediction of noise and vibration levels before any work is carried out on site. These predicted noise and vibration levels shall be registered in the CMP.

Noise attenuation screening to be used if deemed appropriate and noise monitoring to be carried out at the start and at regular intervals during each task

period. Any mobile screens shall have sufficient mass so as to be able to resist the passage of sound across the barrier and to be free of significant holes or gaps between or under any acoustic panels or board materials as far as reasonably practical.

Noise monitoring shall be undertaken using a combination of semi-permanent (continuous) and attended monitoring methods. The locations of the semi-permanent (continuous) and attended monitoring and the frequency of the sampling have previously been agreed with Camden Council.

In the case of vibration, measured vibration levels shall be compared with the criteria in BS 5228: 2009 part 2. In advance of any works being undertaken background readings will be taken to identify the current vibrations levels noting the location of the existing underground tube line.

Appendix A - Works to the existing highway and public footpaths

© This drawing is the copyright of Macfarlane Wilder Ltd. All Dimensions are to be verified on site. Do not scale from this drawing. Macfarlane Wilder accept no liability for any expense, loss, or damage, regardless of its nature, where variations to the details of this drawing have been made without prior written consent from the originating office of the company.

0m 10m 20m

N

NOTE:

Specification of vehicle surfaces by consultant Engineers

New surfaces within RPA to be installed using 'no-dig' construction techniques.

Removeal of an existing surface within RPA to be done by hand.
Machinery if used to break up the surface to be footed outside the RPA.

Refer to:
Arboricultural Survey, Impact Assessment and Method Statement.
Garden Halls Student Accomodation,
Bloomsbury, London
March 2013
by Thomson Ecology

TENNIS COURT
PROVISION UNDER
DISCUSSION

KEY:

- Tarmac - Road Surface
  Ref. to Highway Engineers Specification
- 1 Granite Block Paving
  Colour: various: gray, brown
  200x100x80m
  to match material and bounding Byng Place within the Camden Borough
  To Highway Authority Approval
- 2 Reclaimed Sandstone
  Yorkstone Paving Slabs
  Bond: stretcher
  Joints: mortar
  Finish: natural
- Tactile Paving
  To Highway Authority approval
- 3 Standard Traffica - Concrete paving slab
  by Marshalls
  Edges: square
  Colour: natural
  400x400x85mm
  To Highway Authority Approval
- Conservation Kerb, concrete by Marshalls
  to match existing units on Cartwright Gardens
  To engineers specification
- 4 Diamond Sawn York Sandstone
  Bond: stretcher
  Edges: square
  400x400x85mm
- 5 Resin Bond Gravel by SureSett
  Color: Chestnut
- 6 EverEdge ProEdge BP1 by EverEdge
  Height: 100mm
  Length: 2500mm
  Thickness: 2.5mm
  Color: brown
- 7 Polymer Type 3 MUGA
  on porous macadam by Soft Surfaces
  Tennis Court
  Colour: Dark Green
- 8 Polymer Type 3 MUGA
  on porous macadam by Soft Surfaces
  Tennis Court
  Colour: Brick Red
- 9 Concrete plankform slab
  - Celestia paving
  by Marshalls
  Colour: randomly: Luna, Nebula, Suriya
  Bond: stretcher
  900x300x65mm
- 10 Banding - Pallas plankform blocks
  by Marshalls
  Colour: blue
  Bond: stacked
  300x200x65mm
- A Resin Bound Gravel for Tree Pits
  permeable, porous
  Size: 6-10mm
  Colour: natural
- B La Linea - Concrete Paving Block
  by Marshalls
  Colour: random: light granite, mid gray granite, gray granite
  400x400x65mm
- C Alternate row bonding:
  La Linea - Concrete Paving Block
  by Marshalls
  1. 300x300x60mm and 300x200x60mm
  2. 200x100x60mm and 100x100x60mm
  3. 300x300x60mm and 300x200x60mm
  4. 300x300x60mm and 300x200x60mm
  5. 200x100x60mm and 100x100x60mm
  6. repeat row 1
- D Living Roof Gravel
  - 'Green Slate Scree'
  by Silverland Stone
  Size: 50-75mm
  Depth: 150mm
- E Custom EverEdge by EverEdge
  Height: 300mm
  Length: varies
  Thickness: 2.5mm
  Color: brown
- F Custom EverEdge by EverEdge
  Height: 150mm
  Length: varies
  Thickness: 2.5mm
  Color: brown
- RPA - Root Protection Area
  Ref. to Thomson Ecology Drawings
  Tree Protection Plan - TPP01
  Tree Constraints Plan - TCP01
  and Arboricultural Survey, Impact Assessment and Method Statement
- Ground Protection
  Ref. to Thomson Ecology Drawings
  Tree Protection Plan - TPP01
  and Arboricultural Survey, Impact Assessment and Method Statement
- No Dig Construction Methods
  Ref. to Thomson Ecology Drawings
  Tree Protection Plan - TPP01
  and Arboricultural Survey, Impact Assessment and Method Statement

Rev	Date	By	Notes

Client: University Partnership Programme

Project: Garden Halls, Bloomsbury, London

Title: **Hardworks Plan**

Status: Tender

Drawing No.: 1488-MW-T301 Scale: 1:250 @ A1

Drawn: AS Date: 30.09.2013 Checked: GM

MACFARLANE WILDER
URBAN & ENVIRONMENTAL LAND PLANNING

64 Great Suffolk St London SE1 0BL T: 020 7960 2540 F: 020 7960 2541
E: enquiries@macfarlanewilder.com W: www.macfarlanewilder.com

Appendix B – CLG Comments and Responses

	Ref	P.		Rep Group	Feedback/comments	Comment
1	CMP	7	Consultation	Hotel	Who are the other organisations that have to agree	The process for the plans is as follows; Review comments received from the CLG at meeting 5 Feb. Update CMP and OSMP and circulate track-change copy 13th March. Receive any further comments from meeting 19th March Further meeting to review (if required). Submit CMP to Camden Submit OSMP to Camden
2	CMP	10	Working Hours	Hotel	Hours must be restricted to 9:00 to 17:00	Working hours will restricted to follow the guidance as outlined within the s106 agreement.
3			Working Hours	SST RA	Attendance of vehicles, staff and other, aside from emergency and security needs will be forbidden outside stated working hours. What forfeit will be provided for non-compliance?	Working hours will comply with the s106 agreement. Exceptions will relate to one off deliveries of large plant and equipment which will be defined by the Metropolitan Police Force. Examples of such instances will be the deliveries cranes and large construction equipment. BMCE staff will be in attendance while during deliveries are made outside of normal working hours.
4	CMP	10	Consultation	Hotel	DELETE: "...be an integral part of.." REPLACE with "consult"; INSERT after "...act upon.." "their"	Noted. Revised text will be incorporated into the CMP.
5			Traffic	MA	The proposed traffic diversion scheme is conspicuous	Traffic diversion associated with the Development

					by its absence from the Plan. CGCLG will certainly need to 'sign off' such proposals before the CMP can be submitted to Camden. In view of remarks made at the first meeting about timescales for ensuring the planned start on site, it would be helpful to circulate the traffic scheme ASAP rather than tabling it at the meeting when representatives will not have had sufficient time to absorb the implications for the local community, including businesses.	relate to the closure of Cartwright Gardens and the diversion of the traffic around the crescent. No construction traffic associated with the development will be permitted to use the crescent. Details of the traffic diversion have been discussed with Camden Highways and is identified within section 2.4.1 of the revised CMP.
6			Traffic	SST RA	The plan gives information about construction traffic access along Judd Street, Leigh Street and the straight part of Cartwright Gardens and details steps to mitigate the effect of this. However, there is a brief mention that Sandwich Street will be used for at least two months for the delivery of heavy equipment with no mention of mitigation. We need further details of when this route will be used and to ensure that steps are taken to mitigate the effects. The CMP implies that hoardings will not yet be in place to screen these activities.	Sandwich Street will be used to take deliveries when access cannot be provided via Cartwright Gardens. The deliveries of large plant and equipment will be small in number and take place during the initial period of works. The proposed times and dates will be provided in advance of Sandwich Street being used as an access route. Hoardings and scaffold protection screens will be erected in advance of demolition works being undertaken.
7			Traffic/ road closure	SST RA	The management plan states that residents' parking bays in the neighbourhood will not be affected during the development, but then states that some parking will be required in Sandwich Street. When and under what circumstances will parking bays be suspended in Sandwich Street? What measures will be in place to stop abuse? At least three weeks' notice should be given.	Parking bays within Sandwich Street will only be suspended for short durations when works relative to the area are being undertaken and when no other option is available. Notice will be provided in excess of 4 weeks as requested. Works which will require the suspension of parking bays within Sandwich Street are identified within the table as detailed within section 2.8.1 of the CMP.
8			Traffic	SST RA	When heavyweight vehicles (>1000 kg TARE weight) are to be used during the development, what advance notice will be provided and what forfeit will be provided for non-compliance.	Due to the nature of the development the majority of delivery vehicles will be in excess of 1000kg. Details of expected traffic movement are outlines within section 2.5 CMP. Vehicles will not be permitted to wait in adjacent streets as identified within sections 2.8, 2.8.1, and 2.16 of the CMP.

9			Traffic	SST RA	Standing vehicles with engines running produce noxious fumes, undue noise, vibration and other ingressions on the peace and tranquillity of the neighbourhood. We need to know what protocol will be adopted to prevent any such, or similar, nuisances at any time during the development and what forfeit will be provided for non-compliance.	Standing vehicles will be located behind the hoarding to the West of the Development. The Development will be screen off with 2.40m high Hoarding. Waiting vehicles will turn off their engines when not in use. While the demolition works are being undertaken the existing building will be fully enclosed with a protection scaffold.
10	CMP	15	Road Closure	Hotel	Provide study on traffic flows during construction period	The closure of Cartwright Gardens has been discussed with Camden Council as noted within point 5 above. Details of the expected traffic movements associated with the development works are detailed within 2.4.1 and 2.5 of the CMP.
11	CMP	15	Road Closure	Hotel	Provide proposed signage for non-site traffic flow management	Refer to points 5 and 10 above.
12	CMP	15	Road Closure	Hotel	See Appendix A: Garden Traffic	The section of appendix A which relates to the final designed highway scheme is outside the scope of the CMP. Consultation has previously taken place with Camden Council during the planning consultation. Regarding comments relating to the temporary traffic diversion please refer to comment within points 5 and10 above
13			Cranes	SST TA	The Management Plan states that there will be no over swing outside the boundary of the development site. However, if variable radius cranes are used, what assurances, legally and in practice will be available to protect the parties in the territory under the variable over swing, including when incorrectly used and exposing owners and occupiers to unknown risks.	Cranes will not over sail any private property. Crane will oversail the carriageway. The cranage proposal has been discussed with Camden Council. The cranes have been located to allow work to be undertaken from Cartwright Gardens thus minimising the need to access Sandwich Street. Figure 5 as detailed within the CMP details the crane jib radius.
14	CMP	17	Cranes	Hotel	It is unacceptable for Crane 3 to overhang such a large extent of Leigh Street and should be moved further into the site.	As noted above with point 13 above.

15	CMP	20	Hoardings	Hotel	Hoardings facing Hotels across the Garden should be 4m high & carry full width photo image of new development.	The Development will be enclosed with a solid protection hoarding 2.400m high. The Gardens will be enclosed with a heras fencing system 2.400m high.
16	CMP	20	Hoardings	Hotel	All other hoardings to carry hotel adverts	Hoardings will carry the notice boards and advertising associated with the Development.
17	CMP	21	Garden Security	Hotel	How is it proposed to secure the gardens during the construction phase	Gardens will be provided with a 2.400m heras type security barrier to the perimeter of the working area. Guards will be based on the Development during the day and patrols will conduct frequent visits outside of normal working hours.
18	CMP	21	Garden Security	Hotel	The gardens need to be key padlocked at night during the construction period. Security staff should patrol before opening and padlocking the garden. Workers to be given written instructions not to let- non-site individuals into the gardens on the pain of dismissal.	Access points into the garden will be secured outside of working hours. Access to the gardens will be restricted to persons working on the Development.
19	CMP	22	Local Procurement	Hotel	What plans exist to procure from CG hotels	Any promotional information provided by the local hotels will be made available to staff working on the Development.
20	CMP	22	Local Procurement	Hotel	The Contractor must make hotels in the Crescent and Leigh House their preferred choice during the construction period.	Refer to point 19 above.
21			Dust	SST RA	The Management Plan states that Camden Council must be notified if the monitored level of PM¬10 dust is greater than a trigger value, namely 200 µg.m-3. The CLG should be notified immediately of these occurrences. What action will be taken to ensure that the occurrence is not repeated and what forfeit is in place for each occurrence? We also ask that the developer cleans the exterior of windows of adjacent properties in Sandwich, Leigh and Hastings Street at least every two months throughout the contract.	The CLG will be notified where the trigger levels are exceeded. Should trigger levels be exceeded the working method will be reviewed and amended to ensure dust levels remain within the agreed targets.

22	CMP	23	Dust Prevention	Hotel	Local water pressure problems require site dowsing not to occur between 7-9:00am & 5:30-7pm when guests are showering.	The water consumption associated with the duct control process will be considerably less that the water which is currently used by the existing student accommodation facility.
23	CMP	23	Dust Prevention	Hotel	Given the limited success of dowsing the University must make provision for cleaning the facades of local businesses in Leigh Street and the Crescent (walls and windows).	Prior to the demolition works commencing the existing building will be fully enclosed with scaffold protection. Additionally any dusty works will be dowsed in advance of the works commencing and during the operation.
24	CMP	41	Air Quality Monitoring	Hotel	The CLG must be provided with monthly reports of the air quality reports.	BM will provide details to the CLG.
25			H&S	SST RA	We are concerned that the management plan does not have in place contingency plans for any accidents that might occur during the construction period, such as power outages, contamination of surrounding land or flooding if water mains are broken. What compensation would be made for the inconvenience caused and the health and safety of the local community?	As part of the BMCE management processes procedures will be produced covering emergency events. BMCE will liaise with the emergency services and statutory service providers in advance of works commencing on the Development.
26			H&S		In the event of accident, what detailed plan is in place for any emergency services access to the immediately affected areas and what public and specific liability insurance is being entered into and what assurances will be made known to all parties affected?	Refer to point 25 above.
27	CMP	25	Local tidiness	Hotel	Gardens should continue to be maintained: tidy beds, grass cutting, autumn leave removal, litter removal (windblown)	BM will arrange for the Garden to be kept tidy during the Development period. Outside of this timeframe the Gardens will be maintained by the UoL.
28	CMP		Helpline	Hotel	Crescent residents i.e. not just hotels need to be informed too	The Helpline telephone number will be made publically available and will be displayed prominently of the site notice boards.
29	CMP	30	One Mabledon Pl.	Hotel	Explain why there will be no interaction between two sites over July & August 2014	The adjacent neighbouring sites will be substantially complete prior to the Development of Cartwright Gardens commencing.

30			Site management	MA	The CMP indicates the location of the site office and welfare facilities within the northern tennis courts enclosure and states that workers will not be permitted to use the gardens or the 2 available tennis courts. Where will workers be expected/permitted to go during the hot summer weather? I am thinking about the potential impact on nearby gardens and open spaces, as well as local 'eateries'.	Site accommodation facility includes canteen, toilets and changing rooms. In addition to the canteen provided persons working on the Development will use the local eateries with a view of supporting the local economy.
31	CMP	30	Portakabins	Hotel	Explain and justify this major alteration from CMP contained in planning application	The Development will be completed with one phase therefore the strategy has been amended.
32	CMP	30	Portakabins	Hotel	Will the portakabins be contained within the northern tennis courts?	Cabins will not be contained within the gardens. The cabins will be located upon a support gantry above the closed section of Cartwright Gardens. Section 3.7 and figure 8 has been amended.
33	CMP	30	Portakabins	Hotel	How high will the portakabins rise?	Cabins will be stacked no higher than 3 high – approx 8.00m
34	CMP	30	Portakabins	Hotel	How many workers will be accommodated?	The cabins will serve for all staff associated with the Development – It is expected that number of operatives using the welfare facilities will be not greater than 180 at any one time.
35	CMP	30	Portakabins	Hotel	Through which gate will workers gain access	Workers will gain access to the accommodation units from Cartwright Gardens. Worker access via the Crescent will not be permitted.
36	CMP	30	Portakabins	Hotel	How will that gate be secured day & night?	Gates will be locked at night. During the day time the gates will be manned by BM logistic staff and will be kept shut when not in use.
37	CMP	30	Portakabins	Hotel	What will be the start and end period for these portakabins in the gardens?	The cabins will not be located within the gardens. Refer to point 32 above.
38	CMP	30	Portakabins	Hotel	How will you prevent noise from groups of workers returning to the accommodation late at night e.g. from pub?	Accommodation will provide office and welfare facilities. Residential accommodation will not be provided.
39	CMP	30	Portakabins	Hotel	Workers and Site Offices must be located in Hughes Parry Hall and not the Gardens.	Refer to point 32

40			Portakabins	SST RA	The new CMP is the first time that it has been stated that the tennis courts in Cartwright Gardens will be used to site accommodation for site operatives. This was not part of the planning application. Residents have not previously been informed that the gardens will be closed for two years, apparently only to provide cheap accommodation for site operatives, and have had no opportunity to object. We strongly oppose depriving residents of the use of the tennis courts for two years. It will also seriously increase the noise nuisance in the local neighbourhood after working hours. It makes nonsense of the management plan's claim to use local labour and businesses.	Refer to points 32 and 38. We are in dialogue and endeavouring to allow the tennis courts to remain open for at least 12 months of the Development period in an effort to incorporate the CLG's wishes into the plan.
41			Trees	SST RA	The CMP does not provide information about how the street trees in the local area will be protected. Many of these, particularly in Sandwich, Leigh and Hastings Streets, are mature and would be a great loss to the environmental quality of the neighbourhood. How will they be protected and, if accidentally damaged, can we be certain that they will be replaced with trees of similar maturity?	Details of the tree protection are included within appendix G of the CMP. These details have been provided to Camden Council in response to planning condition 6.
42			Asbestos Removal	SST RA	The buildings being demolished were constructed at a time when asbestos was widely used. There is nothing in the management plan detailing the procedure if asbestos is found. We require that the developer follow the statutory requirements and notify all adjacent properties of "periods of concern" when removal is taking place and that the CMP provides details of this.	The removal of asbestos will follow procedures as produced by the HSE. Asbestos removal will be undertaken by a licensed contractor.
43	CMP	30	Portakabins	Hotel	On the basis of the current plan, no portakabins should be placed in the gardens because (a) visual intrusion detrimental to business, (b) prevents tennis courts being used for an unwarranted period (c) impact of a large groups of workers moving along the Crescent,	Refer to point 32 above.

					particularly at night (d) lack of security arrangements for gardens (e) impracticality of preventing the workforce using the gardens.	
44			Site security	SST RA	What assurance is there that the site perimeter is secure and patrolled at night time to ensure the site is not used for illegal purposes and that the hoardings have no recessed areas, where antisocial behaviour could take place?	Site will be secured outside of working hours. Hoarding will not be provided with recessed areas.
45	CMP	33	Waste Management		Who monitors & controls primary sub-contractors	The principle contractor – Brookfield Multiplex
46	CMP	37	Waste Management		Under what conditions do you envisage revisions to WMS/Plan?	The site based waste management plan as with other management plans will evolve during the life cycle of the development.
47	CMP	37	Timeline		Could we have a more detailed timeline for works starting/ending in the gardens	Refer to point 40 above.
48			Timeline	SST RA	The Management Plan is short on details of the time spans of the different demolition and construction activities. We need a timeline for the whole contract period, with details of when drilling and pile driving will take place, when large vehicles will be delivering equipment, etc.	Programme of works is included within appendix F of the CMP.
49			Light Pollution	SST RA	What assurances are there that any night security lighting will both be effective in securing the site and not be intrusive to neighbouring properties?	Location of security lighting to be discussed with the CLG in advance of their installation
50			TV and radio signal	SST RA	Is this likely from the high metal structures, if so what steps will the developers take to deal with it?	The new Development is a concrete frame structure and the mass of the new works in comparable to that of the existing building.
51			Pest control	SST RA	Despite this being part of a previous management plan, the current plan has no provision for rodent control. A comprehensive, rigorous and thorough control plan for the surrounding area should be in place for the duration of the contract and for six months thereafter.	Refer to point 52 below.
52	CMP		Pest Control	Hotel	Why were the provisions of the original CMP dropped?	This was an oversight and pest control details will be

						added to the CMP. We confirm that the provision as identified within the plan will be incorporated as detailed below: 28 days prior to any demolition works are being carried out the a method statement detailing how the dispersion of rodents will controlled during demolition works will be provided. The method statement shall be forwarded to Local Authority Building Control Services for their approval. (Regard shall be had to Part 'H' of the Building Regulations (Drainage & Waste Disposal).
53	CMP		Pest Control	Hotel	The Contractor must demonstrate to the CLG which provision provides the higher safeguard. Mindful of the reputational damage to hotels caused by rodent incursions and the sums already being spent to prevent it The higher of the old or current provisions should be adopted. In the event of the Hotels having to spend additional sums over the construction period the contractor will compensate the hotels.	Refer to point 53 above.
54	CMP		Noise / Vibration	Hotel	Why were the provisions of the original CMP dropped?	The current CMP provides further details of how the controls will be adopted at Cartwright Gardens. Specifically sections 3.12 to 3.15 inclusive and appendix E. As part of the procedures which will be adopted as part of the Environmental and Sustainability Management Plan Noise vibration and dust monitoring stations will be positioned around the perimeter of the development. In addition and for clarity an abstract of the original plan (Draft Construction Management Plan – March 2013) relative to noise and vibration control measures is listed below. These measures will be incorporated into the revision of the current CMP.

						Abatement Noise Techniques The quietest and newest vehicles/plant machinery shall be used at all times. All vehicles and mechanical plant used for the purpose of the works shall be fitted with effective exhaust silencers, shall be maintained in good and efficient working order and operated in such a manner as to minimise noise emissions. The Best Practicable Means (BPM), as defined in Section 72 of the Control of Pollution Act 1974, shall be employed at all times to reduce noise (including vibration) to a minimum, with reference to the general principles contained in British Standard BS5228: 2009 'Noise and Vibration Control on Construction and Open Sites'. **Noise Levels** The main Contractor shall carry out prediction of noise and vibration levels before any work is carried out on site. These predicted noise and vibration levels shall be registered in the Construction Management Plan. Noise attenuation screening to be used if deemed appropriate and noise monitoring to be carried out at the start and at regular intervals during each task period. Any mobile screens shall have sufficient mass so as to be able to resist the

						passage of sound across the barrier and to be free of significant holes or gaps between or under any acoustic panels or board materials as far as reasonably practical. Noise monitoring shall be undertaken using a combination of semi-permanent (continuous) and attended monitoring methods. The locations of the semi-permanent (continuous) and attended monitoring and the frequency of the sampling have previously been agreed with London Borough of Camden in writing. **Vibration Levels** In the case of vibration, measured vibration levels shall be compared with the criteria in BS 5228: 2009 part 2. In advance of any works being undertaken background readings will be taken to identify the current vibrations levels noting the location of the existing underground tube line.
55			Noise /Vibration	SST RA	How and where is vibration load to be measured? The noise and vibration load associated with each of the various time periods should be detailed. This is extremely urgent as the residents of Sandwich Street who work from home will need to make alternative arrangements during these periods of high levels of noise and vibration and need to know as soon as possible when this is likely to be..	Refer to point 54 above.
56	CMP		Noise / Vibration	Hotel	The Contractor must demonstrate to the CLG which provision provides the higher safeguard. The higher of the old or current provisions must be adopted by the	Refer to point 54 above.

					Contractor. Logged noise levels must be distributed to the CLG on a monthly basis.	
57			Pavement	SST RA	There is a long stretch of natural stone paving in Sandwich Street adjacent to the development site, which is an attractive feature of Sandwich Street. We require assurances from the developers that if this is damaged during the construction period, it will be replaced with natural stone paving matching the existing one.	If the pavement is damaged BMCE will repair. Material selection associated with the footpath has been advised during the planning and 278 works consultation period.
58	OSO MP V01	4	New Pavement	Hotel	The proposed new pavement on the Eastern side of the Gardens must not be constructed until such time as there has been a proper consultation on the proposed one-way system. To construct it in advance of this quite separate exercise is to prejudice the consultation by creating a de facto narrowing of the road conducive to a one-way system.	Camden has confirmed that this is subject to a separate consultation process.
59	OSO MP V01	5	Tennis Courts	Hotel	No courts must be removed from the Garden, which provide material benefit to a wide range of users.	The requested to keep tennis courts over the increase in open space will be passed to the appropriate authorities.
60	OSO MP V01	8	Garden Security	Hotel	See Appendix B: Garden Security	The use of padlocks and additional patrols will be added to the plan as requested. Within the design the security lodge and management offices face the garden and will provide additional oversight. The gardens will be open only from dawn until dust and with public access we do not believe CCTV is appropriate.
61	OSO MP V01	8	Quality and Resources	Hotel	See Appendix C: Adequacy for future Garden Funding	See response to item 68
62	OSO MP V01	11	Private Events	Hotel	There is no reason, given the damage to the hotels that will be caused by opening the Gardens to the public, for excluding the hotels from booking their own private events. Hotels in Cartwright Gardens must be provided	In terms of private events held in gardens this is limited within the 106 agreement and we would in any event anticipate this being a rare occurrence. We do not believe local Hotels have been excluded

					with two slots.	from requesting private events and would expect should a hotel wish to hold a private event in the gardens that this would follow the requirements set out in the OSMP. We would not allocate any slots to events until the requirements within the OSMP are meet.
63	OSOMP V01	11	Private Events	Hotel	As part of the conditions upon private events, it shall be a requirement that any such event is ticketed and such tickets shall not be exchanged; organisers shall check guests into private events and any member of the CLG has the right to be present to ensure such checks are made.	We would anticipate private events in the gardens being a rare occurrence. Should there ever actually be such events they would have to be managed appropriately which would certainly include control of the event including attendees and security. The following is an extract form the 106 agreement: '(vi) details of management and the method of granting permission for private events to be held in the Gardens which will be subject to prior notification to the Community Liaison Group at least two weeks in advance of the event taking place with details to be advertised on the notice board and website AND AT ALL TIMES no more than five daytime and daylight hours private events (during the hours of 8am to 6pm on the same day) and a further three events occurring between the hours of 8am to 9pm on the same day and only where those hours fall within daylight hours) to be held in the Gardens in one calendar year save as otherwise agreed with the Council '.
64	OSOMP V01	13	Consultation	Hotel	The text should be amended to reflect the precise nature of the consultation that actually took place	Clarification of request required.
65	OSOMP		Phasing of Works	Hotel	The University must provide a detailed schedule of works to be carried out in the Garden and on the	Refer to points 40 and 48.

	V01				Gardens Hall site, which avoids the worst of the visual impact of both occurring at the same time.	
66			Tennis Courts	Student, local community and business	Maintain four rather than 2 courts	We will pass this request to the appropriate authority
67	CMP		Boundary Railings	SST RA	The CMP states that the boundary railings to the gardens of Cartwright Gardens will be stripped and re-painted. We ask, in the interests of the local community to stop anti-social behaviour at night time, that these be replaced with new better quality, higher railings. The comparison with Gordon Square, which has often been cited by the developers, is unrealistic. Gordon Square is surrounded by university buildings, Cartwright Gardens by hotels which prostitutes could attempt to use.	We would wish to maintain the railings as they are currently featured.
68			Grounds maintenance	Hotel	University should set aside a ring fenced capital sum from whose income future maintenance would be guaranteed. This is still a viable model which we would urge upon the University. The sum could be found from the proposed life-cycle costings proposed in OSOMP V01. Failing the creation of an adequate ring fenced capital sum the hotels request the following arrangement: Given the University's poor maintenance record over the previous leasehold, when resources were provided by the Hotels, the 'Owners' must commit to maintaining all aspects of the Garden from their own resources without charge to others (except for Tennis Courts) and shall not only produce a life-cycle costing for Garden maintenance but also a consonant 3 year rolling budget	An initial allowance has been made for a sinking fund to maintain the gardens over the life of the development. This will be reviewed and confirmed once the detailed plans, such as 2 verses 4 tennis courts, is agreed. The sinking fund is a ring fence resource and cannot be used outside the life cycle costs. These accounts are not separately audited however we would provide the group with the plans for routine maintenance and sinking fund works on a 5 year plan on an annual basis for the groups input.

					of proposed expenditures, and audited accounts of all Garden expenditures. Such costings, budgets and accounts shall be provided to the CLG and Camden, where the latter shall provide, as promised during the planning application, its expert comment on the adequacy of funding for maintaining the Gardens at the level of quality achieved upon completion of its landscaping.	
69			Gardens security		As a poor minimum the University must provide CCTV in the Gardens and have 5 equally spread security patrols a day in addition to the ones at the beginning and the end of the day. Security staff should also padlock the gates by key, rather than rely upon a security code, since in Argyle Square these are given to down and outs by resident students.	The use of padlocks and additional patrols will be added to the plan as requested. Within the design the security lodge and management offices face the garden and will provide additional oversight. The gardens will be open only from dawn until dust and with public access we do not believe CCTV is appropriate.
70			Governance	MA	The CLG, as currently set up, is entirely preoccupied with the oversight of the construction process and will subsequently be primarily concerned about the management of the halls once they are occupied by students. Issues surrounding the operational management of the gardens will be of interest to the hotels in Cartwright Gardens, the student halls, residents in the northern crescent and adjacent streets and garden users, including tennis players. I can't imagine that people coming to meetings to discuss the gardens will want to spend time listening to disputes between the University and Sandwich Street residents about the hostel or that Sandwich Street residents associations will necessarily be motivated to discuss the operational management of the gardens, which do not directly impinge on their quality of life. There will, of course, be some overlap in membership of the two groups, but separate forums will be the best way	Should it be felt by the Group that as the redevelopment progresses that a change in representation will best allow for consultation and liaison it is within the groups powers to agree change in the make up of the representation though we would request that the size of the group stay within the numbers of representatives already agreed so as to maintain its effectiveness. We would be supportive of the principle of a Friends of Cartwright Gardens Group and would welcome the opportunity to discuss and develop the idea further.

					forward, as proposed and (I thought) previously accepted in principle by Martin when I suggested that a 'Friends of Cartwright Gardens'	
71	CMP		Hard landscaping	MA	concerns about the intention to apply 'bonded resin gravel' to the footpaths within the gardens, as this had proved unsuccessful in other gardens, where the surface has deteriorated quickly and cracks have appeared.	We are awaiting specialist advice on this point so that we can fully consider. Once this is received we will be able to reply more fully.
72	OSMP		Tennis Courts	MA	3. Page 10 of the Plan lists the streets in which residents will be regarded as eligible to use the tennis courts. Whilst we would welcome priority being given to local residents, it would be helpful to define the meaning of "to include the Marchmont Association". This could be interpreted to mean residents living in the streets located within the Marchmont Association's area of benefit, or members of the Marchmont Association. The latter would be difficult to administer, because we do not run a membership scheme as such, with all residents and businesses within the area of benefit who support our aims being deemed to be members, with entitlements to vote at our AGMs and be on our Members and Supporters mailing list.	We have amended the plan to clarify the point and would seek the groups views on what the definition of 'local resident' should be.
73	CMP		Governance	Church	It would help us enormously to plan, and therefore to commit to attending and contributing to the CLG, if we could have a timetable of meetings for longer than one meeting at a time, and ideally for the year ahead or indeed the whole project. I note that the S106 agreement specifies that the CLG shall meet once every three months. I assume it will in fact be more often, and so I propose that the meeting next Thursday includes an item on the agenda to plan the draft schedule of meetings for the duration of the project (ie from now until August 2016), recognising of course that	This has been added to the agenda for the next meeting. The group can decide to meet more often should it wish and it is our understanding that 3 months is an indication of the expectation from planning but this would in no way prevent more regular meetings if the group feels it is appropriate.

					specific meetings can be changed later, and/or cancelled and/or more meetings added on specific items (as long as the once per 3 month condition is met).	
74	CMP	10	Governance	Church	mentions that BM will act upon the CLG's recommendations "where possible". This should be stronger, because at present it is simply a get-out clause which enables BM to ignore the CLG and its recommendations if BM thinks it is awkward, or not "possible" to act upon them.	The wording where possible allows for BM to assess all suggestions prior to being committed which is reasonable. All suggestions will be made available publically on the groups web site and in submitting the CMP for consideration within the planning requirements BM will need to show that they have been reasonable.
75	CMP		Noise	Church	The lists of laws, regulations and European directives, as well as the Environmental Manual (all in appendices) contain reference to noise and general principles to observe to reduce noise impact. However I do not see anywhere in the CMP that there has been any specific consideration of noise impact in this project, or plans as to how to reduce it. For example, the CMP is vague as to when the hoarding will be installed on Sandwich Street, compared to when the heavy equipment will be delivered and demolition and pile-driving carried out – it would make a significant difference if it were specified that the hoarding went up first, which will reduce the noise particularly at ground level. In addition we have students who study during the day, and have thesis/research deadlines, as well as exams throughout the year, and need to know about noise impact well in advance in order to plan. We also sometimes have conferences or training meetings, or Camden Council meetings, which would be disrupted by noise, so we need to know about noise levels 6 months in advance to be able to plan adequately.	Refer to point 54 Hoarding will be erected prior to the demolition of the structure being undertaken.

76	CMP		Pest Control	Church	Rodents: These are not mentioned, except in one point in the Environmental Manual (under Good Housekeeping) to keep litter to a minimum so as to discourage vermin. Large scale demolition like that proposed here, will result in many rats/mice losing their homes in the old building/site, and therefore looking for new homes in surrounding properties – ie our properties. There is no mention of rodent control, or measures which can be taken to reduce the impact on surrounding properties. What sanctions are there if problems do arise? The university/developer should show a clear policy for dealing and paying for any problems that arise. At the very least, provisions according to earlier plans / CMP should be reintroduced.	Refer to point 53
77	CMP		Timetable	Church	Details of timescales: Approximate timescales are given (ie demolition from July 2014 to March 2015, construction to September 2016), but no details as to when the large-scale, disruptive, noisy and dusty activities of demolition and pile-driving foundations. Detailed phasing and timescales need to be provided, and these need to be available now in the CMP, and not just 4 weeks ahead of any particular piece of work.	A high level project plan is provided to the group. If further detail is requested at this stage we would be happy to discuss and provide further information as appropriate.
78	CMP	12	Traffic	Church	identifies vehicle movements every 20 minutes, 10 hours per day, during demolition (July 2014 to March 2015) and then every 10-15 minutes for 10 hours per day at the peak construction time (June 2015 to March 2016). The CMP outlines that traffic will be directed down Judd St, Leigh St, and Cartwright Gardens, with some deliveries to Sandwich St mentioned almost as an aside (on page 15) and without details as to when equipment will be delivered via Sandwich St, for how long, size of vehicles, and other details which will help	Refer to point 7

					us ascertain the disruption and plan accordingly. Similarly, there is a mention that "individual parking bays will be suspended" during these works (page 19) and "single delivery vehicles will be parked within Sandwich St" (page 17) without specifying which bays, for how long, etc. We would like more details, as mentioned above, as to these suspensions. We would also like reassurance that they will not be suspended on a Sunday, so as to allow our parishioners to attend Church services.	Wherever possible arrangement will be made as not to suspend parking bays during Sundays as requested.
79	CMP	8	Traffic	Church	Page 8 mentions that heavy/wide vehicles will be delivered outside of normal hours, and neighbours will be notified 4 weeks earlier. We propose that such deliveries be discussed and agreed with the CLG, and that in any event no such deliveries will take place on Sundays, so as not to disrupt our Church services (which are sometimes in the mornings and sometimes the afternoons, eg on the 3rd Sunday in each month).	Refer to point 3
80	CMP	21, 23, 24			specifies that lorries are trained to watch out for cyclists but we are also concerned about pedestrians. As traffic from Tavistock Square heading along Tavistock Place can no longer turn left into Marchmont Street (north end) – traffic, including many taxis, is forced to continue on to turn left at Judd Street and then left into Leigh Street. It has become a rat run and is very difficult to cross the road safely due to the large increase in traffic volume and the speed at which some vehicles travel (also on street parking makes it hard to see traffic). It is not an easy road for anyone to cross – and we must note that we have large numbers of residents from abroad who have to look a different way when crossing the road, and in addition to our residents there are other student hostels nearby (like the Generator) with	All large vehicles will comply with TfL's Fleet Operator Recognition Scheme or similar, at Bronze level or similar. Companies who will be providing deliveries to the Development will be made aware of the surrounding area specifically the pedestrian who may be crossing the public highways.

					large numbers of foreign students also. At either end of Leigh Street you have to look 3 or 4 different ways before you can cross. Adding lorries to this will make it even more dangerous.	
81	CMP		Trees	Church	There is a statement that there are no trees with tree protection orders so TPOs are not applicable (for example, in Appendix E page 4). However we would like reassurance that care will be taken to protect all existing trees particularly along Sandwich St, and sanctions imposed if trees are damaged or destroyed. Such damage would negatively impact our environment in the short and long term, and also remove a barrier (the tree) which would otherwise reduce the noise, dust and visual impact of the demolition and construction.	Refer to point 41
82	CMP		Site Offices	Church	The plans note "accommodation" in Cartwright gardens. It is not clear if this simply means offices (and dining rooms/meeting rooms for workers) or rooms where workers will sleep and live for the duration of the project. Please clarify.	The term accommodation relates to the site offices and welfare facilities for the site. To clarify the term it does not relate to living/sleeping accommodation contractor and sub contractors will not be residing in the development.
83	CMP		Dust	Church	Page 23 notes that the "external perimeter of the site is regularly patrolled" – please clarify how often? (Regular can mean once per hour, once per day, once per week, once per month, once per year …) Dust will, despite all the developer's efforts, dirty our cars and windows and façade of the Church facing onto Sandwich St. The developer should regularly (at least every 2 months, every 4-6 weeks particularly during peak demolition/dusty times) clean the façade and windows of neighbouring properties including Sandwich, Leigh and Hastings Streets.	Refer to point 21. Patrols will be provided at least twice per day.
84	CMP		Comm's	Church	Page 27 dwells on BM's enthusiasm to liaise with the local community and keep an open door policy. Please let us have details of how to contact BM and how they	BM's project office will be based adjacent to the Development. The BM project office telephone number along with e-mail addresses of the principle

					can be consulted “at any time”? Is there a physical place, a name, a phone number, an email address, a facebook page?	members of the delivery team will be made available to the CLG.
85	CMP		Timeline	Church	Appendix C, page 3 notes various targets and dates, the last of which is “by 2012…” – what is the next target? Please update the plan. Similarly, section 1.6 of Appendix C (on page 4-5) notes various company targets. Were these met?	Appendix C, page 3, section 1.4 records the UK Government targets. Appendix C, pages 4-5, section 1.6 records BM achievements and BM future targets.
86	OSMP		Tennis	Church	Please confirm that ILSC residents will be able to use the Tennis Courts with a local residents’ 50% discount, as the ILSC opens onto Sandwich St, but our residents can only give 30 Thanet St as their postal address which is our official registered address.	It has been agreed that a discount will apply for local residents and the plan will be amended to reflect this. As already identified we would seek the groups definition of a ‘local resident’ but are happy to confirm as far as we are concerned the discount would apply to ILSC residents.
87	CMP		Site accom.	BCAAC	It is essential that this complies fully with the provisions and protections afforded by the London Squares Preservation Act 1931(Amended 1989) an act to provide for the preservation and for the restricting the user of certain squares gardens and enclosures in the administrative county of London and for other purposes. This Act restricts the placing of structures in these gardens see Section 3 (1) Cartwright Gardens is listed under the entry for Borough of St Pancras P46 NB This act applies to the following open spaces in our area: Bedford Square, Cartwright Gardens, Gray’s Inn Square Woburn Square, Euston Square, Fitzroy Square, Gordon Square, Mecklenberg Square, Regent Square, Tavistock Square and Brunswick Square. Therefore it is a matter of considerable concern to the Advisory Committee that this could set a most undesirable precedent for other developers to follow	Refer to point 32 above.

					on sites near or adjacent to these other historic open spaces The BCAAC is also concerned that the proposed use of Cartwright Gardens as a construction staging facility and to accommodate construction-related facilities will violate the prohibitions of the Act. Indeed, the London Squares Preservation Act was enacted to prevent precisely such private uses of London's open spaces. The restrictions of the London Squares Protection Act are quite clear, "a protected square [including Cartwright Gardens] shall not be used otherwise than for one or more of the following purposes (that is to say) the purposes of an ornamental garden pleasure ground or ground for play rest or recreation (in this Act referred to as "authorized purposes") and no building or other structure or erection shall be erected or placed on or over any protected square, except as may be necessary or convenient for or in connection with the use and maintenance of such square for one or more of the authorized purposes Looked at in the cold light of day, it is pretty extraordinary that it should be even contemplated that the gardens would be closed for 2 years and used for this purpose to support reconstruction of the University residence halls.	
88			Governance		2.3 states that BM will be an integral part of the CLG and will implement and act upon recommendations where possible unless there is a compelling reason for not doing so.	Noted
89	CMP		Traffic	BCAAC	2.4 Access arrangement for vehicles states BM : will use a one way loop for all deliveries vehicles accessing the construction site. It will be essential for the CLG to be aware of the departure and destinations of all	Vehicle access / egress routes as proposed have are identified within the original draft CMP dated March 2013 noting that Camden Council is in possession of this document.

					contractor vehicles accessing the site. Serious doubts remain as to the practicality and enforcement of 'the loop,' due in part to the tortuous traffic movements accessing and exiting from the Euston Road. The restrictions may need to be re-considered, not least the recent left turn ban from Tavistock Place into Marchmont Street (north), which results in taxis and other traffic using Leigh Street, with no obvious benefits. It will be important to ensure that they do NOT access via Duke's Road, Flaxman Terrace, Burton Street and the crescent are not used by such traffic, as they are for the development underway at 1 Mabledon Place and that contractors are NOT directed to use this route by satellite navigation systems! Uncovered site debris is frequently conveyed down Burton Street, Burton Place and around Cartwright Gardens at top speed, past numerous residential properties and driven with total disregard for noise pollution. In order to monitor this, it is suggested that CCTV cameras should be installed at the junction of Duke's Road/Burton Street/Flaxman Terrace and that CGCLG should have access to the data recorded (The Gatehouse balcony would be an ideal location).	Noted
90	CMP		Comms.	BCAAC	Para 2.19 states that 'BM pride themselves on minimizing disruption,' so this suggestion would seem to accord with this objective. It also states BM will keep 'local residents and businesses informed of site activities.' Surely, our common objective should be for them to be unaware of these, rather than be 'informed' about them! In addition notices should be located at the junction with Duke's Road and Euston Road stating that there is	Refer to point 84 above and section 3.3 of the draft CMP.

					NO ACCESS to Cartwright Gardens.	
91	CMP		Hoardings	BCAAC	2.13 Details of Hoardings. BCAAC consider that NO advertising should be placed on the hoardings to ensure the visual amenity of the conservation area and the settings of the listed buildings, apart from informing the public what is happening and where to complain as and when necessary.	Refer to point 16 above.
92	CMP		Site accom/light	BCAAC	3.17 refers to site accommodation and in the light of legal prohibition regarding structures in or on the gardens, it follows that an alternative location will need to be found and agreed with LBC and CLG and placed on gantry type structures on the east side of the road adjacent to the site and in the lower sections of the tower as suggested by Sandwich Street residents would seem to be appropriate.	Refer to point 87 above
93	CMP /OS MP		Paving	BCAAC	New footway The CGOSOMP states that the paving will be in 'concrete slabs' these are not appropriate for this location or indeed around the crescent. This should be finished in yorkstone as pavements in yorkstone survive in Burton Place and elsewhere in the vicinity. This is poor quality, utilitarian paving and the introduction of any more in an historic conservation/listed building context is not acceptable.	Part of the 278 agreement
94	OSM P		Seating	BCAAC	The design of the new 'chapelet' seating is not compatible with an historic garden and should be reconsidered.	We would greatly value the groups input on what seating would be in its opinion more suitable. We could then investigate the possibilities and bring these to the group for their consideration.
95	CMP /OS MP			BCAAC	BCAAC considers that the retention of the four courts is desirable as a much needed amenity, without the usual 'anti-social' impacts of other ball games.	We will pass request to the appropriate authorities. As stated at the meeting the University or the developer has no preference
96	OSM P		Private Events	BCAAC	The BCAAC believe that public open spaces should be open to and should benefit the entire community and	Previously the private events held in the Gardens

					that they should not be managed our used for private gain or to the exclusion of the local community. The Bloomsbury garden squares have always provided a refuge - a breathing space – in an urban environment. Cartwright Gardens was designed as and remains a lovely quite space very near the activity of the Euston Road and Kings Cross Station. We are concerned about the suggestion that "events" may be held in Cartwright Gardens. The BCAAC is unaware of any 'events' that have been held in recent years, nor of a demand for them to be held. These events would also seem to be contrary to the very quiet atmosphere, which is such a precious feature of the area, being as close as it is to the dreadful noise and pollution of the Euston Road. The notion of introducing any 'noise pollution' should be unthinkable. It is critically important that Cartwright Gardens be managed and operated without profit motive or economic interest. Any event must be charged a fee consistent with fair value for such event space in Central London. Critically, ALL income generated by any events should be managed by [NEIGHBOURHOOD BOARD] and reinvested in the Gardens for the restoration of the open space itself and not paid to event administration or to offset regular operations costs, which we understand are to be borne by the University. Any such events must also be in compliance with the provisions of the London Squares Act 1931.	have consisted of an annual event held for the students' resident in the University of London's Intercollegiate Halls of Residence. Tickets for this event have been given to the Hoteliers. Priority for events will, as set out in the OSMP, be given to the local community, the University and its students. The CLG will be consulted and informed of requests for events. The owner will be responsible for the maintenance and up keep of the gardens in any event. Where events are for a local community group, the University or its students we would anticipate the charge will be to cover the costs directly associated with the event for example security and additional litter clearance.
97	CMP		Site accom	BCAAC	BCAAC understands that the issue regarding site hoardings will be a reserved matter following the meeting last Monday. However, it does not regard enclosing the garden as proposed and thereby physically and visually linking it with the development	Refer to point 17 above.

					site to be acceptable, or consistent with the common objective of keeping the gardens and tennis courts open throughout 2014-16.	
98	CMP			SST Ltd	Rodent Control 1.1 The S106 Agreement, under Schedule 2, setting out the Construction Management Plan (CMP) requirements, contains no reference to rodent control, neither does the current draft of the CMP. However, the original draft CMP which formed part of the application for planning permission did address that issue. 1.2 If the University Halls developer has since concluded that no method statement is required, we request to know the grounds for that conclusion. Has research has been carried out to reach it? If so, we request a copy the research evidence in order that it can be verified. 1.3 Rodent control has been a serious and costly issue in the block and locally in recent years, possibly due to displacement from buildings demolished as part of the King's Cross Railway Lands redevelopment. We are naturally concerned that the problem is not exacerbated by the Cartwright Gardens Halls redevelopment works. 1.4 Therefore, we request that rodent control be re-introduced into the CMP. 1.5 We trust that, as required by Schedule 2 of the S106 agreement, criterion q), our comments and	Refer to point 53 above

					requests, together with your explanations if you choose not to amend the CMP accordingly, will appear in the final CMP document.	
99	CMP		Noise	SST Ltd	Noise and Vibration Levels 2.1 The draft CMP, submitted as part of the application for planning permission, referred to establishing noise and vibration levels before any work is to be started on site, those levels to be registered within the agreed CMP. It went on to say that noise attenuation would be used if required and that noise monitoring was to be carried out at the start and at regular intervals during each task. The screens were to be of sufficient mass to resist the passage of sound across the barrier and were to be free of holes and gaps. The document stated that the location of noise monitoring had already been agreed with the Local Planning Authority. Concerning vibration levels, the document stated that vibration levels would be compared to British Standard 5228: 2009 part 2. 2.2 The current draft CMP makes no reference to any of this. Why has the requirement for establishing noise and vibration levels not been transferred into this current draft? 2.3 Whilst limited reference is made to noise and vibration, in section 6 of the Environmental and Sustainability Plan (Appendix E of the CMP), this is insufficient. As a fundamental part of the construction and aspects likely to cause the most disruption to residents of Sandwich and Sinclair Houses, these	Refer to point 54 above.

					subjects should be addressed within the main body of the CMP, with reference to established noise levels and vibration limits. Therefore, we request that this be done.	
100	CMP		Asbestos	SST Ltd	Asbestos 3.1 Has an asbestos survey of the existing buildings been done? If so, what were the findings? 3.2 Can provision be included within the CMP to notify neighbouring property owners and occupiers of works relating to asbestos, particularly its removal? Can this include provision for adequately advanced notice of "periods of concern" when it is known that asbestos related work will occur?	The UoL have an asbestos management survey. Prior to any demolition works being undertaken and 'Refurbishment and Demolition' survey will be completed. Also refer to point 42 above.
101	CMP		Traffic	SST Ltd	. Parking and loading arrangements and delivery of materials 4.1 Section 2.8 of the draft CMP indicates that the current car park which faces Sandwich Street is to be used for the delivery of demolition and sheeting equipment (presumably, this is because it is the only open space on site). As such, we wish to establish what this work entails. For example: i) The size of the delivery vans. ii) Timings of deliveries. iii) How many days it will take to complete the delivery. iv) Whether it will be one big lorry per day, or several. v) Where they will park on Sandwich Street. vi) Whether there will be a designated area.	Refer to points 6, 7, and 9 above.

					vii) Whether there will be an assurance that engines must not be left running whilst parked. 4.2 Whilst on this subject, we note from Section 2.11.1 that there will be parking suspensions along Sandwich Street. We must emphasise the importance of advanced notification of such proposed suspensions, especially if involving the temporary suspension of any disabled bays, since some of our residents are elderly and/or disabled and therefore highly dependent on being able to park close to their respective flats.	Noted
102	CMP		Traffic	SST Ltd	Routing of traffic 5.1 We note from Section 2.8 and Figure 4 of the CMP the proposal to stop up Cartwright Gardens for the duration of the works, subject, however, to being confirmed with Camden. Since such matters can take some time to confirm and formalise, may we be updated with progress reports on this aspect? 5.2 What is the contingency plan for routing of traffic and location of delivery drop off if Cartwright Gardens cannot be stopped up for the duration of the works?	Refer to points 5 and 10 above.
103	CMP		Cranes	SST Ltd	Cranes and loading platforms 6.1 Section 2.9 of the draft CMP refers to cranes and loading platforms, the largest crane being opposite Sandwich House. It is stated that the cranes will not over-sail residential buildings. Please note carefully that we reserve in full our legal entitlements to prior notification, and to our formal consent being obtained	Noted

					in advance, should there at any time be a proposed change of method which would involve encroachment on the airspace above our premises. 6.2 Concerning loading platforms, we shall wish to ensure that the condition in Section 2.10.1 is observed, whereby all construction material is moved from within the site as and when needed, without requiring vehicular access within Sandwich Street.	Please refer to point 6 and section 2.8 of the draft CMP.
104	CMP /OS MP		Consultation	SST Ltd	Recording 8.1 Here we simply generalise our point at 1.5, above. Namely, we trust that, as required by Schedule 2 of the S106 agreement, criterion q), the following will appear in the final CMP document: CGCLG members' comments and requests, including our own as above, together with any further information you supply as a result, and with your explanations if on any aspect(s) you choose not to amend the CMP as requested.	All CLG comments and associated actions will be recorded within appendix B of the CMP.
105	CMP /OS MP		Enforcement	SST Ltd	some residents asked for specification of the penalties to be imposed for breaches of CMP conditions.	BMCE will comply with the relevant obligations as identified within the S106 agreement.
106	CMP		Site management	MA	Could you please provide details of the restrictions to be placed on staff gathering in areas outside the site? This has been a bone of contention with other large construction projects in the area.	BMCE discourage this activity and will specifically reference this point within the site rules which will form part of each contractor's appointment. This requirement will be highlighted during the BMCE site induction which every person working on the development will attend. The BMCE logistic manager will rigorously enforce this requirement with the support of the BM delivery team. Persistent offenders will be removed from the project.

						As part of the welfare facility BMCE will provide a dedicated canteen and will encouraging all construction staff to utilise this facility rather than eating food within the surrounding streets. BMCE will also provide a smoking shelter adjacent to the welfare facility within the site demise and encourage all staff associated with the Development to use this area rather than smoking within the surrounding streets.
107	CMP		Traffic	JS	shows access for HGV's. Where, exactly, will these HGV's wait? With a project of this size there will be many occasions when vehicles will need to wait for various reasons before getting on site, and sometimes there will be several vehicles waiting. Where exactly will they wait and how will this be managed? (mentioned also in 2.16)	Refer to points 5 and 10 above. The reference to 'suitable space' within section 2.16 refers to space within the enclosed hoarding situated within the closed section of Cartwright Gardens.
108	CMP		Traffic	JS	2.11 Parking will be "rigorously enforced" how and by whom?	
109	CMP		Site Offices	JS	2.13 Hoarding mentioned – How will this be designed to minimize visual impact and ASB? esp. Graffiti and gang related graffiti which is a common feature of the locality.	The hoarding will comply with Camden Council requirements. Graffiti will be removed or over painted the following working day.
110	CMP		Site Offices	JS	3.7 Use of the gardens for Site Accommodation and Welfare. Complete denial of use of open space and tennis courts and for 2 years is unacceptable.	Refer to point 32 above.
111	CMP		Site offices	JS	Ref Accommodation and welfare - How much of the catering will be provided by the plethora of local outlets. How will workers be encouraged to use local	Refer to point 30 above.

					cafes?	
112	CMP		Air quality	JS	3.14 Air Quality and Carbon Reduction. Please can we have a plan of locations of air quality monitoring stations	Refer to point 54. The proposed location of the monitoring station are detailed with the Cartwright Gardens – Construction, noise, vibration and dust management plan which will be incorporated into revision 04 of the CMP.
113	CMP		Trees	JS	Trees – vehicle strike is probably the No. 1 threat to our street trees. The trees on all the surrounding streets should be surveyed ASAP and a plan to mitigate this put in place in cooperation with the Camden Council Tree Section, eg pruning, "Overhanging Trees" signs attached.	Refer to point 41 above.
114	OSMP			JS	Point 1 - There has been a potentially catastrophic underestimation of the potential for ASB in daylight and after dark. PC Michael O'Grady, our "boots on the ground" has not been consulted at all, nor has the Safer Neighbourhoods team. There are several specific ASB hazards in this particular neighbourhood which will affect the Gardens if opened to the public.	The opening of the Gardens was communicated and agreed as part of the planning approval process.
115	OSMP		Tennis	JS	Point 2 - The proposal to reduce the number of tennis courts by 50% without any efforts to discover who uses the tennis courts or inform them properly of the plan is unacceptable and appears to go against Camden Councils objective to support participation in sport.	Please refer to the response in item 59.
116	OSMP		Tennis	Local Resident	Request that the 4 tennis courts be maintained	Please refer to the response in item 59.
117	OSMP		Plan	CLG 19/3/14	Request that the wording be reviewed to 'other than in exceptional circumstances'	UPP reviewing
118	OSMP &		Plan	CLG 19/3/14	Hard copies of documents to be posted 10 days prior to meetings in addition to e-mail and posting on the	UPP to arrange posting, Representatives to provide postal where they wish hardcopies prior to

	CMP				webpage. Representative groups to confirm postal addresses.	meetings.
119	CMP		Rodents	CLG 19/3/14	It was requested that the CLG be provided with the rodent control plan 28 days in advance (by the end of April 2014)	The rodent management plan has been forwarded to the CGCLG and the plan will be incorporated into revision 04 of the CMP.
120	CMP		Traffic	CLG 19/3/14	It was requested that further consultation with Highways and RNIB regarding the transport element of the plan and specifically -Impact on the RNIB -Impact on Cycle routes - Taxi crossing at Bidborough Street	Brookfield have met and reviewed the proposed logistic plan with the RNIB and Camden Council. Additionally the points previously raised by Camden Cyclists have been incorporated into the current logistic proposal.
121	CMP		Noise	CLG 19/3/14	It was requested the Brookfields provide a communication plan in the event of excessive noise.	Cartwright Gardens – Noise vibration and dust management plan has been forwarded to the CGCLG and will be incorporated into revision 04 of the CMP.
122	CMP		Misc	CLG 19/3/14	It was requested that Brookfields review the specific impact of the works on the Leigh House Hotel	Refer to point 124 below.
123	CMP		Plan	CLG 19/3/14	It was agreed that fig. 4 and 5 of the CMP be amended to improve the clarity of the crane area of coverage/over sail	Brookfield's to amend
124	CMP		Site Offices	CLG 19/3/14	It was requested if the position of the site offices could be moved away from the southern end of Cartwright Gardens	Brookfield's propose to provide site offices within the footprints of the development site.
125	CMP		Hoardings	CLG 19/3/14	It was requested that the use of images on the hoardings could be reviewed to consider scheme images and promoting the area	Brookfield's to review in conjunction with UoL, UPP and Camden Council once proposed images have been provided
126	CMP		Dust	CLG 19/3/14	It was requested that as a gesture of goodwill cleaning of the windows of the neighbouring building be reconsidered	UPP to review
127	OSMP		Tennis	CLG 19/3/14	It was agreed UPP will submit planning condition 5 for 4 tennis courts	UPP to progress

128	CMP		Tennis	CLG 19/3/14	It was requested that the CMP be reviewed to see if it is possible to maintain a tennis court in use throughout the refurbishment of the gardens	Brookfield's reviewing and will implement following confirmation from UPP / UoL and Camden Council
129	OSMP		Planting	CLG 19/3/14	It was requested that the advice and thoughts of the London Wildlife Trust be sort in the design of the Gardens	UPP/UoL to approach the LWT
130	OSMP		Planting	CLG 19/3/14	It was requested that some more mature shrubs be maintained in the gardens	CLG to advise on the plants and UPP to pass to the landscape architect
131	OSMP		ASB	CLG 19/3/14	It was suggested that PC O'Grady should be invited to the next CLG meeting	Chair CLG to invite
132	OSMP		Plan	CLG 19/3/14	It was requested that Skinners be asked to confirm any historic issues that have been reported	UoL/UPP to seek comment
133	CMP		Plan	CLG 19/3/14	Brookfield's to provide the CLG with details of when particular construction activities will take place in 4-6 weeks' time	Brookfield's to provide notice via newsletter and e-mail correspondence.
134	CMP		Parking	CLG 19/3/14	It was requested that 4 weeks' notice be given for the temporary closure of parking spaces on Sandwich Street	Brookfield's to provide notice via newsletters and e-mail correspondence.

Appendix C – Waste Management Strategy

Waste minimisation and management

Contents

1 Purpose and Introduction 2
1.1 Definitions 2
1.2 Legal and other requirements 2
1.3 Site waste management plan regulations 2008 2
1.4 WRAP and Designing-out waste 3
1.5 SWMP and BrookfieldMetrics 4
1.6 Company targets for waste 4
1.7 Scope 5
2 Objectives of the procedure 6
3 Responsibilities 6
3.1 Consultant Designers 6
3.2 Subcontractors 7
3.3 Waste Management Company 7
3.4 Material Suppliers 8
3.5 BMCE Duty Holders 8
4 Process 9
4.1 Bidding stage 9
4.2 Before construction 10
4.3 Construction phase 12
4.4 Post completion 13
5 Audit / Review 13
6 Records 13

1 Purpose and Introduction

Environmental legislation imposes stringent requirements on clients and principal contractors. This procedure identifies the arrangements for the minimisation and management of waste from the construction activities of Brookfield Multiplex Europe.

1.1 Definitions

WRAP – Waste & Resources Action Programme, a government-backed facilitating body

www.brookfieldmetrics.co.uk– online tool for preparing, implementing and reviewing SWMPs. It also includes a waste benchmarking tool

Design out waste Tool (DowT) – online tool for the forecasting of waste at early design stage

NetWaste – online tool for the forecasting of waste at late design stage. It also determines the most cost effective skip strategy for on-site segregation.

1.2 Legal and other requirements

Details of the company's legal and other obligations are described in the Environmental Legal Register UK-EHS-R-204 and the Environmental and Sustainability Management Plan UK-EHS-F-006.
In brief the waste-related legal requirements are as follows;

- when planning to carry out any construction work generating waste, the waste must be forecasted and designed-out as far as possible.
- Any waste minimisation decisions and the waste forecast are to be recorded on the project's Site Waste Management Plan (SWMP).
- When generating and disposing of waste from construction, demolition, excavation and maintenance works duty of care for relevant authorisations to be in place from all parties and a SWMP to be in place and up to date.
- In the case of disposing of hazardous wastes, including oils, electrical and electronic equipment, as well as equipment containing ozone depleting substances, batteries and accumulators, equipment containing PCBs consignment notes should be signed and the records should be kept for the specified time. The environmental regulator should be notified and in England the premises where more than 500 Kg of hazardous waste are produced per year need to be registered with the Environment Agency. All hazardous (special) waste shall be segregated at source, as no mixing with non-hazardous waste is allowed.
- When importing or using waste on a project all duty of care relevant authorisations need to be in place from all parties.
- For any waste removed from a project the carrier must be licensed.
- Any treating of waste, including incineration, should be covered by a permit or a relevant exemption.

Apart from the legal and company requirements there may be other project-specific requirements regarding waste (e.g. BREEAM/LEED) which should be identified to ensure that those are met. Also the company waste requirements as set out in this procedure apply.

1.3 Site waste management plan regulations 2008

The regulations require the client and the principal contractor, when there is one, to arrange for a site waste management plan (SWMP) to be prepared and be in place before any construction works begin on site. The most significant new duties are described below

Preparation: The SWMP, in place before works start on site, must name the responsible parties and state the waste minimisation measures taken, the waste types and associated

quantities predicted, as well as the management options for each one of those types.

Implementation: After construction works start the SWMP should be updated with the types of waste removed whenever waste is removed from the site. Updating for projects of value of > £500,000 must be done as often as necessary in order to reflect the progress of the project and at least every six months.

It must have a record of:

- The identity of the person removing the waste
- Types of waste removed from the site
- The quantities of the waste removed from the site (>£500,000 construction projects)
- The waste carrier registration number of the carrier (>£500,000 construction projects)
- A copy of, or reference to, the Waste Transfer Notes is necessary (>£500,000 construction projects)
- The site where it is taken to must be recorded. Whether the site holds a suitable permit or exemption must be stated. (>£500,000 construction projects)
- as well as if they have been a) re-used, b) recycled, c) sent for another form of recovery, d) sent to landfill or e) otherwise disposed of.

Reviewing: Within three months after the completion of the project it has to be confirmed that the plan has been monitored to ensure that work is progressing according to the plan and that it was updated in accordance with the regulations. It should also contain an explanation of any deviation from the plan. For projects of value of > £500,000 a comparison of the waste prediction with the actual waste produced should be made and an estimate of cost savings achieved by the plan must be included.
There is also the obligation to handle materials efficiently and follow the waste hierarchy as far as possible (reduce, re-use, recycle, recover, dispose in a landfill).

Training: Suitable training must be provided to every worker for the particular work to be carried out within the terms of the SWMP.

Availability of the plan: The SWMP must be available on site and its location known to all contractors. Any subcontractor whose work is described in the plan should have access to it.

Keeping plans: The SMWP must be kept by the principal contractor for two years after the completion of the project.

1.4 WRAP and Designing-out waste

UK Governments each have policy agendas that focus on reducing waste to landfill. The Strategy for Sustainable Construction (2008) in England has a specific target for the construction sector, defined as:

“By 2012, a 50% reduction in construction, demolition and excavation waste to landfill compared to 2008”.

As the delivery body for UK waste strategies, the Waste & Resources Action Programme (WRAP) developed the Construction Commitments: Halving Waste to Landfill; a voluntary agreement for the UK construction industry to achieve this target.

In 2009 Brookfield Multiplex Construction Europe became a signatory to the Construction Commitment. As part of this commitment, we will play our part in reducing the amount of construction, demolition and excavation waste going to landfill. We are working to implement standards for good practice in reducing waste, recycling more, and increasing the use of recycled and recovered materials.

As part of reducing our waste our Design teams will make every effort to design-out-waste according to WRAP's published *Design out waste: A design team guide for buildings.* Ideas will be submitted, reviewed and refined as shown in Figure 1 below. The ideas agreed will be implemented to prevent or minimise waste. Any residual waste generated will need to be managed according to the waste hierarchy. Wastes will be re-used, recycled, recovered and only if necessary will be sent to landfill.

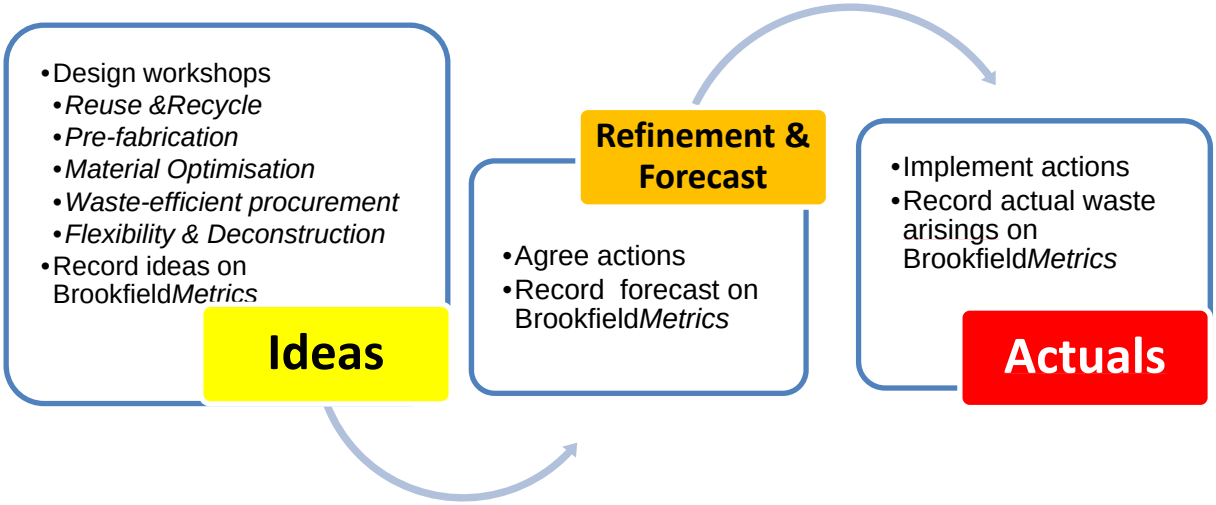


Figure 1 Design out waste process

1.5 SWMP and BrookfieldMetrics

For our projects, an online tool for creating a compliant site waste management plan is to be used, Brookfield*Metrics*, accessible on www.brookfieldmetrics.com. The tool is powered by the BRE (Building Research Establishment) and co-designed by Brookfield Multiplex Construction Europe. Login details can be obtained from the company's Environmental Advisor or deputy.

1.6 Company targets for waste

Background

We have successfully set waste targets since 2007. Each year the target for recycling has been increased as follows:

- 2007 - to recycle 70% waste concrete, bricks and ceramics over the course of a project and 50% of general waste over the course of a project

- 2008 and 2009 - to recycle 80% of construction waste (combined Construction, Refurbishment, Demolition and Excavation).
- 2009-2012 - to escalate the minimum amount diverted from landfill to 90%

Current objectives & targets

We commit to meeting the targets related to the Key Performance Indicators (KPI) below;

1. Construction waste diversion from landfill. Our aim is to maintain a non-hazardous construction waste landfill diversion rate of at least 95% for the next 3 years. All data will be recorded on *BrookfieldMetrics*.
KPI 1; 95% of construction waste diverted from landfill

2. Demolition & Excavation waste reuse and recycling. We will aim to reuse or recycle our non-hazardous demolition and excavation waste. All data will be recorded on *BrookfieldMetrics*.
KPI 2a; 80% of demolition waste reused or recycled
KPI 2b; 50% of excavation waste reused or recycled

3. Waste prevention. Design-out waste workshops will continue to take place with our designers and contractors to minimise waste at source. The ideas will be recorded on *BrookfieldMetrics* as well as the *Waste Minimisation Ideas Register* for dissemination to all future projects.
KPI 3; An updated version of our *Waste Minimisation Ideas Register* to be issued every two years

4. Waste reduction at source. As waste packaging accounts for a large part of construction waste, we will liaise with contractors to investigate ways of reducing it. We will make any Environmental Management System improvements necessary to facilitate this and we will update our *Waste Minimisation Ideas Register* accordingly for dissemination to all future projects.

KPI 4; Record % reduction of packaging waste in comparable projects.

5. Recycled content. Use and record recycled input materials in our projects as much as possible. As part of our effort to reduce the use of finite natural resources we will continue to assess the use of recycled materials. Any materials re-used on site will be recorded on *BrookfieldMetrics*.
KPI 5a; Record m^3 of material reused on site
KPI 5b; Record % of recycled content in materials by cost

1.7 Scope

This procedure applies to any construction works undertaken by Brookfield Multiplex Construction Europe in the UK.

The Waste Requirements for Consultants and Subcontractors must be reviewed by prospective Consultants and Subcontractors when responding to Invitations to Tender of Brookfield Multiplex Construction Europe, it will then be appended to the contract Terms and Conditions to form part of any agreement that Brookfield Multiplex Construction Europe enters into with the Subcontractor.

2 Objectives of the procedure

Any contractual and client requirements will be taken into account to form the project-specific requirements, but as a minimum our design and construction project teams will be required to:

- develop and implement a Site Waste Management Plans throughout the design and construction period that comply with regulatory and company requirements
- record ideas regarding waste minimisation in design, delivery to site and the construction process.
- review the ideas and consider whether to adopt, change or develop further. Make decisions and record the agreed methodology.
- quantify the level of waste anticipated from the design, and use this to inform the wastage allowances applied to the materials order
- measure and report progress against the corporate targets for the quantity of waste produced and the quantity of waste sent to landfill (in m^3 per £100k construction value).
- recover through reuse and recycling a minimum of 95% construction non-hazardous waste
- where there is sufficient space the project teams should plan for and implement waste segregation on site
- The volume of waste diverted from landfill must be maximised and recorded in the Site Waste Management Plan.

The people appointed for the roles and responsibilities described in this Section need to be agreed as early as possible.

Record all information on the SWMP through www.brookfieldmetrics.com. The final copy to be kept in the company's records for a minimum of 4 years after the completion of a project.

3 Responsibilities

3.1 Consultant Designers

Designers will be required to nominate a Designer Waste Champion and a deputy who will:

- From as early in the design stage as possible comment on the BMCE Waste Minimisation Ideas Register UK-EHS-R-205 circulated by the BMCE Design Manager. Ensure waste prevention and minimisation ideas are developed, design solutions are technically and commercially viable, as far as reasonably practicable, and submitted to BMCE for review.
- specify materials with increased levels of recycled content where there is no impact on cost or performance

- work with the project team to ensure that design actions to reduce construction waste and increased reused/recycled content are implemented within their area of responsibility.

3.2 Subcontractors

Before starting on site, each subcontractor organisation shall nominate a Waste Champion and a Waste Administrator (can be the same person) and their deputies.

- the Subcontractor Waste Champion shall inform BMCE of the actions that the Subcontractor proposes to take to reduce waste, increase recovery/recycling through workshops and the use of the UK-EHS-R-205 Waste minimisation ideas register, as well as the corresponding roles and responsibilities, and quantifying the resulting changes as far as practicable.

- where the subcontractor has responsibility for the removal of waste, the Waste Administrator must comply with the specific requirements for waste management companies (see below).

- Both the Subcontractor Waste Champion and Waste Administrator are responsible for arranging to receive training on the use of Brookfield*Metrics*, if relevant, by liaising with the project's Waste Champion.

3.3 Waste Management Company

The Waste management companies are required to nominate an individual as the Project Waste Manager and a deputy who will:

- arrange receiving training on the use of Brookfield*Metrics* by liaising with the project's Waste Champion

- review on Brookfield*Metrics* the ideas and proposals for waste minimisation and offer advice on waste management actions

- comply with all relevant legislation including the Duty of Care Regulations and ensure all Waste Carrier Licence registration details and Waste destination facilities environmental permits or exemptions are uploaded to Brookfield*Metrics*. Please note: If these details already exist under the "waste management companies" list on Brookfield*Metrics* then these do not need to be entered again but only checked for validity.

- submit actual waste data to Brookfield*Metrics* for construction, demolition and excavation waste streams separately, measured in m^3. Report on the different types of waste managed, and the split of each different type of waste according to the waste management method (reuse, recycling, recovery through a waste transfer station, landfill and other) and, in the case of reuse whether this has taken place on- or off-site.

- submit monthly actual waste recycling rates of the waste destination facilities used

- aim to maximise the reuse of demolition and excavation waste

- identify ways to increase the recovery rate of materials by finding end-destinations with high recovery rates

- submit all data and evidence within two weeks of the end of the reporting period. Ensure that Brookfield*Metrics* has been updated with all required evidence of performance against the above targets on completion of the Works

- use a systematic process to record and check waste, recovery and recycling data which is available for inspection on request.

3.4 Material Suppliers

Each subcontractor is to ensure that Material Suppliers are required to:

- work with BMCE and the subcontractors to minimise wastage of the products they supply (for example through logistics, taking back surplus materials, packaging and waste or by providing pre-assembled / pre-cut products)

- advise on the level of recycled content in major materials to be supplied by the subcontractor, and offer to supply materials with a higher level of recycled content where technically and commercially viable; and

- identify and inform the subcontractor how packaging waste on site will be reduced.

3.5 BMCE Duty Holders

3.5.1 Bid team leader
- has the responsibility for appointing the people responsible for waste during the bid stage

3.5.2 Bid waste estimator
- is appointed by the Brookfield Multiplex Construction Europe bid team leader and is responsible for providing basic project details to the Environmental Advisor and for carrying out a preliminary waste prediction

3.5.3 Environmental advisor
- is responsible for initially setting up the profile of a bid or new project on Brookfield*Metrics* for the project SWMP

3.5.4 Project manager
- is responsible for appointing the people responsible for waste using UK-COM-P-003 during the pre-construction and construction stage. Also arranging for the final review of the SWMP after the completion of the project and recording any lessons learned.

3.5.5 Waste estimator
- is appointed by the project manager and is responsible for carrying out a waste prediction for the project SWMP

3.5.6 Design manager/Design waste champion
- is appointed by the project manager and is responsible for liaising with the relevant designers regarding designing out waste

3.5.7 Procurement waste champion

- is appointed by the project manager and is responsible for liaising with the subcontractors and any suppliers regarding recycled content and waste minimisation

3.5.8 Package manager

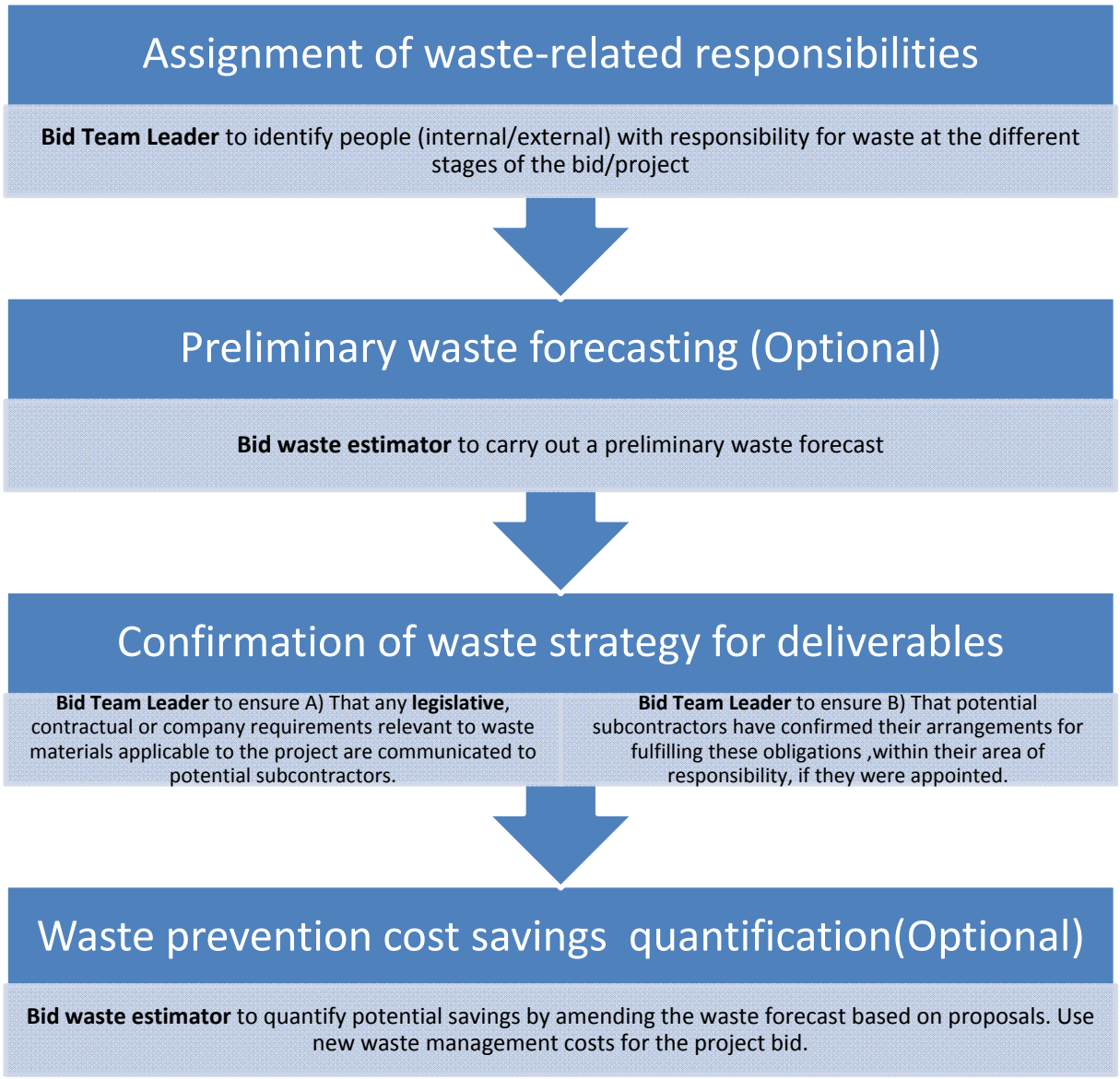
- is appointed by the project manager and is responsible for liaising with the relevant subcontractors regarding designing out, minimising and managing waste according to procedure UK-COM-P-001 and form UK-COM-F-001, and reviewing the MS of the subcontractor according to procedure UK-EHS-P-300

3.5.9 Waste champion

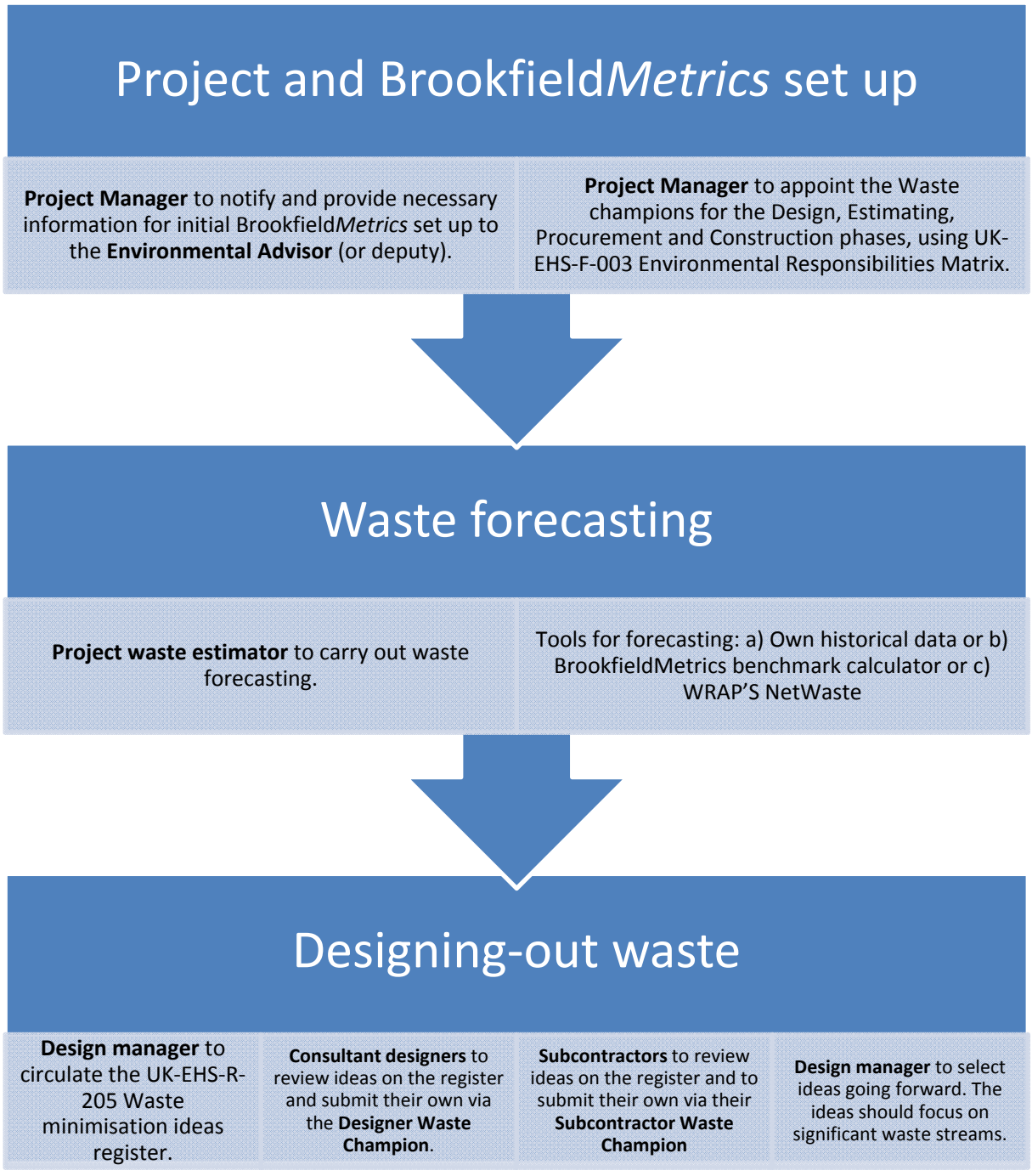
- is appointed by the project manager and is responsible for facilitating, for monitoring the implementation of the SWMP, for arranging for its review and for training new users

4 Process

4.1 Bidding stage



4.2 Before construction



Upload of ideas/actions on Brookfield*Metrics*

Design manager to ensure the agreed waste minimisation ideas are added on the SWMP on Brookfield*Metrics* Tab 2 Waste Min.

Amending the waste forecast and upload on Brookfield*Metrics*

Waste estimator to amend the waste forecast according to the finalised ideas.

Waste estimator to transfer waste forecast to Brookfield*Metrics Tab 3 Forecast.*

Finalising site-specific waste management strategy

Project manager to arrange best waste management options on site regarding waste streams and skips and responsibilities for the disposal and upload of information.

Cascading the ideas through Procurement

Procurement /Commercial manager to agree with the subcontractors and suppliers the level of recycled content and other waste minimisation options (reduced packaging waste, take-back schemes etc).

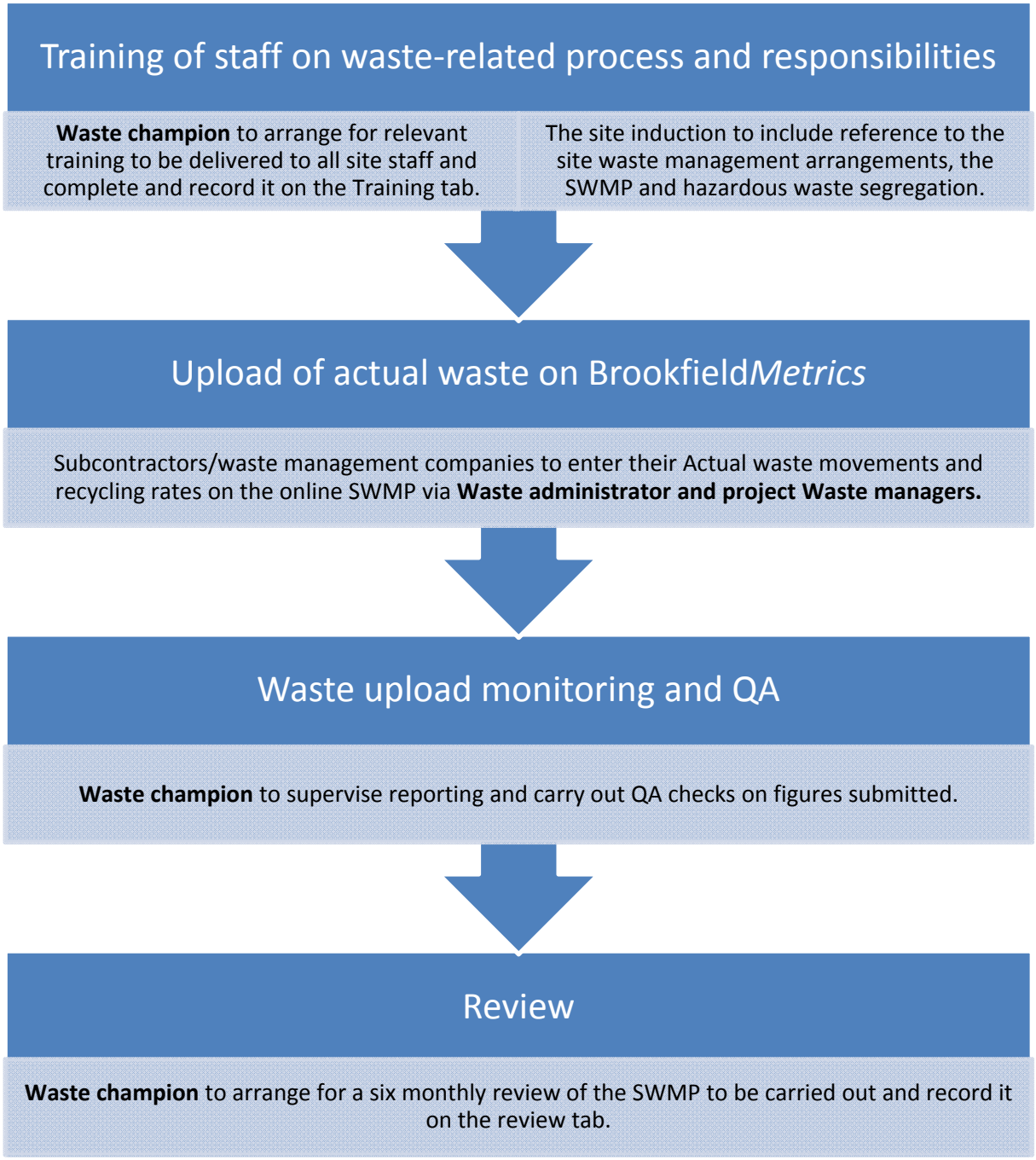
Confirming actions implementation

Package manager to agree with **Subcontractor Waste Champions** their responsibilities for the implementation of the waste minimisation actions using UK-COM-F-001 Subcontractor pre-meeting agenda and the project Waste minimisation ideas register

Subcontractors set up on Brookfield*Metrics*

Package manager to ensure that new **Subcontractor Waste Champions** and the **Project Waste Manager** (waste management companies) are set up on the system and to arrange any training necessary.

4.3 Construction phase



4.4 Post completion

Final review	
Project manager to arrange for final review of the SWMP to be carried out and for deviations from the plan to be recorded as well as any lessons learned and any cost savings.	**Project manager** to submit successful waste minimisation actions (and lessons learned) for inclusion within the Waste Minimisation Ideas Register.

5 Audit / Review

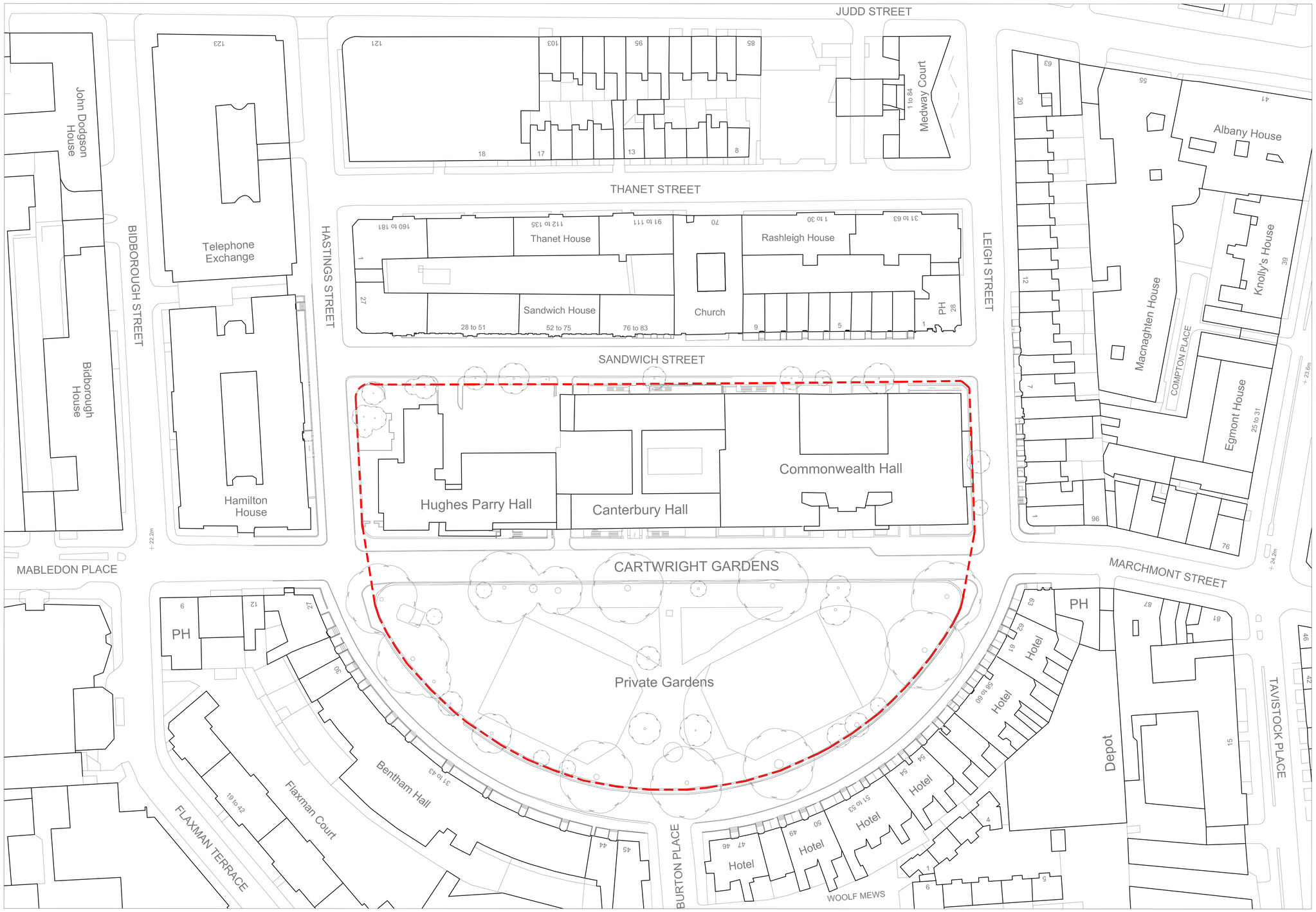
This procedure shall be reviewed on an annual basis to ensure its suitability and effectiveness.

6 Records

Site Waste Management Plan	online at www.brookfieldmetrics.co.uk
Subcontractor pre-meeting agenda	UK-COM-F-001
EHS Monthly Return reports	UK-EHS-F-040
Waste Minimisation Ideas Register	UK-EHS-R-205
Environmental Responsibilities Matrix	UK-EHS-F-003
Appointed persons register	UK-COM-F-003
Appointment and acceptance form	UK-COM-F-004

Rev	Revision Details	Effective Date	Originator
Rev 6	Added requirement for training on the use of BrookfieldMetrics to be delivered by Waste Champion. Added requirement for appointments according to UK-COM-P-003.	01/06/2012	EG
Rev 7	Added reference to the Subcontractor prestart meeting agenda. Removed old waste management and minimisation form for projects before 2008 (now replaced the by Site Waste Management Plan online for all projects). Added reference to UK-EHS-P-125 Sustainable procurement Updated targets section, Updated the process section, Added requirement for appointments according to UK-EHS-F-003 Environmental Responsibilities Matrix	16/04/2013	EG

Appendix D – Location of Site Development



site boundary

North

CLIENT

STRUCTURAL ENGINEER

SERVICES ENGINEER

CONSULTANT

KEY PLAN

NOTES:

DO NOT SCALE. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING. CHECK DIMENSIONS ON SITE AND REPORT DISCREPANCIES TO THE ARCHITECT.

THIS DRAWING IS PROTECTED BY COPYRIGHT.

ALL AREAS HAVE BEEN MEASURED FROM CURRENT DRAWINGS. THEY MAY VARY BECAUSE OF (EG) SURVEY, DESIGN DEVELOPMENT, CONSTRUCTION TOLERANCES, STATUTORY REQUIREMENTS OR RE-DEFINITION OF THE AREAS TO BE MEASURED.

No.	Date	Comment	Drawn	Chk'd
P1	10.04.13	-First Issue	EG	NM

Revisions

Issue Status

PRELIMINARY

tp bennett
architecture
interiors
planning

One America Street London SE1 0NE UK +44 (0) 20 7208 2000 www.tpbennett.com
London Moscow Abu Dhabi New York

Project

University of London
Cartwright Gardens, London

Drawing Title

Existing Plans
Site Plan

Drawn	Date	Scale @ A1 /A3	Alt. Ref.
--	09.04.13	1:500 / 1000	--

tp bennett Project No.	Drawing Number	Rev
A10417	C 0 050	P1

©

PLOTTED FILE: R:\ACTIVE PROJECTS\ARCHITECTS\A10417 CARTWRIGHT GARDENS\CAD\ACTIVE\DIC-SERIES AS EXISTING\A10417_C0050_EXISTING SITE PLAN_P1.DWG
PLOT TIME: 10.04.2013 10:11 PM

Appendix E – Environmental and Sustainability Management Plan

Environmental & Sustainability Management Plan

Key:	(E)=England only, (S)= Scotland only, (W)=Wales only	concept stage	design	procurement	construction

Project name and desription: Cartwright Gardens, student accomodation

Current scope of works and date: Demolition and construction of University Halls of residence

BrookfieldMetrics

	1. Waste							
APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Planning to carry out any construction work generating waste (as Principal Contractor)	Set up SWMP	95(E)	UK-EHS-P-356		*Project Manager*		
Yes	Designing building project	Collect waste minimisation ideas through the Waste minimisation ideas register, Add waste minimisation ideas on SWMP		UK-EHS-P-356 UK-EHS-R-205		*Design Manager*		
Yes	Planning waste costs on Building project	Carry out waste forecast (volumes of wastes) and add information on project SWMP	95(E)	UK-EHS-P-356		*Cost planner or Waste consultant*		
Yes	Procuring companies with waste management responsibilities	Communicate company environmental obligations incl. SWMP and BrookfieldMetrics, Check EHS competence		PAM12, PAM17 UK-EHS-P-356 UK-COM-P-001 UK-COM-F-001		*Procurement Manager*		
Yes	Generating and disposing of waste from construction, demolition, excavation and maintenance works	Appoint people according to waste procedure, All activities that involve waste to have relevant MS and be at least B Status on Aconex before start, All information on SWMP	154 / 136/ 60 / 59/ 74 / 75(W) / 119/83(S)/ 37(S) / 95/ 115(S)	UK-EHS-P-356 UK-EHS-P-300 UK-COM-P-003 UK-COM-F-004	Waste management	*Project Manager, Package Manager, Waste Champion*		
No	Keeping waste generated on site for more than 1 year	Permit from EA/SEPA	60 / 115 / 60/119/83(S)	UK-EHS-P-356		*Waste Champion*		
Yes	Transporting waste outside the site premises (Carriage of Waste)	Ensure permit information is on SWMP	60 / 59 / 55	UK-EHS-P-356	Waste management	*Waste Champion*		
Yes	Disposal of site canteen waste	Ensure all information on SWMP	154 / 136 / 60 / 59/ 74 / 75(W) / 60/119/83(S) /95	UK-EHS-P-356		*Waste Champion*		

Yes	Disposing of waste oils incl.canteen oils	Disposal policy to be agreed and ensure relevant transport, disposal documentation to be on SWMP	142 / 60/119/83(S)	UK-EHS-P-300 UK-EHS-P-356	Waste management	*Waste Champion*		
Yes	Generating and disposing of hazardous waste	B Status MS required, All COSHH waste to be separated at source, All information on SWMP, Ensure premises are registered with EA	154 / 136 / 60 / 59 / 74 / 75(W) / 95 / 66/ 139 / 57 / 58(S)/ 60/119/83 (S), 115(S)	UK-EHS-P-300 UK-EHS-P-356	Waste management- Hazardous materials	*Waste Champion*		
Yes	Disposal of site office waste	Ensure all information on SWMP	154 / 136 / 60 / 59/ 74 / 75(W) / 60/119/83(S) / 95	UK-EHS-P-356		*Waste Champion*		
No	Disposing of old tyres	Not to be disposed of in landfill, All information on SWMP	163	UK-EHS-P-356		*Waste Champion*		
No	Treating waste on site	Permit from EA/SEPA	60/ 60/119/83(S)/ 115(S)	UK-EHS-P-356		*Waste Champion*		
No	Importing and using waste	Permit from EA/SEPA	60 / 59 / 115	UK-EHS-P-356		*Waste Champion*		
No	Disposing of batteries and accumulators	Arrange take-back from supplier	155 / 116	UK-EHS-P-356		*Waste Champion*		
No	Disposing of/replacing electrical and electronic equipment (WEEE)	Recycle and ensure all info on SWMP	149 / 117 / 60/119/83(S)	UK-EHS-P-356		*Waste Champion*		
No	Burning waste	Permit	55/ 60/119/83(S) 60/ 18 /55 /17/ 20/ 16(S)/19(S)	UK-EHS-P-356		*Waste Champion*		
No	Disposing of end-of-life vehicles	Only use certified dismantlers	145 /43	UK-EHS-P-356		*Waste Champion*		
No	*Any other?*							

2. Materials and Services

APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Design project with a recycled content requirement for materials	Ensure recycled materials are specified as required		UK-EHS-P-356		*Design Manager*		
Yes	Procurement of timber products	Buy from or specify certified suppliers		UK-EHS-P-125		*Procurement Manager*		
Yes	Procurement of site offices	Procure energy and water efficient cabins		UK-EHS-P-125		*Procurement Manager*		

Yes	Procurement of materials and services for offices	Procure/request sustainable materials, Procure companies that meet PQQ requirements		PAM12 UK-COM-P-001 UK-COM-F-001 UK-EHS-P-125 UK-EHS-F-007 UK-EHS-P-915		*Procurement Manager/ Office Manager*		
Yes	Use of timber products for construction	Use/Request certified products and ensure all is recorded on Brookfield*Metrics*		UK-EHS-P-125		*Procurement/ Environmental Manager*		
Yes	Use and storage of substances hazardous to health (COSHH)	Carry out/Check MS and risk assessment according to COSHH Compile a Pollution Incident Response Plan, Post response flowchart	36	UK-EHS-P-300 UK-EHS-P-500 UK-EHS-F-050 UK-EHS-F-016	Storing and managing Bulk Materials Storing Oils and Bulk Liquids	*Logistics/ Environmental Manager*		
Yes	Taking delivery of chemicals	Ensure MS comes with Material Safety Data Sheet	165, 86	UK-EHS-P-300		*Logistics/ Environmental Manager*		
Yes	Storage of Oil in fixed tanks or mobile bowsers	Check oil storage guidelines are adhered to	33/ 122		Storing Oils and Bulk Liquids	*Logistics/ Environmental Manager*		
No	Brookfield Multiplex acting as the importer of packaged goods	Register to importer scheme for packaging waste	143			*Logistics/ Environmental Manager*		
Yes	Dealing with equipment (air-con, fridges, fire protection systems etc) containing florinated greenhouse gases, PCBs and other ozone depleting substances	Obligations for people dealing with the equipment, regarding inventories, disposal and their competence	167/139/63/55/ 80, 58(S)			*M&E Manager*		
No	Working on a COMAH (Control of Major Accident Hazards) site where >25 t of dangerous substances are stored on site	Obligation for comprehensive emergency plans and notification of environmental authority	30			*Logistics/ Environmental Manager*		
	Any other?							

	3. Land and Ecology							
TICK IF APPLICABLE	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Planning work on a project with an EIA	Ensure EIA conditions are incorporated in the design		UK-EHS-F-001a		*Design Manager*		
No	Planning work on land with Archaeological or contaminated land finds	Liaise with Archaeologists or land clean up specialists		UK-EHS-F-001a	Archaeology	*Project Manager*		
No	Design project in Areas of natural habitats, wildlife, SSSI and park land	Adhere to restrictions imposed Check MS	24/ 132/ 133/ 85/78(S)/ 134(S)/ 76/ 39 /77		Ecology	*Project Manager*		
No	Design project on Listed Buildings or conservation areas	Adhere to any restrictions imposed and Check MS	81			*Project Manager*		
Yes	Works where there is risk of exposure to asbestos	Adhere to H&S and restrict spreading of asbestos Check MS	28 / 29	UK-EHS-P-300		*Site engineer/Manager*		
No	Dealing with trees under Tree Preservation Orders	Obtain consent from Planning if a protected tree is to be cut and Check MS	107/109(S)	UK-EHS-P-300		*Site engineer/Manager*		
No	Preventing and dealing with Environmental Damage and contaminated land	Prevent environmental damage or further damage	49 / 48 (W) / 50(S)	UK-EHS-F-050	Ground contamination Spill Control	*Site engineer/Manager*		
No	Dealing with contaminated land	Obligations can be imposed for clean up by Local Authority	25/ 60 / 27(W) / 26(S)		Ground contamination Spill Control	*Site engineer/Manager*		
Yes	Works causing environmental nuisance	Prevent nuisance Check MS for controls, Ensure conditions of any notice served are adhered to	60 / 106(S)	UK-EHS-P-300		*Site engineer/Manager*		
Yes	Works causing Littering	Ensure measures in place to prevent littering	60		Good House-keeping	*Site engineer/Manager*		
No	Dealing with injurious and prohibited vegetation (e.g. Knotweed)	Prevent injurious and prohibited vegetation from spreading, Check MS	131 / 133 / 64	UK-EHS-P-300	Noxious and invasive weeds	*Site engineer/Manager*		
No	Disturbance of Footpaths and Rights of way	Adhere to restrictions imposed	70/133/87/ 39/ 71(S)		Good House-keeping	*Site engineer/Manager*		
No	Working on or near burial grounds	Check MS Adhere to any restrictions imposed	12	UK-EHS-P-300	Archaeology	*Site engineer/Manager*		
No	Removal of human remains (archaeology)	Obtain license from Home Secretary before removing	13		Archaeology	*Site engineer/Manager*		

No	Dealing with archaelogical finds	Report findings	112		Archaeology	*Site engineer/Manager*		
No	*Any other?*							

	4. Water							
APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Designing the drainage system of a building	Ensure correct drainage links	11		Water Resources	*Services Design Manager*		
Yes	Designing the Water Supply (Water Fittings)	Ensure the wholesomeness of the water is not affected	127/ 130 / 129 / 120(S) / 128(S)			*Services Design Manager*		
No	Planning works that will require groundwater abstraction (Wells or Boreholes)	Abstraction permit from environmental regulator to be obtained (>5 m^3/day in England and >10m3/day in Scotland)	126 / 125 / 121(S)		Water Resources	*Project/ Environment Manager*		
No	Planning works over or near to water	Permit from environmental regulator may be required Check MS	189, 121(S)	UK-EHS-F-050 UK-EHS-P-300	Water Resources	*Project/ Environment Manager*		
No	Planning the discharge of extracted groundwater/ surface run off / effluent / dangerous substances to Natural Waters / Surface water drainage	Discharge permit from environmental regulator to be obtained. Check MS to ensure prevention of water pollution In Scotland a SUDS must be used for run off during works	152 / 121(S)/55/93/126/123(S)/ 35	UK-EHS-F-050 UK-EHS-P-300	Water Resources	*Project/ Environment Manager*		
No	Planning to discharge into sewers via new connection	Apply for a connection with sewage undertaker				*Project/ Environment Manager*		
No	Planning the discharge of concrete wash water into the ground	Limits and conditions apply depending on volume and risk. Permit from environmental regulator may be required.	190	UK-EHS-G-461		*Project/ Environment Manager*		
No	Planning the discharge of concrete wash water into a foul sewer	Apply for a discharge licence with sewage undertaker and refer to content and volumes conditions imposed		UK-EHS-G-461		*Project/ Environment Manager*		
No	Planning impounding on surface waters or wetlands	Permit from environmental regulator to be obtained	121(S)/ 125			*Project/ Environment Manager*		
No	Planning construction of Well and or Boreholes	Permit from environmental regulator may be required	121(S)		Water Resources	*Project/ Environment Manager*		
No	Managing water contamination	Ensure prevention and clean up, if necessary. Deploy Pollution Response Plan.		UK-EHS-F-050	Water Resources	*Project/ Environment Manager*		
Yes	Consumption of water for construction activities	Use water efficiently. Record on BrookfieldMetrics and post graph on site		UK-EHS-F-001c		*Environment/ Logistics Manager*		

	Any other?							
	5. Dust, Light, Emissions and Odours							
APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Works generating dust (demolition, excavation)	Controls for potential nuisance are described in MS and implemented, Ensure any limits agreed with the Local Authority are adhered to, If out of hours work ensure company permit is in place	29	UK-EHS-P-315 UK-EHS-P-300 UK-EHS-F-018f UK-EHS-F-018g UK-EHS-F-019	Dust, Emissions and Odours	*Site/ Environmental Manager*		Please also see the Air Quality and Carbon reduction method Statement as part of the s106 response
Yes	Works using light, generating emissions and odours	Ensure nuisance prevented, including plant emitting dark smoke, If out of hours work ensure company permit is in place	60/18/55/17/20/16/19(S)	UK-EHS-P-315 UK-EHS-P-300 UK-EHS-F-018f UK-EHS-F-018g UK-EHS-F-019	Dust, Emissions and Odours	*Site/ Environmental manager*		Please also see the Air Quality and Carbon reduction method Statement as part of the s106 response
No	Use of heavy oil fuel with a sulphur content	Ensure no use of heavy fuel oil with a sulphur content exceeding 1% by mass on site	97(E), 98(S)			*Procurement, M&E Engineer, Site/ Environmental manager*		Please also see the Air Quality and Carbon reduction method Statement as part of the s106 response
	Any other?							
	6. Noise and Vibration							
APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Planning works generating Noise/ Vibration on Construction Sites	Ensure conditions of any limits agreed with Local Authority or notice served are adhered to, If out of hours work ensure company permit is in place	35 / 60 / 108 / 106(S)	UK-EHS-P-300 UK-EHS-P-505 UK-EHS-P-315 UK-EHS-F-018f UK-EHS-F-018g UK-EHS-F-019	Noise and Vibration	*Site/ Environmental Manager*		
Yes	Use of Equipment for Outdoor Use	Obligations on suppliers of equipment on noise levels, If out of hours work ensure company permit is in place	79	UK-EHS-P-300 UK-EHS-P-510 UK-EHS-P-315 UK-EHS-F-018f UK-EHS-018g UK-EHS-F-019	Noise and Vibration	*Site/ Environmental Manager*		
	Any other?							
	7. Energy and Carbon							

TICK IF APPLICABLE	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Designing the energy performance of a building	Ensure energy efficiency according to latest target. Provide user manual	12/10/46(S)/11(S)			*M&E Design Engineer*		
Yes	Consuming energy, fuel while carrying out building works	Record all on BrookfieldMetrics		UK-EHS-F-001a UK-EHS-F-040		*Site manager/ Environmental manager*		
Yes	Having responsibility for the energy supply of a building or site captured under CRC	Record and report consumption on BrookfieldMetrics and Submit to the Environment Agency.	99			*M&E Engineer*		
Yes	Installing the services of a building	Provide Energy Certificate	45			*M&E Engineer*		
No	Inspecting boilers and air-conditioning systems	Obligation to inspect and give assessment of energy efficiency and recommendations	148/42			*M&E Engineer/ Facilities Manager*		
	Any other?							

8. Traffic and Vehicles

APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
No	Planning works involving road obstruction	Plans need to be agreed beforehand with the local authority				*Project Manager*		
Yes	Management of vehicles on site	Ensure nuisance and idling is prevented		UK-EHS-F-025		*Logistics/Site Manager*		
	Any other?							

9. System Management

APPLICABLE?	ACTIVITY	OBLIGATIONS	LEGAL REGISTER	PROCEDURE / FORM (intranet)	MANUAL	NAME OF RESPONSIBLE PERSON AND DEPUTY	NEXT REVIEW DATE	NOTES (optional)
Yes	Appointing site staff with environmental responsibilities	Ensure competent staff are appointed to cover all environmental roles		UK-COM-P-003 UK-EHS-F-003		*Project Manager*		
Yes	Appointing Subcontractors	Assess environmental competence. Pre-start meeting to take place using agenda and to be minuted		UK-COM-P-001 UK-COM-F-001 UK-EHS-F-007		*Commercial/ Procurement/ Package Manager*		

Yes	Method Statements or Environmental Management Plans for site activities by contractors	Ensure MS and EMPs are reviewed for environmental controls to any applicable environmental impacts, Ensure MS programme is followed		UK-EHS-P-300 UK-EHS-P-106 UK-EHS-F-010		*Project Manager, Planner*		
Yes	Preventing and responding to pollution incidents	Ensure site-wide Response Plan, In the case of an incident deploy pollution response plan		UK-EHS-P-320 UK-EHS-F-50		*Project Manager*		
Yes	Report of an incident	Complete and circulate an immediate report, complete incidents log, instigate investigation, add to the Monthly Returns form		UK-EHS-P-325 UK-EHS-F-021b UK-EHS-021d UK-EHS-F-040		*Project Manager/ Environmental Manager*		
Yes	Liaising with the authorities (EA, SEPA, local authority etc)	Complete and circulate an immediate report, add to the Monthly Returns form		UK-EHS-P-380 UK-EHS-F-021b UK-EHS-F-040		*Project Manager/ Environmental Manager*		
Yes	Site inspections/ audits	Review for environmental controls to any applicable environmental impacts, Review for compliance with management system requirements, Use inspection guidance and Complete daily and/or weekly inspection report		UK-EHS-P-355 UK-COM-P-006 UK-COM-F-021 UK-EHS-F-024 UK-EHS-F-022 UK-EHS-F-040 UK-COM-F-006 UK-COM-F-008 UK-COM-F-009 UK-COM-F-012 UK-COM-F-018 UK-COM-F-025 UK-COM-F-026 UK-EHS-F-023 UK-EHS-P-340 UK-EHS-P-905		*Project Manager*		
Yes	Complaints and compliments	Ensure record is up-to-date, implement corrective and preventative action and record close out when appropriate		UK-COM-P-009 UK-COM-F-022		*Project Manager*		
Yes	Contractor weekly meetings	Environment to be an agenda item and meetings to be minuted		UK-COM-P-001		*Project Manager*		
Yes	Project EHS meetings	Discuss environmental issues internally and externally with subcontractors. Meetings to be minuted and minutes circulated.		UK-EHS-P-310 UK-COM-F-010		*Project Manager*		

Yes	Monthly site environmental reporting	Site reports environmental information using Monthly Returns form within first two weeks of following month		UK-EHS-P-387 UK-EHS-F-040 UK-EHS-P-930		*Project/ Environmental Manager*		
Yes	Information on Noticeboard (site and office)	Ensure Environmental responsibilities org chart, policy statements and (where appropriate) performance is posted		UK-EHS-F-039		*Environmental Manager and Office Manager (office)*		
Yes	BM staff Environmental training	Ensure training review is carried out, All BM staff to have appropriate training, Ensure Training Matrix up-to-date.		UK-COM-P-004 UK-EHS-F-060		*Project Manager*		
Yes	Subcontractor staff Environmental training	Ensure all subcontractors deliver environmental toolbox talks to cover all their impacts and evidence is received. Ensure subcontractors meet relevant environmental training criteria. Site induction to refer to emergency procedures and SWMP, COSHH waste.		UK-COM-P-001 UK-COM-P-004 UK-COM-F-001 UK-EHS-F-060 Environmental Toolbox Talks UK-EHS-F-015		*Construction Manager*		
Yes	Visitors' inductions	Ensure site visitors are inducted		UK-EHS-F-014		*Environmental Manager*		
Yes	Site documentation	Ensure all sustainability/ environmental documentation/records are appropriately reviewed and filed.		UK-COM-P-002 UK-COM-P-002a UK-COM-P-002b UK-COM-F-005 UK-COM-P-010		*Project Manager, Document Controller*		
Yes	Management review	Assess site performance and propose/agree improvements		UK-COM-P-008		*Project Manager*		
Yes	Interaction with the local community	Liaise with the local community to reduce environmental nuisance and complaints				*Project Manager*		
No	*Any other?*							
	10. CCS							
	1. Enhancing the APPEARANCE ***Constructors should ensure sites appear professional and well managed.***							

	1.1 Does the external appearance of the site present a positive image of the industry?	*First impressions, signage, fencing, obstructions, mud, debris, litter*						
		Tidiness, organisation, entrance						
	1.2 Does the site appear well organised, clean and tidy?							
	1.3 Does the appearance of all facilities, stored materials, vehicles and plant make a positive impression?	*Screening of facilities, remote compounds*						
	1.4 Does the appearance of the workforce project a positive impression?	*Dress code, smoking*						
	1.5 What actions are taken to keep the perimeter and surrounding areas clean, tidy and free of litter, mud and dust?	*Inspection, public rubbish, access roads, dust prevention*						
		Site waste, litter, debris, viewing points, graffiti, vandalism						
	1.6 What arrangements are in place to ensure that the public and visitors see a site that is organised, clean and tidy?							
	1.7 How are site facilities, compounds, waste and storage areas cleaned, managed and maintained?	*Supervision, procedures*						
	1.8 How does the site encourage	*Workforce awareness, involvement*						

	the workforce to contribute to cleanliness and good housekeeping?							
	1.9 How is smoking managed to avoid a negative impact on the public?	*Guidance, discrete areas, ashtrays*						
	1.10 How are company values and corporate identity promoted?	*Branding guidelines, signage, websites, communications*						
	2. Respecting the COMMUNITY							
	Constructors should give utmost consideration to their impact on neighbours and the public.							
	2.1 Are all those affected by the work identified, notified and kept informed and shown courtesy and respect?	*Pre-start information, company contact information, complaints procedures, updates, sensitivity to neighbours, special needs*						
	2.2 Are all reasonable efforts being made to minimise the impact of deliveries, parking and work on the public highway and footpaths?	*Routes, timings, unloading, public diversions, utility works*						
	2.3 Is the site contributing to and supporting the local community and businesses?	*Community liaison, local shops, trade contractors*						
	2.4 Is the site actively working to create a positive impression by promoting the site's registration with the Scheme and displaying Scheme banners and posters?	*Workforce and public, inductions, toolbox talks, newsletters*						
	2.5 How does the site ensure that all those affected, including visitors, are treated with consideration, courtesy and respect?	*Local and special needs, operative conduct and behaviour, induction and training*						

	2.6 How is nuisance and intrusion minimised?	*Noise, privacy, outlook, radios, phones, cameras, parking and obstruction*						
	2.7 How are compliments, comments and complaints sought, recorded and managed?	*24/7 contact information, regular reviews*						
	2.8 What is being done to support and contribute to the local community including promoting local employment?	*Corporate Social Responsibility policy, creating opportunities, schools, businesses, residents*						
	2.9 How do company directors, senior managers, clients and consultants assist the site in meeting the requirements of the Code?	*Scheme champions, CCS briefing and action plan, meeting agendas, management review*						
	2.10 What is being done to leave a positive and lasting impression of the industry on completion of the project?	*Co-operation, support, goodwill, legacy*						
	3. Protecting the ENVIRONMENT							
	Constructors should protect and enhance the							
	3.1 Are environmental issues identified, communicated, managed and promoted?	*Environmental policy statement displayed, site specifics, induction, waste management plan, workforce, supply chain*						
	3.2 Is waste avoided and the use of resources and energy minimised?	*Policy, reducing, reusing and recycling, sustainable solutions*						
	3.3 Are all reasonable efforts being made to minimise the impact of vibration and of air, light and noise pollution?	*Working methods and equipment, programming, noise monitoring*						
	3.4 Are all reasonable efforts being made to protect the existing ecology, the landscape and water courses?	*Birds, trees, plants and wildlife, river, hazardous substance storage, spill control*						
	3.5 How are environmental issues identified and managed?	*Management policy, training, specialist input, planning, monitoring*						
	3.6 How are environmental issues communicated and promoted to the workforce and the general public?	*Newsletter, notice board, local groups, consultation, involvement, promoting achievements*						

	3.7 How is the site measuring and minimising its use of natural resources including water?	*Recycling, sustainable sources, policy, implementation, water/energy saving measures, harvesting rainwater, offsite construction, prefabrication*						
	3.8 How is the site measuring and reporting its carbon footprint and what is being done to reduce it?	*Carbon footprint reporting tools, report to company level, energy and fuel use minimised, eco cabins, signage, travel plans, green purchasing*						
	3.9 How is vibration, and air, light and noise pollution measured and managed to minimise impact?	*Noise monitoring, lighting, dust, fumes, working methods*						
	3.10 How is a positive contribution being made to the natural environment?	*Awareness, goodwill work, planting, landscaping, local materials, improvements, post completion impact*						
	4. Securing everyone's SAFETY ***Constructors should attain the highest levels of safety performance.***							
	Note that the Code addresses the safety systems in place. The safety of the working site is outside the Code and the monitoring process.							
	4.1 Are systems in place that care for the safety of the public, visitors and workforce?	*First aid, A&E, safety plan updated, inspections, risk information, PPE, protected access to cabins, controlled access*						
	4.2 Have security risks to neighbours and the public been considered and addressed?	*Site security, scaffold protected, traffic management, protection*						
	4.3 Are initiatives in place to ensure continuous safety improvements?	*Workforce consultation and information, training*						
	4.4 Does the site encourage attitudes and behaviours that enhance safety performance?	*Management, supervision, induction*						
	4.5 How is the safety of the public outside the site addressed and monitored?	*Falling debris, roads, footpaths and diversions, barriers, lighting*						
	4.6 What arrangements are in place for dealing effectively with emergencies?	*Emergency procedures, medical info*						

	4.7 What is done to ensure that the movement of vehicles and plant outside the site is not a risk to pedestrians, cyclists and other road users?	*Vehicle protection, warning systems, sensors, speed limits, supervision*						
	4.8 How are accidents, incidents and near misses recorded, and what is done to learn from them?	*Recording, analysing, communicating, training*						
	4.9 How does the site provide current safety and risk information to operatives and visitors?	*Hazard board, daily briefing*						
	4.10 How does the site embed a culture of continuous positive safety performance?	*Attitudes, behaviour, incentives, controls, CSCS cards for visitors*						
	5. Caring for the WORKFORCE							
	Constructors should provide a supportive and caring working environment.							
	5.1 Does the site demonstrate a commitment to respect, fair treatment, encouragement and support?	*Harassment, male, female, mobility impaired, age*						
	5.2 Are personal development needs identified and is training promoted?	*Training – directly employed, supply chain, trade contractors*						
	5.3 Does the site care for the health and wellbeing of the workforce?	*Occupational health risks assessed, drugs and alcohol, contact details, medical conditions, medications*						
	5.4 Are suitable, hygienic and well maintained welfare facilities provided within a reasonable distance of the work area?	*Changing, drying, toilets, showers, lockers, kitchen*						
	5.5 How does the site assess and monitor the competency of the workforce?	*CSCS, skills cards*						
	5.6 How does the company encourage new people into the industry?	*Careers advice, apprenticeships, placements*						
	5.7 How is the health and wellbeing of the workforce assessed and addressed?	*Posters, healthy lifestyle advice, weather protection*						

	5.8 How is the site providing for the needs of a diverse workforce regardless of gender, age, religion or ability?	*Separate changing rooms, ramps, cultural needs, literacy and numeracy training*						
	5.9 How are the welfare facilities managed and what additional facilities are available?	*Cleaning regime, rest, exercise and recreation*						
	5.10 What is done to ensure that the workforce feels involved and is encouraged to provide feedback?	*Open door policy, recognition, reward, feedback/consultation*						
	Additional Information							
	Innovation							
	What measures have been implemented on the project that demonstrate innovation and original thinking?							
	Site Specific Data This information is used to capture key information and identify trends within the industry ***Please note that data should be gathered on the current registration period only***							

	What is the average number of operatives?							
	Of these, how many on average are women?							
	What percentage of the workforce holds CSCS cards?	%						
	How many compliments have been received and recorded by the site?							
	How many complaints have been received and recorded by the site?							
	How many reportable accidents have there been?							
	How many non-reportable accidents have there been?							
	Have there been any fatalities on site?							
	Does the site record environmental incidents	Y / N						
	If yes, how many have there been?							

Site Manager Feedback

Does the Site Manager have any comments, questions or suggestions for the Scheme?

11. BREEAM

Please refer to the project specific tracker.

Revision record

Rev	Sections Amended	Date of Issue	Prepared By	Approved By	Description of Amendments
DRAFT		22/01/2014	EG		

On the next tab please select	Yes	if an activity is applicable to your project
	No	if an activity is not applicable to your project

1. Contacts	Office hours	Out of hours
External contacts		
Specialist clean up contractor		
Internal contacts		
Project Environmental Manager		
Company Environmental Advisor	02076593500	07833297014

2. Spill Flow Chart

The appropriate information to be filled in and the flow chart in the next tab to be printed in A2 size and displayed a) on notice boards and b)near any fuel tanks and c) COSHH/liquid stores.

3. Chemical Products and COSHH Materials Inventory

An up-to-date record of all substances stored on-site, together with an indication of the maximum quantity likely to be stored is to be maintained together with product data sheets and COSHH assessments for any substances posing a risk to people and/or the environment.
Make sure that all emergency responders can access this inventory. **Include a reference here:**

4. Pollution Prevention Equipment Inventory

Record the equipment and materials you have on site to deal with pollution incidents
• absorbents;
• drain mats/covers;
• pipe blockers;
• booms;
• pumps;
• over drums
If any equipment requires special training to use it, include the contact details of staff members who are trained in its use.

Pollution Prevention Equipment Inventory (on and off site-resources)			
Type	Location	Amount	Staff contact

5. Roles during incident	
Project Manager	Ensure all subcontractors are notified and coordinate evacuation if necessary
Construction Manager	Coordinate response
EHS Manager	Assess situation and the clean up method
Site/package manager	Liaise with subcontractor responsible for clean up, ensure clean up according to MS
Logistics Manager	Coordinate logistics if necessary
Electrical Supervisor	Make area safe in terms of electricity

6. Site Plan and Drainage Plan

A site plan AND a drainage plan (can be the same document in accordance with the guidelines below should be maintained on site and they should be easily accessible to be used in the case of an emergency.)

A. Site Plan

This should be a clear diagram of the site showing layout and access details, along with a schematic representation of the site drainage arrangements. Features that you should show are:

the layout of buildings;
access routes and meeting points for emergency services;
the location of process areas and any on-site treatment facilities for trade effluent or domestic sewage;
areas or facilities you use to store raw materials, products and wastes (include details of tank sizes and products stored);
bunded areas, with details of products stored and estimated retention capacity;
location of hydrants, 'fireboxes' and pollution prevention equipment and materials;
any watercourse, spring, borehole or well located within or near the site;
areas of porous or unmade ground;
site drainage – foul, surface and trade effluent drainage systems including features such as:

oil separators/interceptors
firewater/spillage containment systems;
balancing tanks;
pollution control devices (shut-off valves/penstocks fitted in drains);
sacrificial containment areas such as car parks;
other areas suitable for portable storage tanks, for blocking drains and temporary storage of firewater.

- all stores
- bulk storage vessels
- drums or containers that you use for storing oils, chemicals or other potentially polluting materials. If you regularly store oils or chemicals or hold them away from fixed installations or storage areas in any significant quantity, you should indicate their whereabouts on the site plan.

You should provide a brief description of how all facilities operate and make sure they're clearly labelled above ground.

B. Drainage Plan

You should use the standard/conventional features of drainage plans. This will make them easier for other organisations to use and for your own staff to understand.

Use red for foul sewers
Use blue for surface water sewers, watercourses and soakaways
Use the same convention for drain covers and grips
Number the drain covers to help identify them
Distinguish between separate or combined system (Red C = Combined)
Mark the location, depth and construction details of any soakaways or depth for boreholes and wells
Indicate the direction of flow for all sewers
Identify the sewage treatment works/sewage pumping station to which your site connects
Identify all surface water outfalls from the site
Identify suitable points for installing pollution control booms or for constructing a dam either at the outfalls or on the receiving watercourse
Consider installing permanent boom anchor points at a suitable location, taking into account possible flow conditions

Whilst you are drawing up your drainage plan, use the opportunity to check for any mis-connections from your site, for example, a foul sewer that is linked or connected into a watercourse. This is illegal and may also lead you to respond incorrectly during a spillage.

In many cases, you'll need additional drainage plans to provide detailed information. You should attach these to your response plan and refer to them in it. These should be kept with the rest of the plan ready to use during an incident response.

Spill Response

Has Chemical / Fuel / Oil Spill Occurred?

- NO → Ensure potential pollutants are stored within a bunded area .

  Strictly follow refuelling procedure.

  Have a Site & Drainage Plan ready.

  Be familiar with Spill Kit &

- YES → **Does spill pose a risk to health?**

  - YES risk to health → **Contact Brookfield Multiplex management who will advise on relevant safety procedures**
    Consider evacuation

  - NO → Immediate risk to ENVIRONMENT
    Contact Project Construction Manager and EHS Manager

    Can immediate action contain the spill on site & prevent flow into drains?

    - NO → **Reportable Incident:**
      Contact Project Manager who will coordinate response and contact Head Office SHEQ Department for advice on notifying enforcement authorities

      Consult drainage plan & block drains from manhole at safest point & await further advice.

      Carry out actions as advised

      Where possible

    - YES →
      1. **Protect drains by blocking around them, or intercepting the spill flowpath with sandbags, earth or similar.**
      2. **Eliminate source of spill using appropriate PPE by shutting off valve or tap, uprighting tipped drums etc and place within bunded area for containment.**
      3. **Contain spill by absorbing with sand or adsorbent granules and cloth from spill kit.**
      4. **Clean up any remaining liquids with adsorbent cloth. If safe to do so.**
      5. **Place all clean up materials (including contaminated sand) into a bag.**
      6. **Seal the bag and place into Hazardous Waste skip or bunded area for proper disposal.**
      7. **DO NOT empty into a general waste skip.**
      8. **Report the incident (no matter how small) to your Manager so that the incident can be logged in the site diary.**

IMPORTANT CONTACT NUMBERS

Project Manager / Director:

Construction Manager:

Site / Logisitics Manager:

Project EHS Manager:

Security :

Emergency Services: 999

Others:

_ _ _ _ _ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _ _ _ _ _ _

Legal Register Contents

CONTENTS REFERENCE	UK LEGISLATION	LEGAL REGISTER REFERENCE
1	Air Quality (England) Regulations 2000	1.14
2	Air Quality (Scotland) Regulations 2000	1.16
3	Air Quality (Wales) Regulations 2000	1.15
4	Air Quality Standards (Scotland) Regulations 2010	1.13
5	Air Quality Standards (Wales) Regulations 2010	1.12
6	Air Quality Standards Regulations 2010	1.11
7	Anti-Pollution Works (Scotland) Regulations 2003	7.30 / 7.36
8	Anti-Pollution Works Regulations 1999	7.29 / 7.35
9	Anti-Social Behaviour Act 2003	3.37
10	Building (Scotland) Act 2003	2.3 / 7.19
11	Building (Scotland) Regulations 2004	2.5 / 3.4 / 7.10
12	Building Regulations 2010	1.17 / 2.2 / 3.3
13	Burials Act 1857	3.29
14	Chemical Weapons (Notification) Regulations 1996	5.19
15	Chemical Weapons Act 1996	5.19
16	Clean Air (Emission of Dark Smoke) (Exemption) (Scotland) Regulations 1969	1.8
17	Clean Air (Emission of Dark Smoke) (Exemption) Regulations 1969	1.6
18	Clean Air Act 1993	1.4
19	Clean Air Dark Smoke (Permitted Periods) (Scotland) Regulations 1958	1.9
20	Clean Air Dark Smoke (Permitted Periods) Regulations 1958	1.7
21	Climate Change Agreements (Eligible Facilities) (Amendment) Regulations 2009	2.9
22	Climate Change Agreements (Energy-intensive Installations) Regulations 2006	2.9
23	Climate Change Levy (General) (Amendment) Regulations 2012	2.10
24	Conservation of Habitats and Species Regulations 2010	3.7
25	Contaminated Land (England) Regulations 2006 (as amended)	3.14 / 8.36
26	Contaminated Land (Scotland) Regulations 2006	8.38
27	Contaminated Land (Wales) Regulations 2006	3.16 / 8.37
28	Control of Asbestos at Work Regulations 2006 (as amended)	3.1 / 5.6
29	Control of Asbestos in the Air Regulations 1990	3.2 / 5.7
30	Control of Major Accident Hazards (COMAH) 1999	5.17
31	Control of Pesticide Regulations 1986	3.26
32	Control of Pollution (Amendment) Act 1989	8.5
33	Control of Pollution (Oil Storage) (England) Regulations 2001	7.6
34	Control of Pollution (Oil Storage) (England) Regulations 2001	7.14
35	Control of Pollution Act 1974	4.1 / 7.7 / 7.8 / 7.15
36	Control of Substances Hazardous to Health Regulations 2002	5.3
37	Controlled Waste (Fixed Penalty Notices) (Scotland) Order 2004	8.1
38	Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991	8.5
39	Countryside and Rights of Way Act 2000	3.10 / 3.27
40	Dangerous Substances (Notification and Marking of Sites) Regulations 1990	5.18
41	Disused Burial Grounds (Amendment) Act 1981	3.30
42	Ecodesign for Energy-Using Products Regulations 2010 (EUP)	2.12
43	End of Life Vehicles (Producer Responsibility) Regulations 2005	6.13 / 8.25
44	End-of-Life Vehicles Regulations 2003	6.13 / 8.25
45	Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007 (as amended)	2.1
46	Energy Performance of Buildings (Scotland) Regulations 2008	2.4
47	Environment Act 1995	1.9 / 6.11
48	Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009	3.15 / 8.18
49	Environmental Damage (Prevention and Remediation) Regulations 2009	8.16
50	Environmental Liability (Scotland) Regulations 2009	3.17 / 8.20
51	Environmental Noise (England) Regulations 2006	4.9

52	Environmental Noise (Identification of Noise Sources) (England) Regulations 2006	4.9
53	Environmental Noise (Scotland) Regulations 2006	4.11
54	Environmental Noise (Wales) Regulations 2006	4.10
55	Environmental Permitting (England and Wales) Regulations 2010	1.1 / 1.5 / 7.5 / 7.12 / 7.13 / 8.6 / 8.15
56	Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011	5.15
57	Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) Regulations 2000	8.40
58	Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (Scotland) Regulations 2000	8.41
59	Environmental Protection (Duty of Care) Regulations 1991	8.4
60	Environmental Protection Act 1990	1.2 / 1.3 / 3.21 / 3.22 / 4.2 / 8.3 / 8.9 / 8.35 / 3.12
61	Export and Import of Dangerous Chemicals Regulations 2008	5.20
62	Finance Act 2000	2.8
63	Fluorinated Greenhouse Gases Regulations 2009	5.14
64	Food and Environment Protection Act 1985	3.26
65	Greater London Low Emission Zone Charging Order 2006 & (Variation) Order 2007	6.8
66	Hazardous Waste (England and Wales) Regulations 2005	8.17
67	Hazardous Waste (Wales) Regulations 2005	8.19
68	High Hedges (Appeals) (England) Regulations 2005	3.37
69	High Hedges (Appeals) (Wales) Regulations 2004	3.37
70	Highways Act 1980	3.27
71	Land Reform (Scotland) Act 2003	3.28
72	Landfill (Scotland) Regulations 2003	8.44
73	Landfill Tax Regulations 1996	8.43
74	List of Wastes (England) Regulations 2005	8.7
75	List of Wastes (Wales) Regulations 2005	8.8
76	National Parks and Access to the Countryside Act 1949	3.10
77	Natural Environment and Rural Communities Act 2006	3.10
78	Nature Conservation (Scotland) Act 2004	3.9
79	Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001	4.7
80	Ozone Depleting Substances (Qualifications) Regulations 2009	5.16
81	Planning (Listed Building and Conservation Areas) Act 1990	3.32
82	Pollution Prevention and Control (Scotland) Regulations 2000	1.2 / 8.9
83	Pollution Prevention and Control Act 1999	8.9
84	Producer Responsibility Obligations (Packaging Waste) Regulations 2007	8.47
85	Protection of Badgers Act 1992	3.8
86	REACH Enforcement Regulations 2008	5.2 / 5.5 / 5.9 / 5.11
87	Rights of Way Act 1990	3.27
88	Road Traffic (Vehicle Emissions) (Fixed Penalty) (Scotland) Regulations 2003	6.10
89	Road Traffic (Vehicle Emissions) (Fixed Penalty) (Wales) Regulations 2003	6.9
90	Road Traffic Act 1988	6.3
91	Road Traffic Regulation Act 1984	6.6
92	Road Vehicles (Construction and Use) Regulations 1986	6.2
93	Salmon and Freshwater Fisheries Act 1975 and Water Resources Act 1991	7.12
94	Sewerage (Scotland) Act 1968	7.3
95	Site Waste Management Plans Regulations 2008	8.30
96	Special Waste Regulations 1996	8.22
97	Sulphur Content of Liquid Fuels (England and Wales) Regulations 2007	6.4
98	Sulphur Content of Liquid Fuels (Scotland) Regulations 2007	6.5
99	The CRC Energy Efficiency Scheme Order 2010 The CRC Energy Efficiency Scheme Order (Amendment) 2011	2.6
100	The Environmental Damage (Prevention and Remediation) Regulations 2009	3.13
101	The Water Environment (Oil Storage) (Scotland) Regulations 2006	7.9

102	Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999	3.5
103	The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 1999 (as amended)-largely revoked	3.6
104	Town and Country Planning (General Permitted Development) (Scotland) Order 1992	3.20
105	Town and Country Planning (General Permitted Development) Order 1995	3.19
106	Town and Country Planning (Scotland) Act 1997	3.20 / 3.23 / 4.4
107	Town and Country Planning (Trees) Regulations 1999	3.11
108	Town and Country Planning Act 1990	3.19 / 4.3 / 6.1
109	Town and Country Planning (Tree Preservation Orders and Trees in Conservation Areas) (Scotland) Regulations 2010	3.33
110	Trade Effluents (Asbestos) (Scotland) Regulations 1993	7.3
111	Trade Effluents (Prescribed Processes and Substances) Regulations 1989 & 1991	7.2
112	Treasure Act 1996	3.31
113	The Waste (England and Wales) Regulations 2011	8.42
114	The Waste (Scotland) Regulations 2011	8.43
115	The Waste Information (Scotland) Regulations 2010	8.44
116	Waste Batteries and Accumulators Regulations 2009	8.26
117	Waste Electrical and Electronic Equipment Regulations 2006	8.32
118	Waste Incineration (Scotland) Regulations 2003	8.21
119	Waste Management Licensing Regulations 2011	1.2 / 8.9
120	Water (Scotland) Act 1980	7.16
121	Water Environment (Controlled Activities) (Scotland) Regulations 2011	7.7 / 7.8 / 7.15 / 7.17 / 7.18 / 7.25
122	Water Environment (Oil Storage) (Scotland) Regulations 2006	7.18
123	Water Environment and Water Services (Scotland) Act 2003	7.7 / 7.8 / 7.15 / 7.25
124	Water Industry Act 1991	7.1
125	Water Resources (Abstraction and Impounding) Regulations 2006	7.21
126	Water Resources Act 1991	7.20
127	Water Supply (Water Fittings) Regulations 1999	7.22
128	Water Supply (Water Quality) (Scotland) Regulations 2001	7.26
129	Water Supply (Water Quality) Regulations 2000	7.24
130	Water Supply (Water Quality) Regulations 2001	7.23
131	Weeds Act 1959	3.24
132	Wild Mammals (Protection) Act 1996	3.8
133	Wildlife and Countryside Act 1981	3.8 / 3.9 / 3.10 / 3.25 / 3.27
134	Wildlife and Natural Environment (Scotland) Act 2011	3.9
	EUROPEAN LEGISLATION	LEGAL REGISTER REFERENCE
136	Commission Decision 2000/532/EC on Waste Categories (Waste Catalogue)	8.2 / 8.13
137	Council Directive 2000/76/EC on the incineration of waste	8.12
138	Council Directive 85/337/EEC on the assessment of certain public and private projects on the environment	3.37
139	Council Regulation No 1005/2009 on Substances that Deplete the Ozone Layer	5.13 / 8.39
140	Decision 2003/33/EC on landfill acceptance criteria	8.42
141	Decision 2455/2001/EC establishing the list of priority substances in the field of water policy	7.32
142	Directive 1975/439/EEC on the disposal of waste oils	8.33
143	Directive 1994/62/EC on packaging and packaging waste	8.46
144	Directive 2000/14/EC on the approximation of laws of the member states relating to the noise emission in the environment by equipment for use outdoors	4.6
145	Directive 2000/53/EC on End-of-Life Vehicles	6.12 / 8.24
146	Directive 2000/60/EC establishing a framework for Community action in the field of water policy	7.28 / 7.33

147	Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise	4.8
148	Directive 2002/91/EC on the energy performance of buildings	2.7
149	Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)	8.31
150	Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage	3.40 / 8.14 / 8.34
151	Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products	2.11
152	Directive 2006/11/EC of the European Parliament and of the Council on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community	7.4 / 7.11
153	Directive 2006/118/EC on the protection of groundwater against pollution and deterioration	7.34
154	Directive 2008/98/EC of the European Parliament and of the Council on Waste	8.1
155	Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators	8.23
156	Directive 2008/105/EC on environmental quality standards in the field of water policy	7.27 / 7.31
157	Directive 2008/50/EC on ambient air quality and cleaner air for Europe	1.8
158	Directive 70/220/EEC on Light Duty Motor Vehicles	6.7
159	Directive 79/409/EEC on the conservation of wild birds	3.38
160	Directive 88/77/EEC on Heavy Duty Diesel Engines for Motor Vehicles	6.7
161	Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora	3.39
162	Directive 97/68/EC & 77/306/EEC & 77/537/EEC on Emissions from Other Mobile Machinery	6.7
163	Directive 99/31/EC on the landfill of waste	8.42
164	Regulation (EC) 1272/2008 of the Classification, Labelling and Packaging of Substances and Mixtures.	5.21
165	Regulation (EC) 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)	5.1 / 5.4 / 5.8 / 5.10
166	Regulation (EC) 1967/548/EEC of the Approximation of Laws, Regulations, and Administrative Provisions relating to the Classification, Packaging and Labelling of Dangerous Substances.	5.22
167	Regulation (EC) 842/2006 of the European Parliament and of the Council on certain fluorinated greenhouse gases	5.12
	BRITISH STANDARDS	LEGAL REGISTER REFERENCE
168	Code of Practice for Demolition - BS 6187	1.19
169	Control of Noise on Construction and Open Sites - BS 5228	4.12
170	Guide to Damage from Ground Borne Vibration - BS 7385	4.14
171	Guide to Evaluation of the Human Exposure to Vibration in Buildings - BS 6472	4.15
172	Methods of Rating Industrial Noise affecting Mixed Residential and Industrial Areas - BS 4142	4.13
173	Recommendations for Tree Work - BS 3998	3.38
	ENVIRONMENT AGENCY - POLLUTION PREVENTION GUIDANCE	LEGAL REGISTER REFERENCE
174	Above Ground Oil Storage Tanks - PPG 02	7.39
175	Dewatering Underground Ducts and Chambers - PPG 20	7.48
176	General Guide to the Prevention of Pollution - PPG 01	1.20 / 2.13 / 3.39 / 4.17 / 5.23 / 6.15 / 7.38 / 9.2
177	Installation, Decommissioning and Removal of Underground Storage Tanks -PPG 27	7.50

178	Managing Fire Water and Major Spillages - PPG 18	7.47
179	Planning and the Historic Environment - PPS 05	3.41
180	Pollution Incident Response Planning - PPG 21	5.25 / 7.49 / 9.4
181	Pollution Prevention Guidance for Working at Construction or Demolition Sites - PPG 06	1.21 / 2.14 / 3.40 / 4.18 / 5.24 / 6.16 / 7.43 / 9.3
182	Refuelling Facilities - PPG 07	7.44
183	Safe Storage and Disposal of Used Oils - PPG 08	7.45 / 8.50
184	Storage and Handling of Drums and Intermediate Bulk Containers (IBCs) - PPG 08	8.51
185	The Water Environment (Controlled Activities) (Scotland) Regulations 2005 : A Practical Guide	7.51
186	Treatment and Disposal of Sewerage Where No Foul Sewer is Available - PPG 04	7.41 / 8.49
187	Use and Design of Oil Separators in Surface Water Drainage Systems - PPG 03	7.40
188	Vehicle Washing and Cleaning - PPG 13	7.46
189	Works and Maintenance In or Near Water - PPG 05	7.42

Common Forms

UK/COM/F/001	Subcontractor Pre Start Meeting
UK/COM/F/004	Appointment and Acceptance Form
UK/COM/F/005	Document Review and Sign Off
UK/COM/F/006	Audit Notification and Agenda
UK/COM/F/008	Audit Issue Tracker
UK/COM/F/009	Audit Report
UK/COM/F/010	Meeting Minutes Template
UK/COM/F/012	SHEQ Non Conformance Report
UK/COM/F/014	SHEQ Audit Programme
UK/COM/F/018	Corrective and Preventative Action Request
UK/COM/F/021	Inspection Report
UK/COM/F/022	Complaints Register
UK/COM/F/025	Corrective and Preventative Action Register
UK/COM/F/026	SHEQ Non Conformance Register

Common Procedures

UK/COM/P/001	Assessment & Management of Appointed Contractors
UK/COM/P/002	Document Control General Structure
UK/COM/P/002a	Document Control (Correspondence, Financial, Contractual)
UK/COM/P/002b	Records
UK/COM/P/003	Appointed Persons (SHEQ)
UK/COM/P/004	Environment, Health & Safety and Quality Training
UK/COM/P/005	Internal Audit
UK/COM/P/006	Non-Conformance
UK/COM/P/007	Corrective Action
UK/COM/P/008	Management Review Meetings (SHEQ)
UK/COM/P/009	Complaints and Compliments
UK/COM/P/010	Issue and Distribution of Management Systems
UK/COM/P/011	Proposals for Change and Suggestions for Improvement
UK/COM/P/012	Performance Measurement and Monitoring

EHS Forms

UK/EHS/F/001a	Environmental and Sustainability Policy Statement
UK/EHS/F/001b	Health and Safety General Policy Statement
UK/EHS/F/001c	Environmental Sustainability Targets

UK/EHS/F/001d	Code of Conduct
UK-EHS-F-003	Environmental Responsibilities Matrix
UK/EHS/F/004	Construction Phase HS Plan Template
UK/EHS/F/006	E&S Management Plan Template
UK/EHS/F/007	EHS Information Required from Contractor at Pre-Contract Stage
UK/EHS/F/008	Method Statement Preparation Template
UK/EHS/F/010	Project Method Statement & Risk Assessment Programme
UK/EHS/F/011	Project EHS Hazard & Risk Register
UK/EHS/F/014	Visitor Induction Checklist
UK/EHS/F/015	Site Registration
UK/EHS/F/016	COSHH Register
UK/EHS/F/018f	Out of Hours Permit Checklist
UK/EHS/F/018g	Contractor Register of Work Permit Areas
UK/EHS/F/019	Permits Register
UK/EHS/F/021	Accident / Incident Report and Claim Form
UK/EHS/F/021b	Immediate Incident Report
UK/EHS/F/022	Supervisor's Daily Health Safety and Environmental Checklist
UK/EHS/F/023	Internal EMS Audit Information Checklist
UK/EHS/F/024	EHS Inspection Guidance Sheet
UK/EHS/F/025	Site Traffic Management Plan & Checklist
UK/EHS/F/027	Project ENV Audit Sectional Log ISO 14001
UK/EHS/F/039	Site Environmental, Safety and Access Signs
UK/EHS/F/040	Monthly EHS Return
UK/EHS/F/050	Pollution Incident Response Plan
UK/EHS/F/051	H&S Objective Plan
UK/EHS/F/060	Register of Training Attendance
UK/EHS/F/068	Site Visitor Request Form
UK/EHS/R/203	H & S Legal and Other Requirements
UK/EHS/R/204	Environmental Legal and Other Requirements
UK/EHS/R/205	Waste minimisation ideas register
UK-ENV-G-461	Concrete washout discharge

EHS Procedures

UK/EHS/P/100	EHS Responsibilities

UK/EHS/P/105	Construction Phase H&S Plan
UK-EHS-P-104	E&S Management Plan
UK/EHS/P/106	Contractor EHS Management Plan
UK-EHS-P-125	Sustainable procurement
UK/EHS/P/300	Hazard Identification, Risk Assessments and Method Statements
UK/EHS/P/310	EHS Project Meetings and Communications
UK/EHS/P/315	Permits to Work
UK/EHS/P/320	Emergency Procedures
UK/EHS/P/325	Incident Reporting and Investigation
UK/EHS/P/340	EHS On-site Disciplinary Procedure
UK/EHS/P/355	Site Inspections
UK/EHS/P/356	Waste Minimisation & Management
UK/EHS/P/380	Liaison with Enforcing Authorities
UK/EHS/P/386	Environmental Aspect Register
UK/EHS/P/387	EHS Monthly Return
UK/EHS/P/500	Control of Substances Hazardous to Health
UK-EHS-P-505	Noise
UK/EHS/P/510	Vibration
UK/EHS/P/905	Director’s EHS Tour
UK/EHS/P/915	EHS Information, Advice and Information Support Services
UK/EHS/P/916	Legal EHS Requirements
UK/EHS/P/917	EHS Objectives
UK/EHS/P/930	Communication, EHS Meetings and Passing of Information

ENVIRONMENTAL MANUAL

ARCHAEOLOGY

HAZARDS

1 Failure to comply with any contract and planning conditions relating to archaeology.
2 Damage to known archaeological remains or historical features requiring protection during construction.
3 Discovery of unexpected archaeological finds.
4 Disruption to project programme and cost.
5 Prosecution and fines

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Understand the risk:** When applying for planning permission, the developer will normally be asked to assess the archaeological potential of the site. If archaeological remains are known, or are thought to exist on site, the local authority will impose planning conditions or obligations on the project to ensure that archaeological remains are preserved and/or protected during construction. These requirements must be adhered to.
ALL	**Document requirements:** Make sure that any contract or planning conditions relating to archaeology are built into plans, method statements and work instructions.
ALL	**Follow instructions and advice:** Obey the advice provided by any appointed archaeologist when working over or near sites of known archaeological importance. If in doubt, stop work and contact the Construction Manager to agree way forward.
3	**Be prepared:** Assume there is always some risk of encountering unexpected archaeological remains.
	Know what to look for: During excavations, look out for uncharacteristic burned or blackened material, brick or tile fragments, coins, pottery or bone fragments, skeletons, timber joints or post holes, brick or stone foundations, in-filled ditches.
3	**Know what to do:** If any unexpected archaeological remains are encountered: • Immediately stop work • Protect the find by fencing/blocking it off. • Contact the construction manager to determine whether an archaeologist needs to be called in. • Consider seeking specialist advice on how to proceed. • If human remains are encountered a Home Office licence will be required before works can continue. • Certain types of find are classified as 'treasure' (e.g. coins or objects made of gold/silver dating back more than 300 years). These types of find need to be reported to the local police station for advice on what to do next.
3 , 4	**Avoid delays:** If addressed at the right time and in the right way, unexpected archaeological finds may not necessarily cause delays to programme/knock-on costs.
ALL	**Avoid prosecution:** It is illegal to damage designated sites of archaeological importance (e.g. Scheduled Ancient Monuments).
ALL	**Avoid prosecution:** Before removing human remains from known burials, it is necessary to obtain a licence from the Home Office. The licence will normally impose conditions regarding the way in which remains are removed and by whom.

DUST, EMISSIONS AND ODOURS

HAZARDS

1 Failure to comply with terms of planning conditions relating to dust control
2 Complaints and claims from neighbours for dust soiling of parked vehicles, windows and property
3 Claims from farmers for dust damage to crops
4 Impacts on ecology through dust soiling
5 Health hazard

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Understand the risks**: • Maintain a daily log of weather conditions/wind direction/site activities • Ensure that daily site checks include evidence of dust soiling (see also '*Good House-keeping*') • Record and follow up complaints promptly • For prolonged dusty activities, erect screens to trap dust/act as a windbreak.
ALL	**Controlling dust from vehicles, plant and equipment**: • Ensure vehicles are suitably sheeted before they leave site • Sheeting must be maintained in good order, free from excessive rips and tears • Ensure vehicles pass through the wheel wash before leaving site. • Adhere to speed limits on site • Pave/tarmac heavily used areas, or use geotextiles • Damp down haul roads and stock piles (see also '*Storing and Managing Materials*') • Minimise cutting and grinding on site and look for opportunities to specify pre-cut/treated materials • Specify cutting/grinding equipment fitted with dust extractors, local exhaust ventilation (LEV) • Use wet systems/local water sprays to damp down work face

	• Make sure generators and equipment are switched off when not in use.

ALL	**Controlling dust from materials-handling and storage:** • Store fine dry materials within buildings or provide adequate protection from the wond • Use enclosed chutes for dropping demolition materials that have the potential to cause dust and dampen chutes regularly • Minimise drop heights into haulage vehicles, conveyors and skips • Mix large quantities of concrete or bentonite slurries: (i) off-site; (ii) in enclosed areas; or (iii) behind screens • See also '*Storing and Managing Materials*'.
ALL	**Reducing emissions and odours** • Locate stationary plant as far from sensitive nearby uses as possible • Use electrically powered plant instead of petrol or diesel, where possible • Ensure vehicles and plant are in a good state of repair with an up-to-date maintenance log • Ensure that vehicles and plant are not left running for long periods when not in use • Ensure that vehicle exhausts are directed vertically upwards where possible, or at minimum directed away from the ground • Cover waste skips and containers. • Replace lids or cover paints, thinners and adhesives when not in use.

ECOLOGY

HAZARD

1 Failure to comply with terms of planning conditions relating to habitat protection or protected species
2 Changes to water quality
3 Loss or damage to habitats, trees, hedgerows and vegetation
4 Death or injury of protected species
5 High noise levels disturbing adjacent ecology
6 Damage, removal or burial of protected rock formations and landforms
7 Disruption to project programme and cost
8 Prosecution and fines

CONTROL MEASURES

Hazard Identified Above	Control Measures
ALL	**Understand the risks:** When applying for planning permission, the developer will be asked to carry out an ecological survey to identify any protected sites, habitats or species within or near to the site. In most situations, specialist advice will be needed to determine the best way of dealing with these, if encountered. • Find out if the client has identified any designated ecological sites or protected species • Check whether there are any further planning or contract conditions relating to ecology • Obtain formal consent from the relevant regulatory authority before carrying out any work in or near a site of designated ecological importance • Nature conservation bodies include: Natural England, Countryside Council for Wales, Scottish Natural Heritage and Northern Ireland Environment and Heritage Service • Obtain formal consent from Environment Agency before carrying out any work in or near surface waters, rivers or fisheries • Make sure that site workers are aware of what protective measures are to be taken
ALL	**Protected species – bats**: There are sixteen species of bat in the UK and of these six are endangered and a further six are classified as vulnerable. As bats tend to return to the same roosts every year, their habitat is protected whether the bats are present or not. Roost include: holes and cracks in mature trees, roofs and walls of buildings, under bridges, disused tunnels and underground caves. They hibernate between October and April and breed between May and September. • It is illegal to injure, capture or disturb a bat, or to damage trees, buildings and other places used for roosting, even if the roost is currently unoccupied. • No work may be carried out in a hibernation roost or breeding roost. • If bats are encountered, a licensed bat-worker must be appointed to capture or handle them.
ALL	**Protected species – nesting birds:** All birds and their nests are protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), with some rare species such as barn owls, birds of prey, black redstarts and kingfishers, carrying further protection against disturbance. The bird nesting season is between March and July, extending to September for some species. • All clearance works should be carried out prior to or after the bird breeding season. • Stop work immediately, if nesting birds are found and seek advice from Head Office, or the person assigned with environmental responsibility in the Project EMP.
ALL	**Protected species – badgers:** Badgers are widespread throughout the UK and can be found living in: woodland, road and railway embankments refuse tips, under buildings, in hollow trees. It is illegal to directly disturb a badger sett, or to carry out works close to a sett without a licence from the relevant nature conservation body or consent from DEFRA. • A licence must be obtained for the following activities: use of heavy machinery within 30m; light machinery within 20m; use of

	hand tools within 10m. • If a badger sett is discovered after works have started, stop work immediately and seek advice from Head Office, or the person assigned with environmental responsibility in the Project EMP.
ALL	**Protected species – reptiles:** Reptiles can be found throughout the UK and are typically found in dense grassland, or scrub with open areas, railway embankments and hedgerows. There are six native species of reptile in the UK: common lizard; sand lizard; slow-worm; adder; grass snake; smooth snake. • It is illegal to kill or injure common lizards, slow worms, adders and grass snakes. • Obtain a licence before carrying out any work in areas known to contain sand lizards and smooth snakes. • If reptiles are found stop work immediately and seek advice from Head Office, or the person assigned with environmental responsibility in the Project EMP.
ALL	**Protected species – water voles:** Sometimes confused with rats, the water vole can be found in burrows 2m from the water's edge near or below the water line in: slow-flowing rivers, streams, ditches, dykes and around ponds and lakes. • It is illegal to directly disturb water voles or their burrows. • If water voles are discovered after works have started, stop work immediately and seek advice from Head Office, or the person assigned with environmental responsibility in the Project EMP.

ALL	**Protected species – great crested newts:** The Great Crested Newt is the largest and rarest of the three species of newt found in the UK. They can be found in ponds and slow moving watercourses, and derelict land around water features. • It is illegal to kill, capture, trade or disturb a Great Crested Newt or to destroy the habitats in which they breed. • Watch out when moving logs, stones or rubble near to ponds and water features as these are common habitats for Great Crested Newts. • If the species is encountered, stop work immediately and seek advice from Head Office, or the person assigned with environmental responsibility in the Project EMP.
ALL	**Designated sites:** Sites with important ecological attributes (both plant and animal species) or natural landforms can be given special protection that can be applied at regional, national or international level depending on their importance rarity or typicalness. Examples of designated sites include: Area of Outstanding Natural Beauty (AONB), Local Nature reserve (LNR), Special Area of Conservation (SAC), Special Protection Area (SPA), Sites of Special Scientific Interest (SSSI), RAMSAR sites (wetlands of international importance) and World Heritage Sites. • It is an offence to carry out works in designated sites without the prior permission of the relevant nature conservation body • The notice period for prior permission is usually several months • Once working methods have been agreed, they must be adhered to. Failure to do so will result in prosecution or fines.

1, 2, 3, 4, 7, 8	**Working near Water:** • Place a protective bund around ponds to prevent water pollution • Dewatering can affect the ecology of any wetlands around the site. Check the rate of dewatering against consent limits • Consider monitoring water levels during the works.

GOOD HOUSE-KEEPING

HAZARDS

1 Failure to comply with any contract and planning conditions relating to 'Considerate Constructor Scheme'.
2 Complaints and claims from surrounding businesses and residents.
3 Risk of prosecution for causing litter, nuisance.
4 Risk of attracting vermin.

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Keep the Public Informed:** If people are kept informed of what is happening on a construction site, they are less likely to complain. • Identify key local representatives and keep them informed. • Visit occupants of nearby sensitive buildings and notify them of noisy operations BEFORE they start (e.g. on-site crushing, concrete-batching, power-floating). • Prepare leaflets and distribute them to nearby residents and businesses. Check if you need to translate leaflets into other languages. • Set up a complaints help-line and make sure it is working properly. • Log all incoming queries and complaints to help identify persistent problems and make sure they are dealt with. This information can also be used to oppose any unsubstantiated complaints/claims.
ALL	**Signage:** Make sure signage throughout the site is clear and up to date. • Check hoardings, pedestrian routes and green routes regularly • Provide viewing points for the public at regular intervals around the site hoarding • Remove fly-posters, graffiti, obsolete site signage and any debris • Provide consistent signage, labels and posters for all bulk material/ waste storage areas.
ALL	**Be a Considerate Constructor:** Most Brookfield Multiplex sites are subject to a 'code of practice' called the Considerate Constructors' Scheme. • Make sure site staff know what's expected of them when arriving/leaving site • Minimise, noise, litter, disturbance, offensive language and

	behaviour on and around the site • Encourage site workers to use public transport where possible and make sure they only park in designated areas • Adhere to agreed 'working hours'.

ALL	**Maintenance of Roads, Fences, Etc:** Most Brookfield Multiplex sites will subject to planning conditions to ensure that adequate house-keeping standards are maintained: • Use a road sweeper to keep external roads leading to the site clean • Keep site entrances free of dust, debris, mud and stones at all times • Damp down haul roads in dry weather; lay temporary fill and scrape excess mud in wet • Keep hoardings and site fencing in a good state of repair and repaint when necessary • Install a wheel wash to clean all vehicles that have crossed unmade ground • Use water sparingly when washing-down pavements, roads and entrances • Install silt filters into nearby surface water drains and keep them clear.
1, 2, 3	**Burning Materials**: Burning materials on-site is prohibited.
1, 2, 3	**Vermin**: Store all food/putrescible wastes in suitable containers and clear regularly. Remove litter regularly.

GROUND CONTAMINATION

HAZARDS

1 Delays to programme through unexpected or accidental contamination
2 Liability for costs arising from spreading or making existing contamination worse
3 Risks to human health (asphyxiation, poisoning, microbiological diseases, chemical burns, cancer agents)
4 Pollution of groundwater and surface watercourses
5 Pollution of surrounding land
6 Impacts on flora and fauna
7 Corrosion of buried services and structures

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Understand the risk:** Ground contamination is often present as a result of a previous land use. If contaminants are known/thought to be present, the developer will be required to carry out an exploratory investigation to determine the type and extent of the contamination. Any site remediation is then subject to approval from the local authority.
	• Check contract documentation, planning conditions and Project EMP for any site restrictions arising from actual or potential ground contamination. • Check whether site remediation works have been completed and are supported by certificates/paper-work. • Make sure that site workers are aware of any risks associated with the disturbance or handling of contaminated materials.
ALL	**Be prepared**: During excavation, piling and dredging activity, check for visual signs of contamination: • Discoloured soil (e.g. chemical residues). • Unexpected odours (e.g. hydrocarbons) • Fibrous texture (e.g. asbestos). • Presence of foreign objects (e.g. chemical/oil containers/waste). • Evidence of previous soil workings. • Evidence of underground structures, pipe-work and tanks. • Artificial/made ground from historic land use (e.g. slag heaps, fly-ash, coal). • Old drain runs.
ALL	**Know what to do:** When contaminated materials are suspected, you should: • Stop work immediately. • Report the discovery to your Package. Manager who will need to seek expert advice. • Seal off the area to prevent the spread of contaminants. • Clear surrounding area of materials that could cause fire or explosion. • Establish whether the local authority/ Environment Agency needs to be notified. • Arrange for a material sample to be tested and characterised using the MCERTS standard. • Apply 'Best Practicable Environmental option' (BPEO) for any subsequent remediation/removal. • Agree any required changes to site remediation plan and forward to local authority. • Ensure any contaminated materials requiring off-site disposal have been assigned the correct six-digit code and are removed by a licensed operator (see also 'Hazardous Waste').
ALL	**Avoid Spreading Contamination**: To avoid spreading contaminated material, you should: • Prevent vehicles and plant from crossing area unless absolutely necessary for remediation. • Avoid stockpiling contaminated soil wherever possible. • If material has to be stockpiled, use an impermeable membrane/store on hard standing. • Cover stockpiled material to prevent wind-blown dust and to prevent water ingress. • Control surface water drainage from stockpiled area. • Dig and line a sump to collect any run-off, test water to classify it for purposes of disposal and arrange for it to be collected by

	tanker.
3	**Protect Site Workers:** A hygiene facility should be provided on heavily contaminated sites. No eating or smoking should take place in the 'dirty area'. Access to canteens, changing and toilet facilities should be restricted so that workers have to pass through the hygiene facility first. Health surveillance is appropriate where: • The nature of the work is likely to cause exposure to a hazardous substance, and; • The substance is known to cause disease or an adverse effect, and; • There are valid techniques for detecting the effect on people (e.g. asbestos, PCB-contaminated oil).

NOISE & VIBRATION

HAZARDS

1 Complaints from nearby residents and businesses
2 Structural damage to buildings and utilities
3 Civil nuisance claims
4 Enforcement/abatement notices
5 Prosecution and fines
6 Programme delays and associated costs

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Understand the risk:** When applying for planning permission, the developer will normally be asked to assess the potential noise impacts on surrounding uses. If potentially significant noise impacts are predicted, the local authority will impose planning conditions or obligations on the project to control those impacts. These requirements may include: • Limits on hours/times of day during which noisy works can take place • Limits on average noise allowed over a given period • Limits on maximum noise allowed over a given period • Noise mitigation measures at source/on site boundary • Evidence that 'BPM' is being applied.
ALL	**Document requirements:** Make sure that any contract or planning conditions relating to noise and vibration are built into plans, method statements and work instructions.
ALL	**Monitor baseline conditions**: • Before works start, carry out a noise survey at locations around the site. The results should be used to plan the location of noisy operations that could cause nuisance to sensitive receptors, and can be used to oppose unsubstantiated complaints. • If ground conditions indicate that ground-borne noise and vibration are likely, it is essential to survey sensitive locations and structures before works start. Surveys should include a detailed record of: o Existing cracks and their widths o Level and plumb survey, including damp-proof course measurements of tilting walls or bulges o Other existing damage, including: loose or broken tiles, pipes, gullies, plaster or paving • Photographic records and the installation of vibration monitoring equipment are also helpful to establish alleged or actual damage.
ALL	**Keep people informed:** Visit occupants of nearby sensitive buildings BEFORE noisy operations start to explain what you will be doing, why the works are needed and how long they will last. • See also *'Good House-keeping'*
ALL	**General controls (noise):** The following generic measures should be considered for each noisy work activity to control noise, in order of priority: • Control of noise at source: o Selection of low noise methods o Control of working hours o Selection of quiet or low noise equipment o Location of equipment on site o Provision of acoustic enclosures • Screening: o Local screening of plant o Intermediate bunds, or screens o Acoustic hoarding at the site perimeter
ALL	**Specific controls (noise)**: Specific measures, which should be applied to demonstrate that 'BPM' is being applied include: • Select equipment and working methods that produce less noise and vibration wherever possible (e.g. use hydraulic shears instead of hydraulic impact breakers, pre-fabricate formwork and steel work off-site).
ALL	• Erect hoardings and acoustic screens BEFORE any works commence on site. • Keep noisy plant as far away as possible from sensitive receptors. • Carry out noise monitoring at the start of each new activity on site. • Only use equipment that conforms to the relevant national or international standards on noise and vibration. • Use noise-control equipment such as jackets, shrouds, hoods and doors. • Make sure that compressors, percussion tools and vehicles are fitted with effective silencers in accordance with manufacturer specifications. • Select electrically powered plant in preference to diesel, or petrol driven plant, where possible. • Shut down plant when not in use.

	• Use mufflers or silencers to reduce the noise transmitted along pipes and ducts. • Minimise the drop heights into hoppers, lorries or skips (reducing the drop height by a factor of 10 reduces noise by about 10dB). • Consider using rubber linings on tippers in very sensitive areas. • Design haul roads to minimise the amount of reversing required. • Keep haul roads well maintained • Provide a 24-hour contact number and make sure it is available to the public.

ALL	**Specific controls (vibration):** The following BPM measures should be considered: • Can the activity be carried out using a different technique which results in lower vibration levels? (e.g. using bending techniques to break out concrete instead of percussive techniques) • As high frequency vibration causes less damage than low-frequency vibration, can the plant be operated in a mode that generates less low frequency vibration? (e.g. vibratory roller, wacker plates) • Can the plant be isolated from what it's sitting on (the transfer medium)? • Can plant be placed on a heavy base which causes less vibration? • Fit anti-vibration mountings, where practicable, to rotating and/or impacting equipment. • Consider using rubber linings on tippers in very sensitive areas. • Keep haul roads well maintained.

NOXIOUS AND INVASIVE WEEDS

HAZARDS

1 Risk to buildings & structures – penetrates concrete, asphalt, walls and foundations (Japanese Knotweed)
2 Risk to human health – poisonous & skin irritant (Giant Hogweed)
3 Risk to animal health – poisonous to grazing animals (Ragwort)
4 Impacts on flora – shades out other species (Himalayan Balsam)
5 Expensive to eradicate
6 Prosecution and fines if materials are spread

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**General controls**: If you come across noxious weeds or plants, you should:
	• Cordon off the area to prevent spread of weeds • Notify Head Office or the or the person assigned with environmental responsibility in the Project EMP • Ensure that equipment is clean and free of any pieces of plant material before leaving the area. • Ensure boots are clean and free of any pieces of plant material before leaving the area. • Spray with herbicide to kill off top growth and commence root killing • Excavate main stumps and rhizomes and put in skip to dry before sending off site for burning under licence or incineration. • Excavate all traces of root under controlled conditions. • Spread contaminated soil onto polythene or hard standing and spray any new growth with herbicide over a two year period.
1, 5, 6	**Japanese Knotweed:** Japanese knotweed is a perennial plant that grows to a height of about 3 metres in mid summer and can spread up to 7 metres. In the autumn, the leaves and stems die but the stems remain. It is capable of penetrating rock, concrete and tarmac to depths of up to 3 metres. Any fragments of stem or root will grow to form a new plant, which makes it very difficult to eradicate. If you come across Japanese Knotweed, the following additional controls are necessary: • Stop work within 7m of the suspect plant and contact or the person assigned with environmental responsibility in the Project EMP to identify the weed formally. • Notify landowner and local authority, if source is on an adjacent site. • For sites AWAY from water, you can use the following types of herbicide to treat standards of Japanese Knotweed: o Picloram (Tordon 22K, Nomix Chipman)

	o Imazapyr (Arsenal, Nomix Chipman) o Triclopyr (Garlon 4, Nomix Chipman, Dow). • For sites within 10m of water, the only herbicide approved for use is glyphosate. • Spray the green shoots as soon as they appear, usually in April/May. • Total eradication is unlikely following a single application, so ensure that terms of service agreement provide for repeat application and the work is carried out under guarantee. • Control is usually improved if the herbicide is applied to the underside of the leaves. Dispose of any stems, roots and shoots as HAZARDOUS WASTE and must be incinerated or buried in a landfill to a depth of at least 5 metres.

2, 4, 5, 6	**Giant Hogweed:** Giant hogweed grows up to 5 m tall. The stems are hollow, ribbed and furrowed and can be 100 mm across. The leaves are dark green and form a rosette which can be up to 1m across. The plant thrives in any habitat, but particularly where the soil has been disturbed, e.g. riverbanks, derelict land and railway embankments. The plant contains large amounts of poisonous sap, which, on contact with the skin and in the presence of sunlight, causes severe irritation, swelling and painful watery blisters. This reaction can occur up to 24 hours after exposure to sunlight. Contact with eyes can cause temporary blindness. • Stop all work near the suspect plant and contact the person assigned with environmental responsibility in the Project EMP to identify the weed formally. • Seek medical advice if you have been in contact with the plant. • Wear protective clothing and eye protection before touching the plant.

SPILL CONTROL

ISSUES

1 Pollution of groundwater and surface watercourses
2 Liability for costs of clean-up
3 Pollution of surrounding land
4 Impacts on fauna and flora
5 Risk of fire or explosion
6 Risks to human health (asphyxiation, poisoning, chemical burns, cancer agents)
7 Corrosion of buried services and structures
8 Prosecution and fines

INFORMATION

Issue Identified Above	Control Measure
ALL	**Spill Control:** In the event of a spill occurring, the following procedure should be followed: **STOP => CONTAIN => NOTIFY => CLEAN-UP**

ALL (Cont.)	**STOP:** • STOP work immediately and prevent any more material spilling,. (e.g. right an oil drum, close a valve) • If the material is flammable, remove all possible sources of ignition. (e.g. isolate electricity, switch off plant, extinguish cigarettes) **CONTAIN:** • Fetch PPE and materials from the nearest spill kit and contain the spillage immediately. • If unsure about what PPE to use, obtain COSHH sheet and re-assess. • If the spill is fairly small it can be cleared up using absorbent materials. • For a large spill the first priority is to prevent it reaching a watercourse, drain, sensitive environment or soak away. • Seal off drains and deploy floating booms into watercourses, if in the path of the spill. • Place bunds of earth, sand, or absorbent granules around the spill to contain it. • Use absorbent mats or granules to absorb any free liquids. • If spill is percolating into made ground, consider digging a trench/ sump and fill with absorbent granules to capture any free-liquid. • Spill kits should contain equipment specific to the oils and chemicals being used on the site and should include:

	o oil-absorbent granules o absorbent mats (preferably water-repelling) o floating booms o drain covers o gloves & PPE **NOTIFY:** • If a spillage occurs you should notify your foreman/supervisor immediately giving the following information: o Has the substance entered a drain/watercourse, or is there an immediate risk to a drain/watercourse? o Substance involved and quantity o Location o Reason for incident o Action taken
ALL	• For **MAJOR** spills, your foreman/supervisor must contact Head Office and the person assigned with environmental responsibility in the Project EMP immediately for further advice. • The Environment Agency must be notified formally in the event of any spill affecting a watercourse or surface water feature above the 'threshold values' described in the Project EMP.
ALL	**CLEAN UP** • The contaminated spill kits, granules and any contaminated material should be collected or excavated and put into a suitable "Hazardous Waste" container. It must not be mixed with other (non hazardous) waste. The equipment taken from the spill kit must be replaced immediately. • You will find general information on incident management in Section 4 of the Project EMP. • Once clean up is complete, you should complete an Environmental Incident Report Form. This is needed to demonstrate to regulators and other third parties that the matter has been dealt with correctly. Mandatory information to be recorded will include: o Date, location and time of spillage o Substance(s) involved o Actions taken to contain o Notifications (e.g. foreman, Head Office, Environment Agency) o Remedial actions taken to prevent further similar incidents

STORING AND MANAGING BULK MATERIALS

HAZARDS

1 Failure to comply with contract or planning conditions relating to the specification of materials.
2 Depletion of natural resources.
3 Nuisance claims and complaints (dust, soiling, noise, odour)
4 Health hazard
5 Pollution of air, water and land.
6 Vandalism or theft.

CONTROL MEASURES

Hazard Identified Above	Control Measure
1, 2	**Check material specifications:** Many major projects are subject to contract and planning conditions that are designed to encourage the use of materials from sustainable sources, and use of secondary and recycled materials. • Make sure that subcontractors are aware of any specific requirements for the procurement of materials. These may include: Green Guide Category 'A' materials, FSC timber, CFC-free products, low solvent products, vegetable-based oils and lubricants. • Ask subcontractors to supply 'chain of custody certificates' and delivery notes for loads of bulk timbers to prove that the correct timber sources have been used. • Keep this information on file. You will be asked to provide documentary evidence of material sources for any material that is subject to a planning condition.
1, 2	**Use materials efficiently:** (1) When ordering, avoid: • Over-ordering. • Ordering inappropriate lengths. • Ordering for delivery at the wrong time. (2) When deliveries arrive on site, avoid: • Damage during unloading. • Delivery to wrong part of the site. • Delivery of damaged goods. • Accepting incorrect deliveries, specifications or quantities. (3) When storing materials, avoid: • Exceeding their shelf life. • Damage or contamination from incorrect storage. • Damage or spillage through incorrect or repetitive handling. • Loss, theft and vandalism.
1, 2	**Specify secondary/recycled materials where possible:** • Make sure materials do not contain contaminants and that pH levels are suitable for intended use. • Ask for test certificates for recycled aggregate/MOT Type 1 and concrete. • Do not accept loads of top-soil, secondary or recycled material without supporting paper-work. • Check with the Environment Agency, if you intend to specify secondary/recycled materials from third party sources. You may need a waste management exemption.
ALL	**Store bulk materials correctly:**

	• Provide dedicated area for material storage well away from drains/watercourses • Store materials in suitable bunkers, sheds, or containers and label • Protect storage area against flooding or water-logging • Provide spill kits and ensure they are accessible and fully stocked • Keep waste materials separate from clean materials • Protect against vandalism or theft • Protect against damage from mobile plant and vehicles.
ALL	**Manage stockpiles correctly:** • Obtain a waste management exemption from the Environment Agency if you intend to store up to 90 cubic metres of aggregate/ construction material for up to 3 months. • Store top soil in piles less than 2 metres high to prevent damage to the soil structure • Segregate different grades of soil • Position spoil and temporary stockpiles well away from watercourses and drainage systems • Stockpiles should not be too steep and minimise movements of materials • Direct surface water away from the stockpiles to prevent erosion at the bottom • Place silt screens around spoil heaps to trap silt from surface water run-off • Consider growing vegetation on long-term stockpiles to prevent dust in dry weather conditions and to minimise erosion of the stockpile.

STORING OILS AND BULK LIQUIDS

HAZARDS

1 Pollution of groundwater and surface watercourses
2 Liability for costs of clean-up
3 Pollution of surrounding land
4 Impacts on fauna and flora
5 Risk of fire or explosion
6 Risks to human health (asphyxiation, poisoning, chemical burns, cancer agents)
7 Corrosion of buried services and structures
8 Prosecution and fines

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Storing Oils, Fuel and Chemicals:** Different materials need to be managed according to the risk they pose to people and the environment. Bulk oils and fuels, for example, need to be stored in accordance with the Oil Storage Regulations and located away from water-courses and drains. Other potentially hazardous materials, such as solvents and adhesives, are supplied with COSHH data sheets, which stipulate how the material should be stored, handled and disposed of. General controls will include:
ALL (Cont.)	• Oil should only be stored in containers with sufficient structural integrity and strength to ensure they do not burst or leak whilst in ordinary use • The container must have secondary containment that : o Has a capacity of **110% of the largest container or 25% of the combined capacity of all containers** in the group, **whichever is greatest** o Is positioned to minimise risk of damage by impact o Has an impermeable base and walls, to water and oil • The base and walls must not be penetrated by any openings (i.e. valves, draw pipes) used to drain the system unless they are adequately sealed to prevent oil escaping • Label containers clearly so that appropriate remedial action can be taken in the event of a spillage • Regularly check taps and hoses for signs of leakage • Avoid storing drums tightly together. Store drums so they can all be inspected for leaks and accessed easily • Prevent damage from vandalism of theft. • Ensure that all valves and trigger guns are vandal and tamper-proof. Provide notices to ask site personnel to lock valves and trigger guns when not in use • Before moving a drum, make sure the bung is secure • Provide sufficient absorbent granules, drain covers and PPE to tackle a spill and make sure people know how to use them (See also *'Spill control'*).
ALL	**Bunding Tanks:** • To avoid spillages, bund tanks with a minimum capacity of 110% of the largest tank, or 25% of the total storage capacity, whichever is the greater • Make sure bund is fitted with a sump and tap to allow rainwater

	to be drained off safely • Do not allow bunded areas to fill with rainwater or slops • Site tanks away from vehicle movements and mark them clearly so they are visible • Do not put tanks anywhere near surface water drains, watercourses or sewers. • Avoid placing tanks on unmade ground to reduce the risk of soil contamination • Mark the contents of any tank clearly • Make sure fill points, valves and trigger guns are inside the bund • Position air vents so they can be seen easily and directed down into the bund in the event of accidental release of contents • Fit any pumps outside the bund with a non-return/check valve installed in the feed line • Provide separate fill pipes for each tank unless the tanks are interconnected by a balance pipe of greater capacity than the fill pipe • Mark fill pipes with the product type and tank number where there is more than one tank • Provide sufficient absorbent granules, drain covers and PPE to tackle a spill and make sure people know how to use them (See also *'Spill control'*).

ALL	**Refuelling Protocol:** • Designate a specific area on-site for refuelling that is bunded and well away from surface water drains • Avoid using remote fill-points. Where these are unavoidable, install suitable oil separators to the surface water drainage system • Avoid refuelling close to watercourses. Where this is unavoidable, keep materials such as absorbent pads and booms readily available in case of spillage • All refuelling must be supervised. Do not leave valves open unattended. If not already required to do so, consider using auto-close vales • Keep an emergency spill-kit at each refuelling point. • If mobile refuelling is carried out, ensure that each bowser carried a spill kit • Bowsers should have an automatic cut out • Ensure that site workers carrying out refuelling are aware of the protocol and know what actions to take in an emergency (See also: *'Spill Control'*).

WASTE MANAGEMENT – HAZARDOUS MATERIALS

HAZARDS

1 Failure to comply with any contract and planning conditions relating to waste
2 Risks to human health (poisoning, chemical burns, cancer agents)
3 Pollution of groundwater and surface watercourses
4 Pollution of surrounding land
5 Impacts on flora and fauna
6 Corrosion of buried services and structures
7 Liability for costs arising from fly-tipped waste
8 Prosecution and fines for failure to dispose of waste correctly

CONTROL MEASURES

Issues Identified Above	Control Measure
ALL	**Hazardous wastes** are wastes that possess one or more of the 14 hazardous properties in the Hazardous Waste Directive, including those that are deemed to be dangerous to life and/or damaging to the environment, and may be corrosive, reactive, explosive, oxidising, carcinogenic or flammable. Examples of hazardous waste include: asbestos, acids, alkaline solutions, oily sludges, waste oils and wood preservatives. The fourteen hazardous properties identified by the Directive are: H1: Explosive H8: Corrosive H2: Oxidising H9: Infectious H3a: Highly Flammable H3b: Flammable H10: Toxic for reproduction H4: Irritant H11: Mutagenic H5: Harmful H12: Releases toxic gas in contact with air, water or acid H6: Toxic H13: Releases hazardous substances after disposal H7: Carcinogenic H14: Ecotoxic

ALL (Cont.)	Hazardous wastes are listed in the List of Wastes Regulations. Each category of waste is given a unique six-figure code and hazardous waste is identified as: Any waste that is highlighted in the List of Wastes Regulations with an asterisk • Any surplus/obsolete product or material that is marked with a hazard label. • Any waste material that contains one or more of the hazardous properties described in the Hazardous Waste Directive • Any waste material that contains components with the

	hazardous properties H1 to H14 above threshold concentrations. • Any specific batch of waste that the UK Government or the Environment Agency determines is to be treated as hazardous. Examples of hazardous wastes common to the construction industry include: • 13 07 01* - Waste fuel oil and diesel • 15 02 02* - Absorbents containing dangerous substances (e.g. oil) • 17 01 06* - Mixtures or separate fractions of concrete, tiles, bricks and ceramics containing dangerous substances • 17 05 03* - Soil and stones containing dangerous substances • 17 06 05* - Construction materials containing asbestos
ALL	**Classifying Hazardous Waste**: To classify the wastes produced in your area of direct responsibility and decide which is the most appropriate disposal route you should: • Use the European Waste Catalogue to identify the correct six-digit code for the waste and classify it as either non-hazardous, hazardous (mirror entry), or hazardous (absolute) • Use the guidance in Chapter 17 of EWC to determine the hazard level • Carry out assessment or testing of the waste as required to determine whether it meets the 'Waste Acceptance Criteria' (WAC) for its intended destination • Make sure WAC test results meet legal requirements • Determine waste disposal route: o Inert waste landfill o Non-hazardous landfill o Non-reactive cell in non-hazardous landfill (asbestos /plasterboard waste) o Hazardous waste treatment plant o Hazardous landfill o Incineration

ALL	**Storing hazardous waste:** • Make sure you know the Environment Agency premises code for your site • If you are unsure, ask Head Office, or the person with nominated environmental responsibility in the Project EMP • Make sure hazardous wastes ate stored in suitably labelled containers away from sensitive nearby uses and protected from site traffic • Make sure storage area for hazardous wastes is bunded (See also: '*Storing Bulk Oils and Liquids'*) • NEVER mix hazardous wastes with other wastes • NEVER mix hazardous wastes together • Do not store wastes longer than is necessary to complete the paper-work and arrange for its disposal.
ALL	**Transport and disposal:** The waste producer (usually the subcontractor) must complete a hazardous waste consignment note that travels with the waste to its final treatment or disposal site. The note must include the following information: • Premises code • Description of waste • EWC code • Quantity • Chemical/biological components of the waste and their concentrations • Physical form • Hazard code(s) • Container type, number and size
ALL	**Waste documentation:** All hazardous waste consignment notes must be retained for five years.

WASTE MANAGEMENT– INERT & NON-HAZARDOUS MATERIALS

HAZARDS

1 Failure to comply with any contract and planning conditions relating to waste management and recycling
2 Impacts on landfill capacity
3 Nuisance and odours
4 Liability for costs arising from fly-tipped waste
5 Prosecution and fines for failure to dispose of waste correctly

CONTROL MEASURES

Hazard Identified Above	Control Measure
ALL	**Definition of waste:** The term "waste" is defined as 'any substance or object which the holder discards, intends to discard or is required to discard'.

	• **Inert waste** refers to materials that do not require significant physical, chemical or biological reactions or cause environmental pollution when deposited into a landfill site. These include: rocks, concrete, ceramics, bricks and masonry, but not topsoil. • **Non-hazardous wastes** are those that are not inert and include timber and bitumen (depending on tar content).
ALL	**Waste Duty of Care:** It is essential to check that all wastes produced on site are described, stored, handled and transferred in accordance with legal requirements. In particular: • It is illegal to mix solid and liquid wastes pending collection. • It is illegal to mix general, inert wastes with hazardous or active wastes. • It is illegal to take inert waste materials from any Brookfield Multiplex site and use/sell it as fill material on any other third party site, unless the site receiving the material has a waste management license/exemption. • Separate all recyclable wastes, including: cardboard and plastic packaging, wood, plasterboard, bricks and blocks, metals. • Store waste safely pending collection. • Only transfer wastes to licensed waste carriers/licensed sites • Maintain records of waste volumes, vehicle registration, destination sites and dockets to prove that each consignment has been disposed of correctly. • Use the correct European Waste Catalogue code to describe waste.

ALL	**Who is authorised to take waste:** • **Council waste collectors** You don't have to do any additional checks for Council collectors, but you will have to complete some paperwork. • **Registered waste carriers** Most carriers of waste have to be registered with the Environment Agency or the Scottish Environment Protection Agency. Look at the carrier's certificate of registration or check with the Agencies. • **Exempt waste carriers** The main people who are exempt are charities and voluntary organisations. Most exempt carriers need to register their exemption with the Environment Agency or the Scottish Environment Protection Agency. If someone tells you they are exempt, ask them why. You can also check with the Agencies that their exemption is registered

ALL	• **Holders of waste management licences** Some licences are valid only for certain kinds of waste or certain activities. Ask to see the licence. Check that it covers your kind of waste. • **Holders of waste management exemptions:** Some activities are exempt from licensing. If someone tells you they are exempt, ask them why. You can also check with the Agencies that their exemption is registered. • **Registered waste brokers**: Anyone who arranges the recycling or disposal of waste, on behalf of someone else, must be registered as a waste broker. You can check with the Environment Agency or the Scottish Environment Protection Agency that the broker is registered.
ALL	**Standard checks for waste contractors:** Prior to appointing contractors to treat, store or dispose of waste, you must: • Obtain copies of the waste management licence (or exemption certificate) held by the potential contractor • Obtain written confirmation from potential contractors of the waste transfer/landfill sites they propose to use for your wastes • Maintain records in a way that can be checked on request by Head Office or the Environment Agency

ALL	**Standard checks for waste consignments:** For each waste consignment that leaves the site, you must: • Use a 'waste transfer note (WTN)' or 'season ticket' system for your own vehicles. This must record the category of waste, end destination(s) and be supported by some means of signature system as each vehicle leaves the site. • For 'owner-drivers, each load MUST be supported by a WTN with ALL relevant sections completed. The Subcontractor must provide evidence that 'owner-drivers' are disposing of wastes correctly and should ask for tickets from the 'end destinations' as evidence that the material has been tipped/sold to a licensed third party • Make sure the waste has been described correctly. WTNs must include the following information: o Description of the waste (e.g. concrete waste) o European Waste Catalogue (EWC) six-digit code o How it is contained o Quantity of waste o EA registration number of waste carrier/broker o Destination • Ensure that all irregular loads of waste are declared on WTNs (e.g. redundant materials, wastes arising from cleaning up spills). Note that some of these wastes may have to be handled as Hazardous Waste. • Keep copies of all transfer notes for a minimum of two years for inert/non-hazardous wastes and fie years for hazardous wastes.

ALL	**Record-keeping:** Brookfield Multiplex and its subcontractors are required to maintain records on the types and volumes of waste that have been disposed of, re-used or recycled as part of your contract. On a periodic basis you should also carry out the following checks: • Have wastes been described correctly? • Are vehicles collecting waste materials suitably licensed (waste carrier license)? • Do destinations on waste dockets match the list of approved end destinations supplied by the waste contractor. • Are wastes reaching their stated destinations? To determine this you will need to follow a random sample of waste vehicles to ensure their actual destinations match the destinations recorded on the relevant docket. • Are wastes being sold as 'construction fill' to third parties who do not possess the correct waste management licenses /exemptions?

WATER RESOURCES

ISSUES

1 Pollution of groundwater and surface watercourses
2 Liability for costs of clean-up
3 Pollution of surrounding land
4 Impacts on fauna and flora
5 Risk of fire or explosion
6 Risks to human health (asphyxiation, poisoning, chemical burns, cancer agents)
7 Corrosion of buried services and structures
8 Prosecution and fines

INFORMATION

Issue Identified Above	Control Measure
ALL	**Understand the risks:** Environment Agency records show that the UK construction industry causes more pollution incidents than any other industry sector, causing an average of 570 pollution incidents per annum. Controlled waters have legal protection and include: rivers streams, ditches, ponds, locks, groundwater and coastal waters up to 3 miles in-shore. Pollution is any poisonous, noxious or polluting matter or any solid waste matter and includes: silt, cement, concrete, bentonite, petroleum spirit, chemicals, solvents and sewage. If controlled waters are polluted, you, your company, your subcontractors and your client could end up in court. In addition to the fines, and the costs of clean up, you may also be held liable for damages to any landowners or industries making use of the water resource further downstream. Directors can also be held personally responsible, fined and/or imprisoned.
ALL	**Know your site:** • Establish water quality and levels by taking baseline assessments before work begins on site • Establish the location of local streams and watercourses and the position of surface water, combined and foul sewers on-site. • Mark all drains to distinguish them (surface water = **BLUE**; foul = **RED**) • Protect or cover all drains • Ensure that all temporary connections are being made with the right type of drainage system
ALL	**Abstracting water:** • Ensure the site has a license to abstract water from a controlled water source • Ensure that the site complies with the conditions of any abstraction licence
ALL	**Discharging water:** • Discharges should only be made into drains with the appropriate discharge consents: o Foul water sewer – effluent discharge consent from the sewerage company o Surface water drains – discharge consent from the environment regulator • Be aware that discharge consents will take between four and twelve weeks to obtain • Check that site workers are aware of the quality and quantity of water that can be discharged over a given time period • Check for any visible signs or smell of water pollution in watercourses/drains in or near the site • Make sure that water is treated prior to disposal • If a settlement tank is used, make sure it is working properly • If a lagoon/pond is used, make sure it is not leaking
ALL	**How and what to monitor:** • Establish a regular monitoring procedure for water discharged form the site and keep records (turbidity, flow rate, pH) • Check outfalls and pipe-work daily to ensure they are clean and clear of litter, etc.
ALL	**Emergency preparedness and response:** • Make sure site workers know what to do in the event of a spillage and where the closest spill kits are located. • Ask site staff if they know who they should contact in the event of an incident as part of daily inspections. • Prepare and test a Pollution Incident Control Plan. • Nominate a spill contractor to deal with major incidents.

ALL	**Managing effluent – concrete/ bentonite:** • Wash out lorries, grabs and bulk containers in a designated area. • Make sure designated area is at least 10m away from drains and watercourses. • Protect drains and watercourses from washout. • Ensure concrete subcontractor treats/disposes of washout correctly.
ALL	**Managing effluent – from vehicles and boot washing:** • Carry out cleaning in a bunded area and recycle the water. • Discharge waste water into a settlement tank/lagoon prior to discharge to foul sewer. • Obtain consent from sewerage authority to discharge waste water. • Collect heavily silted water/slurry in a sealed tank for removal from site by a licensed waste disposal contractor.

ALL	**Managing run-off and silty water** • Ensure that temporary drainage systems have been installed, prior to starting work on site. • When carrying out earthworks, make sure that a filter strip has been left to prevent surface water run-off. • Use sediment fencing to trap mud and heavy silt. • Check and clean silt filters and traps regularly. • Check watercourses (if applicable) and drains daily – look for any visible signs of discolouration or odours. • Monitor any water treatment methods to ensure their effectiveness. • If a settlement tank is used, make sure water is not flowing too fast, or over-flowing. • If straw bales are used, make sure they are securely fixed. • (See also 'Good house-keeping').
ALL	**Design and operation of settlement tanks/lagoons:** • The size of the tank/lagoon should be adequate for the settlement time required and the rate at which water flows or is pumped into it • Install a long, narrow, shallow settlement lagoon to ensure maximum retention time of all water • Obtain a consent to pump clean water from the surface of the settlement tank/lagoon into rivers/designated discharge point • Make sure the entry chamber is cleaned periodically to prevent the build up of silt • Monitor outflow water quality periodically.
ALL	**Dealing with water in excavations:** • Measures should be put in place to prevent water from entering excavations • Consult the Environment Agency BEFORE carrying out any works below the water table, including any site dewatering • Control water in excavations by installing stone-filled edge drains leading to sumps
	• Tom manage groundwater flowing into excavations, install cut-off ditches, walls or well-point dewatering • Obtain consent to discharge water from excavations and adhere to any conditions attached to it.

ALL	**Working over or near water:** • Prior approval is required form the Environment Agency for all temporary works in or near water that: o interfere with the bed or banks or flood channel of any water course o are within 8m of the bank of any main river o are within 16 m of any tidal defence • Consider using decking or barges below the works to act as a bund in the event of a spillage • Erect dust screens and splash plates on bridges • For long-term or complex works, consider placing a permanent floating boom immediately downstream of the works. • Avoid storing fuel in vessels near water • Make sure spray, dust or other airborne materials do not enter watercourses • Approaches to watercourses should be kept free from the build up of mud • Check the watercourse daily to see if it is silty, or discoloured downstream of the works, or if there is an oily sheen on the water • Ensure that site workers know where to find spill kits and how to use them (See also *'Spill Control'*).

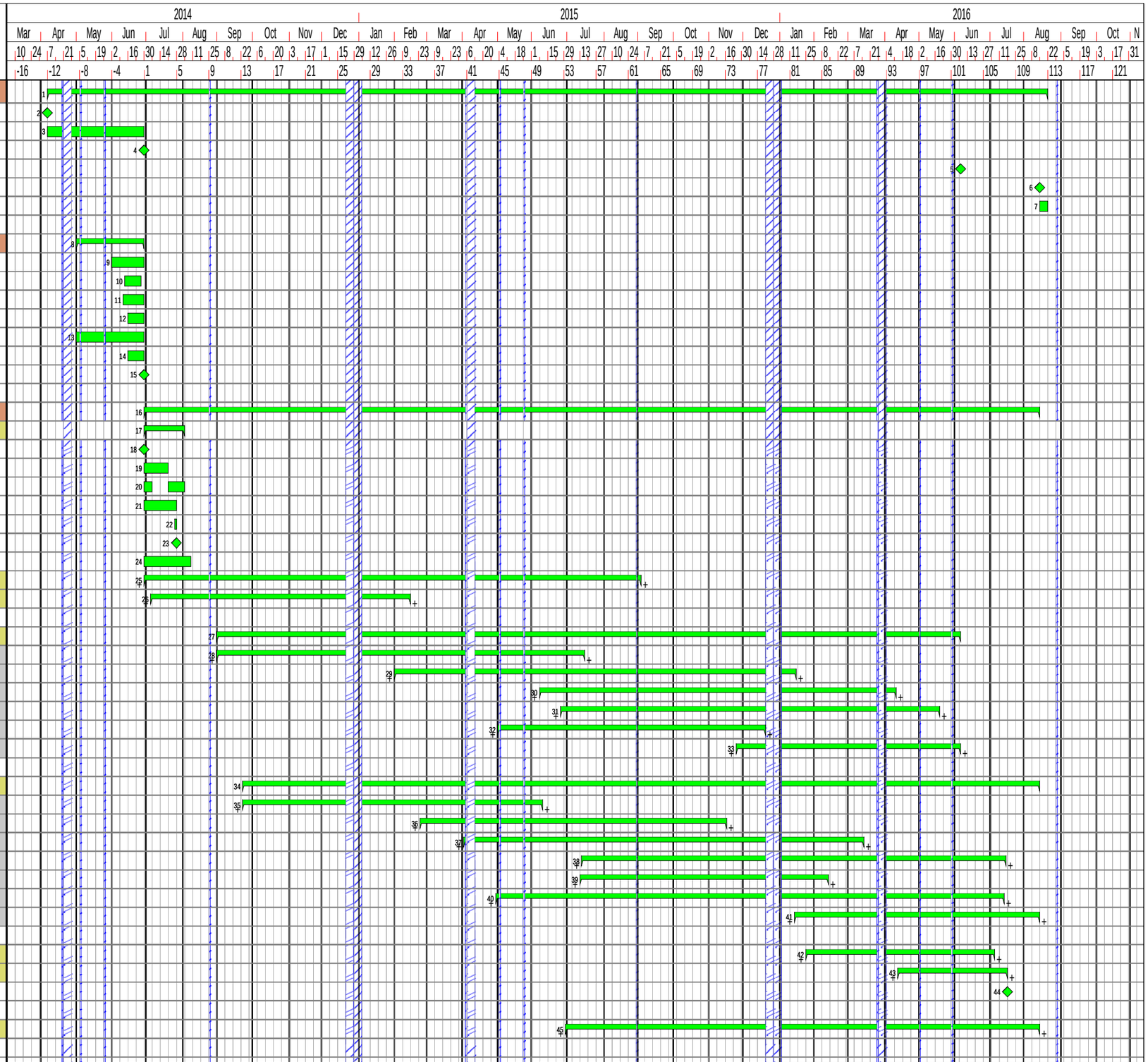
Appendix F – Outline Programme of Works

"This programme is copyright and the property of Brookfield Multiplex and must not be used with out written approval".

Proposed Halls of Residence - Cartwright Gardens

TENDER PROJECT PROGRAMME (SUMMARY)

Line	Name	Duration	Start	Finish
1	**Project Milestones**	**574d**	**07/04/2014**	**19/08/2016**
2	Financial Close		07/04/2014	07/04/2014
3	Mobilisation	52d	07/04/2014	27/06/2014
4	Start On Site		30/06/2014	30/06/2014
5	Complete Hughes Pary Tower		06/06/2016	06/06/2016
6	Practical Completion		12/08/2016	12/08/2016
7	Removal of Site Office Accomodation From Cartwright Gardens Roadway	5d	15/08/2016	19/08/2016
8	**Pre-Construction**	**40d**	**01/05/2014**	**30/06/2014**
9	Temporary Works Design	20d	02/06/2014	27/06/2014
10	Perimeter Scaffold Design	10d	12/06/2014	25/06/2014
11	Prepare & Approve Method Statement & Risk Assessment	13d	11/06/2014	27/06/2014
12	Dilapidation Survey	10d	16/06/2014	27/06/2014
13	Traffic Management Plan	40d	01/05/2014	27/06/2014
14	Asbestos Removal - Notification To Remove Asbestos	10d	16/06/2014	27/06/2014
15	Commence On Site		30/06/2014	30/06/2014
16	**Construction**	**517d**	**30/06/2014**	**12/08/2016**
17	**Site Establishment / Enabling Works**	**25d**	**30/06/2014**	**01/08/2014**
18	Commence On Site		30/06/2014	30/06/2014
19	Erect Gantry Over Cartwright Gardens Roadway	15d	30/06/2014	18/07/2014
20	Set Up Temporary Site Accomm./ Welfare Facilities	15d	30/06/2014	01/08/2014
21	Construct Temporary Pedestrian / Cycle Route Through Cartwright Gardens	20d	30/06/2014	25/07/2014
22	Install Road signage in Preparation For Road Closure Of Cartwright Gardens	1d	25/07/2014	25/07/2014
23	Close Cartwright Gardens Roadway		28/07/2014	28/07/2014
24	Erect Perimeter Hoardings	29d	30/06/2014	07/08/2014
25	**Demolition - Hughes Parry Hall & Tower**	**288d**	**30/06/2014**	**02/09/2015**
26	**Demolition - Canterbury Hall & Commonwealth Hall**	**150d**	**04/07/2014**	**13/02/2015**
27	**Hughes Parry Tower (245 Rooms)**	**424d**	**01/09/2014**	**06/06/2016**
28	**Structural Modifications**	**210d**	**01/09/2014**	**15/07/2015**
29	**External Facade**	**230d**	**02/02/2015**	**14/01/2016**
30	**Internal Finishes**	**204d**	**08/06/2015**	**11/04/2016**
31	**Lift Installations**	**217d**	**25/06/2015**	**18/05/2016**
32	**Plant Rooms**	**163d**	**01/05/2015**	**18/12/2015**
33	**Final Fit Out / Commissioning / Handover**	**121d**	**25/11/2015**	**06/06/2016**
34	**Main Building / Town Houses (Main-709, TH-172, LSW-73, total=954)**	**457d**	**23/09/2014**	**12/08/2016**
35	**Substructure**	**168d**	**23/09/2014**	**09/06/2015**
36	**Superstructure**	**181d**	**24/02/2015**	**16/11/2015**
37	**Building Envelope**	**229d**	**02/04/2015**	**14/03/2016**
38	**Lift Installation**	**244d**	**14/07/2015**	**14/07/2016**
39	**Plant Installation**	**143d**	**13/07/2015**	**11/02/2016**
40	**Internal Finishes**	**294d**	**30/04/2015**	**13/07/2016**
41	**Final Fit Out**	**144d**	**14/01/2016**	**12/08/2016**
42	**External Works**	**109d**	**22/01/2016**	**05/07/2016**
43	**Cartwright Gardens Roadway**	**66d**	**13/04/2016**	**15/07/2016**
44	Re-Open Cartwright Gardens		18/07/2016	18/07/2016
45	**Private Gardens**	**275d**	**30/06/2015**	**12/08/2016**



Date of Issue: 27/02/2014 Drawn By: MEArcher

Print Date: 13/03/2014 Reviewed By: B Day

Comments:

Programme No.: CG-TP-002d

Revision: Revision Date: 13/03/2014

File Path: C:\Programmes 2014\Cartwright Gardens\Indicative Construction Programme 30.pp

Appendix G – Tree Protection Proposal

Cartwright Gardens (Ref: 2013/1598/P) – Condition 6

Introduction

Condition 6 of the Cartwright Gardens Planning Permission (Ref: 2013/1598/P) requires details of how trees to be retained will be protected during construction works at the site.

The locations of the trees within the boundary and adjacent to the Development to be removed and protected are shown on the Thompson Ecology drawing AUPP101/11140/1 (See Appendix A). (This formed part of Arboricultural Survey, Impact Assessment and Method Statement submitted for planning).

The majority of trees to be retained are located within Cartwright Gardens Open Space, where there will be the introduction of new hard landscaping and soft landscaping.
A number of trees are also located along Sandwich Street and Leigh Street.

Sandwich Street and Leigh Street

To the east of the Development there are six trees located within Sandwich Street (T7, T8, T9, T10, T11 and T12) and a further two trees to the south along Leigh Street (T13 and T14).

T7, T8, T9, T10, T11, T12, T13 and T14 are located within the public footpath outside the Development boundary. Construction traffic will access the development from Cartwright Gardens which will ensure that the trees within both Sandwich Street and Leigh Street will not be affected by the works.

These trees will be further protected from construction activity by the sturdy site boundary hoardings.

We have undertaken specialist advice from Thompson Ecology in regard to protecting these trees during construction. The protection measures are outlined below and in Appendix B.

This appendix details additional controls which will be employed should any works be required within the root protection area (RPA).

T7 and T8

The RPAs of T7 and T8 have been adjusted to take into account existing retaining wall and buried structure, which forms a root barrier onto the site. This means it is unlikely that there are any roots from these trees on site that could be affected by the proposed development. The location of the existing buried structure is detailed upon Cundall drawing SLXX(23) 1020 and SLXX(28) 5060. (See appendix C).

Drawings below detail the existing buried structure.

- SLXX(23) 1020
- SLXX(28) 5060 - Refer to sections 1-1 and 2-2

T9, T10, T11, T12, T13 and T14

The existing light well forms a root barrier preventing roots from these trees entering the site. The configuration of the existing light well is shown within the Cundall drawings SLXX(23) 1020, 1021 and SLXX(28) 5050 ,5061 and 5062. (See appendix C).

Drawings below detail to the existing light wells.

- SLXX(23) 1020
- SLXX(23) 1021
- SLXX(28) 5060 - Refer to sections 3-3 and 4-4
- SLXX(28) 5061 - Refer to sections 5-5, 6-6, 7a-7a and 7b-7b.

- SLXX(28) 5062 - Refer to sections 8b-8b.

Gardens

Drawing AUPP101/11140/1 (Appendix A) details the location of the tree protection fencing which will be erected within the garden to ensure that the root protection area (RPA) of the existing mature trees is protected.

As noted on the drawing works will require construction activities to be undertaken within the RPA. While working within the RPA 'no-dig' construction techniques will be utilised incorporating the following:

- The tree protection zone will be closed off with rigidly secured Heras fence panels as detailed within BS5837:2012 ("Trees in Relation to Construction"). Appendix D details the fencing system which will be used. Where access is required within the RPA an opening will be formed within the fencing. Following the completion of the works the fence will be re-secured.

- The procedure associated for the excavation operations within the RPA will utilise the use of spades (hand held breakers for hard surfaces). Compacted soil will be loosened by the use of air guns. Any exposed roots would be covered with damp hessian sacks to maintain the root moisture. Arisings will be moved to a suitable collection point outside the boundary of the RPA for removal from site or re-used elsewhere.

- Areas of existing hard landscaping which are to be removed and currently located within the RPA will be removed with the use of small mechanical plant which will be footed either outside of the RPA or upon the existing hard standing which is to be removed.

Appendix A

thomson ecology
www.thomsonecology.com
enquiries@thomsonecology.com
Legend
Tree Protection Fencing
'No Dig' Construction Methods
Ground Protection Afforded by Existing Hardstanding
Ground Protection
Root Protection Area of Category 'B' Tree
Root Protection Area of Category 'C' Tree
Tree to be Removed
Tree Stem Location
Site Boundary
Proposed Development
Site Grid Reference: 530060 182549
Site Postcode: WC1H 9EE
Base mapping supplied by the client University Partnerships Programme. All rights reserved.
This map must not be copied or reproduced by any means without prior written permission from Thomson Ecology Ltd.
Drawing Ref
AUPP101/11140/1
Scale at A3
1:800
Drawn
NS
Checked
TD
Date
02/10/2012
Date
02/10/2012
Client
University of London
Figure Number
3
Figure Title
Tree Protection Plan (TPP01)
N
0
10
20
Metres
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15
T16
T17
T18
T19
T20
T21
T22
T23
T24
T25
T26
T27
T28
T29
T30
T31
T32
T33
T34
T35
T36
T37
T38
T39
T40
T41
T42

Appendix B

From: Sam Lowe
Sent: 04 February 2014 10:53
To: Andrew Richardson
Subject: RE: UPP Cartwright Gardens - Planning Condition 6

Andrew,

In the case of T7 and T8, their RPAs have been adjusted to take into account a retaining wall, which forms a root barrier onto the site. This means it is unlikely that there are any roots from these trees on site that could be affected by the proposed development. T7 and T8 will also be protected from the construction activity on site by sturdy site boundary hoardings.

With regard to the other streets on Sandwich Street (T9 to T12) and Leigh Street (T13 and T14), a light well also forms a root barrier preventing roots from these trees entering the site. Site boundary hoarding will also protect these trees from the construction activities on site.

Any excavation required directly adjacent to these RPAs will be undertaken by hand for the first 1m in depth, with any roots exposed under 25mm in diameter being pruned back leaving a clean-cut surface and to a lateral root, where possible. Any clumps of roots, or roots over 25mm, will be assessed for their suitability for pruning by suitably qualified and experienced arboriculturist. Any roots exposed during construction activities in this area will be covered in dry hessian cloth and not left exposed for more than 24 hours.

I hope this is what you had in mind, but just let me know if you need anything else.

Kind regards,

Sam

Sam Lowe BSc (Hons) MSc TechCert(ArborA) MArborA
Head of Arboriculture

Thomson Ecology Ltd

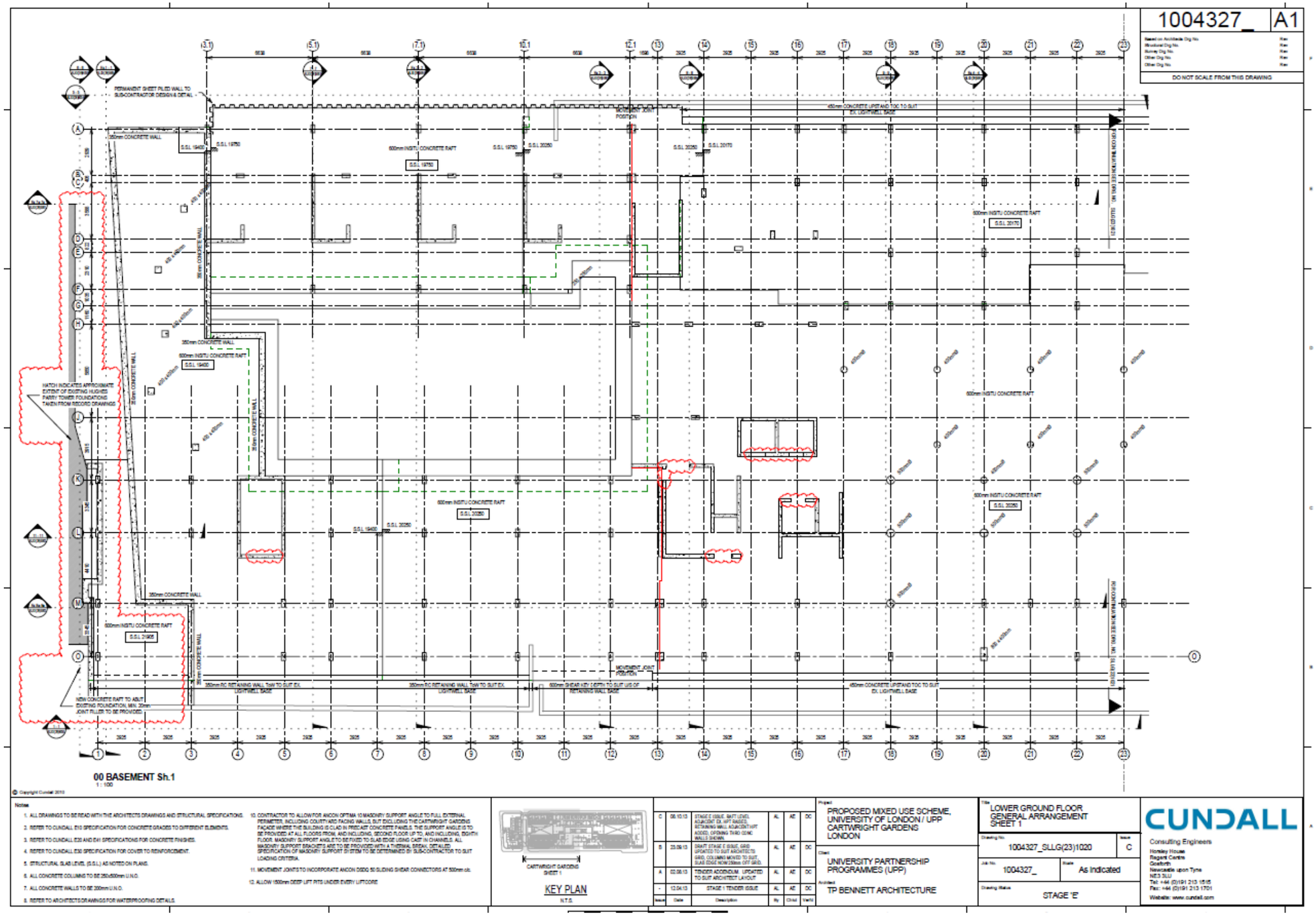
D: 01483 466034 M: 07768 203821 T: 01483 466000
Compass House, Surrey Research Park, Guildford, GU2 7AG, UK

www.thomsonecology.com

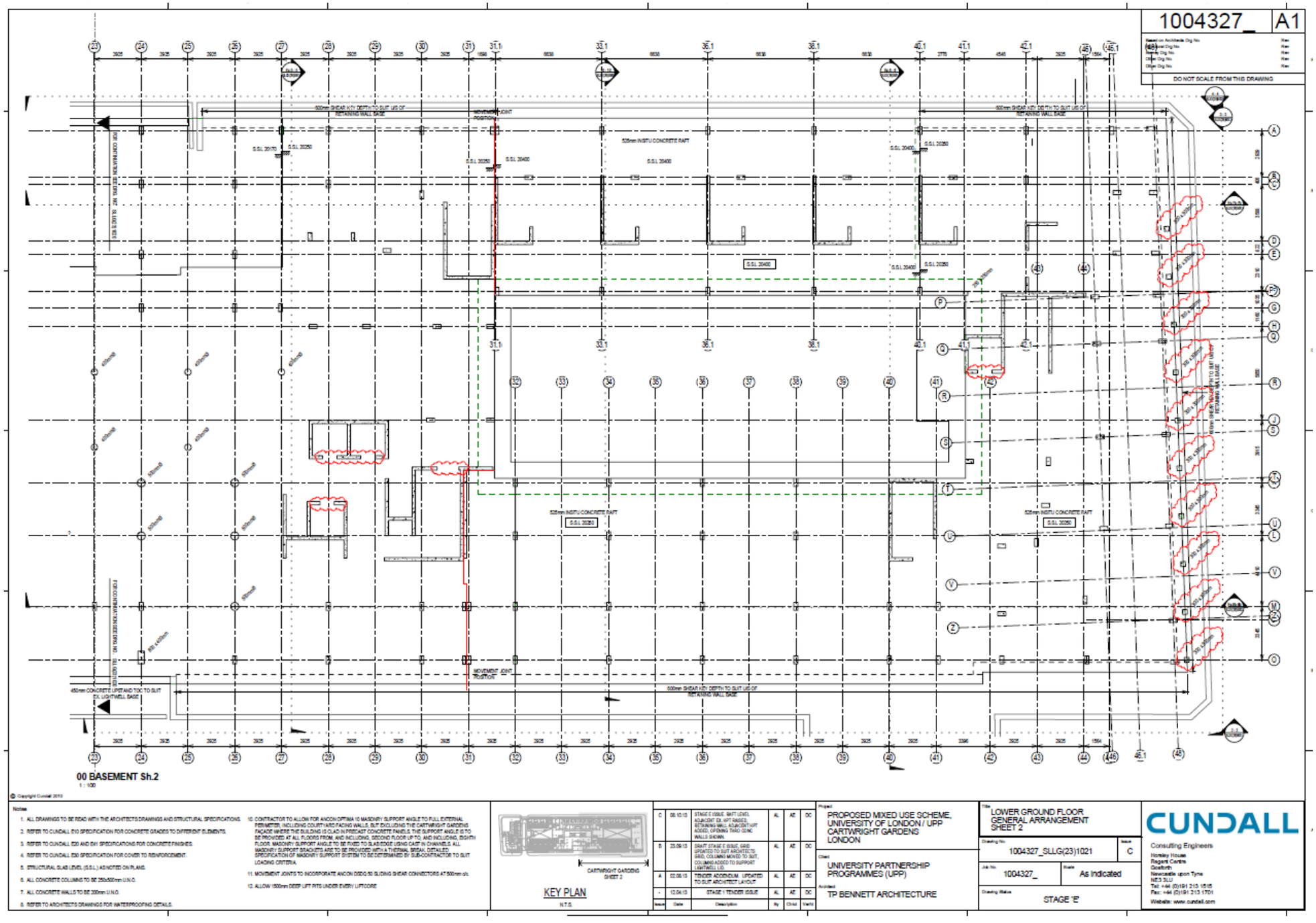
IMPORTANT - This email was sent from an email address under the control of Thomson Ecology Ltd. Please read our email receipt policy here.

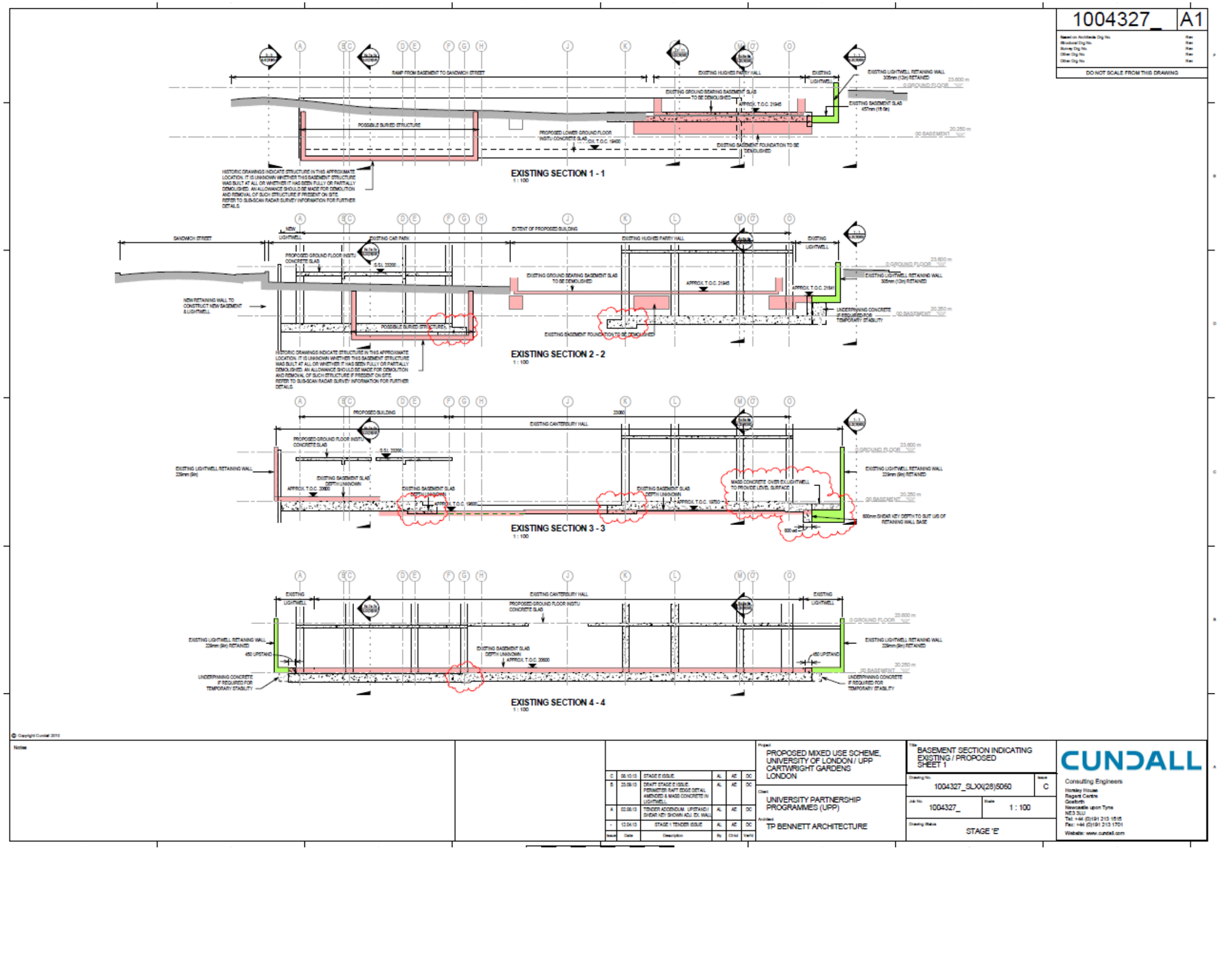
This message has been scanned by Mimecast supplied by Computer Strategies.

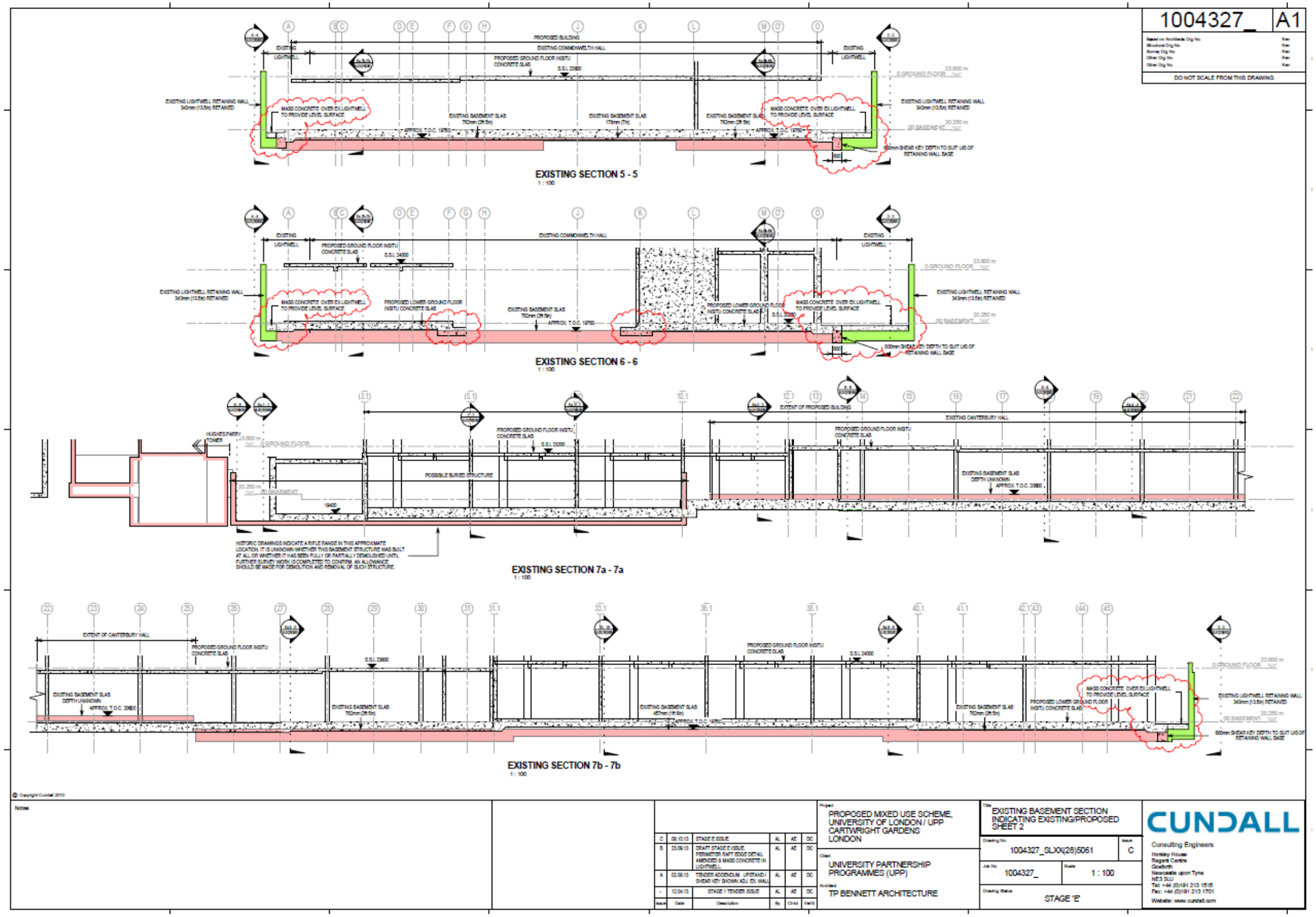
Appendix C


1004327_ A1
DO NOT SCALE FROM THIS DRAWING
00 BASEMENT Sh.1
1 : 100
KEY PLAN
N.T.S.
PROPOSED MIXED USE SCHEME, UNIVERSITY OF LONDON / UPP CARTWRIGHT GARDENS LONDON
UNIVERSITY PARTNERSHIP PROGRAMMES (UPP)
TP BENNETT ARCHITECTURE
LOWER GROUND FLOOR GENERAL ARRANGEMENT SHEET 1
1004327_SLLG(23)1020
C
1004327_
As Indicated
STAGE 'E'
CUNDALL
Consulting Engineers
Horsley House
Regent Centre
Gosforth
Newcastle upon Tyne
NE3 3LU
Tel: +44 (0)191 213 1515
Fax: +44 (0)191 213 1701
Website: www.cundall.com

Cartwright Gardens (Ref: 2013/1598/P) – Condition 6

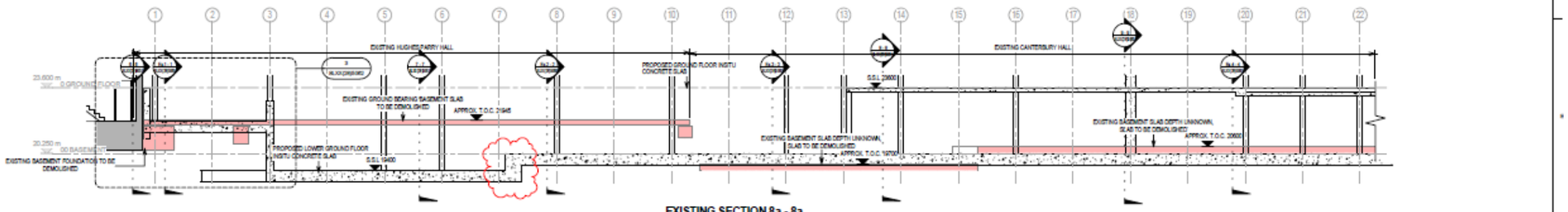



1004327_ A1
DO NOT SCALE FROM THIS DRAWING
EXISTING SECTION 1 - 1
1 : 100
RAMP FROM BASEMENT TO SANDWICH STREET
EXISTING HUGHES PARRY HALL
EXISTING LIGHTWELL
EXISTING LIGHTWELL RETAINING WALL 305mm (12in) RETAINED
EXISTING GROUND BEARING BASEMENT SLAB TO BE DEMOLISHED
APPROX. T.O.C. 21945
EXISTING BASEMENT SLAB 457mm (18 0in)
POSSIBLE BURIED STRUCTURE
PROPOSED LOWER GROUND FLOOR INSITU CONCRETE SLAB
APPROX. T.O.C. 19400
EXISTING BASEMENT FOUNDATION TO BE DEMOLISHED
HISTORIC DRAWINGS INDICATE STRUCTURE IN THIS APPROXIMATE LOCATION. IT IS UNKNOWN WHETHER THIS BASEMENT STRUCTURE WAS BUILT AT ALL OR WHETHER IT HAS BEEN FULLY OR PARTIALLY DEMOLISHED. AN ALLOWANCE SHOULD BE MADE FOR DEMOLITION AND REMOVAL OF SUCH STRUCTURE IF PRESENT ON SITE. REFER TO SUB-SCAN RADAR SURVEY INFORMATION FOR FURTHER DETAILS.
EXISTING SECTION 2 - 2
1 : 100
SANDWICH STREET
NEW LIGHTWELL
EXISTING CAR PARK
EXTENT OF PROPOSED BUILDING
PROPOSED GROUND FLOOR INSITU CONCRETE SLAB
S.S.L 23300
NEW RETAINING WALL TO CONSTRUCT NEW BASEMENT & LIGHTWELL
EXISTING LIGHTWELL RETAINING WALL 305mm (12in) RETAINED
UNDERPINNING CONCRETE IF REQUIRED FOR TEMPORARY STABILITY
EXISTING SECTION 3 - 3
1 : 100
PROPOSED BUILDING
EXISTING CANTERBURY HALL
EXISTING LIGHTWELL RETAINING WALL 229mm (9in)
EXISTING BASEMENT SLAB DEPTH UNKNOWN
APPROX. T.O.C. 20600
APPROX. T.O.C. 19600
APPROX. T.O.C. 19750
MASS CONCRETE OVER EX.LIGHTWELL TO PROVIDE LEVEL SURFACE
600mm SHEAR KEY DEPTH TO SUIT U/S OF RETAINING WALL BASE
EXISTING SECTION 4 - 4
1 : 100
450 UPSTAND
0 GROUND FLOOR 23.600 m
00 BASEMENT 20.250 m
© Copyright Cundall 2013
Notes
C 08.10.13 STAGE E ISSUE AL AE DC
B 23.09.13 DRAFT STAGE E ISSUE. PERIMETER RAFT EDGE DETAIL AMENDED & MASS CONCRETE IN LIGHTWELL AL AE DC
A 02.09.13 TENDER ADDENDUM - UPSTAND / SHEAR KEY SHOWN ADJ. EX. WALL AL AE DC
- 12.04.13 STAGE 1 TENDER ISSUE AL AE DC
Issue Date Description By Chkd Verfd
Project: PROPOSED MIXED USE SCHEME, UNIVERSITY OF LONDON / UPP CARTWRIGHT GARDENS LONDON
Client: UNIVERSITY PARTNERSHIP PROGRAMMES (UPP)
Architect: TP BENNETT ARCHITECTURE
Title: BASEMENT SECTION INDICATING EXISTING / PROPOSED SHEET 1
Drawing No.: 1004327_SJX0(28)5060
Issue: C
Job No.: 1004327_
Scale: 1 : 100
Drawing Status: STAGE 'E'
CUNDALL
Consulting Engineers
Horsley House
Regent Centre
Gosforth
Newcastle upon Tyne
NE3 3LU
Tel: +44 (0)191 213 1515
Fax: +44 (0)191 213 1701
Website: www.cundall.com

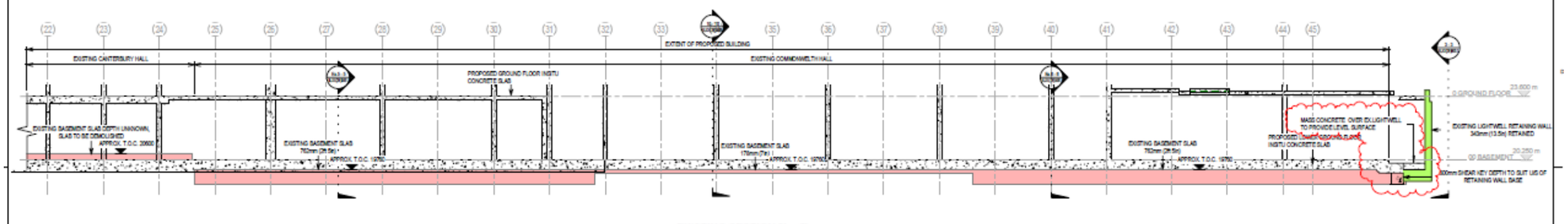

1004327_ A1
DO NOT SCALE FROM THIS DRAWING
EXISTING SECTION 5 - 5
1 : 100
EXISTING SECTION 6 - 6
1 : 100
EXISTING SECTION 7a - 7a
1 : 100
EXISTING SECTION 7b - 7b
1 : 100
PROPOSED MIXED USE SCHEME, UNIVERSITY OF LONDON / UPP CARTWRIGHT GARDENS LONDON
UNIVERSITY PARTNERSHIP PROGRAMMES (UPP)
TP BENNETT ARCHITECTURE
EXISTING BASEMENT SECTION INDICATING EXISTING/PROPOSED SHEET 2
1004327_SLXX(28)5061
C
1004327_
1 : 100
STAGE 'E'
CUNDALL
Consulting Engineers
Horsley House
Regent Centre
Gosforth
Newcastle upon Tyne
NE3 3LU
Tel: +44 (0)191 213 1515
Fax: +44 (0)191 213 1701
Website: www.cundall.com

1004327_ A1

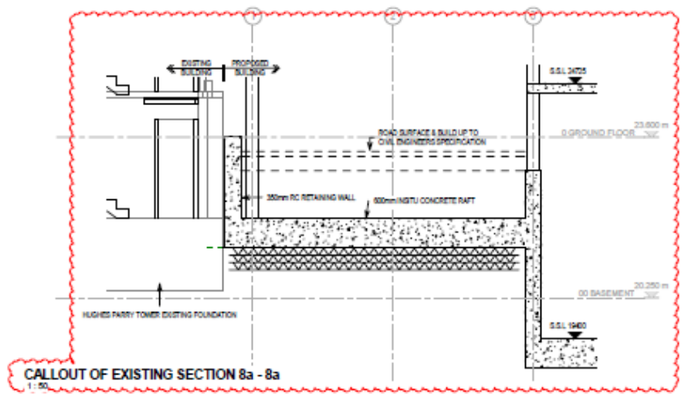
DO NOT SCALE FROM THIS DRAWING



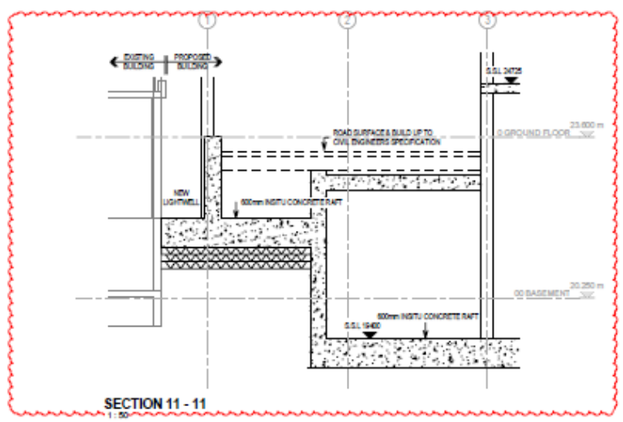
EXISTING SECTION 8a - 8a
1 : 100



EXISTING SECTION 8b - 8b
1 : 100



CALLOUT OF EXISTING SECTION 8a - 8a
1 : 50



SECTION 11 - 11
1 : 50

© Copyright Cundall 2013

Notes

C	08.10.13	STAGE E ISSUE. SECTIONAL DETAILS ADDED.	AL	AT	DC
B	23.09.13	DRAFT STAGE E ISSUE. PERIMETER RAFT EDGE DETAIL AMENDED & MASS CONCRETE IN LIGHTWELL.	AL	AT	DC
A	02.09.13	TENDER ADDENDUM. UPSTAND / SHEAR KEY SHOWN ADJ. EX. WALL	AL	AT	DC
-	12.04.13	STAGE 1 TENDER ISSUE	AL	AT	DC
Issue	Date	Description	By	Chkd	Verfd

Project
PROPOSED MIXED USE SCHEME, UNIVERSITY OF LONDON / UPP CARTWRIGHT GARDENS LONDON

Client
UNIVERSITY PARTNERSHIP PROGRAMMES (UPP)

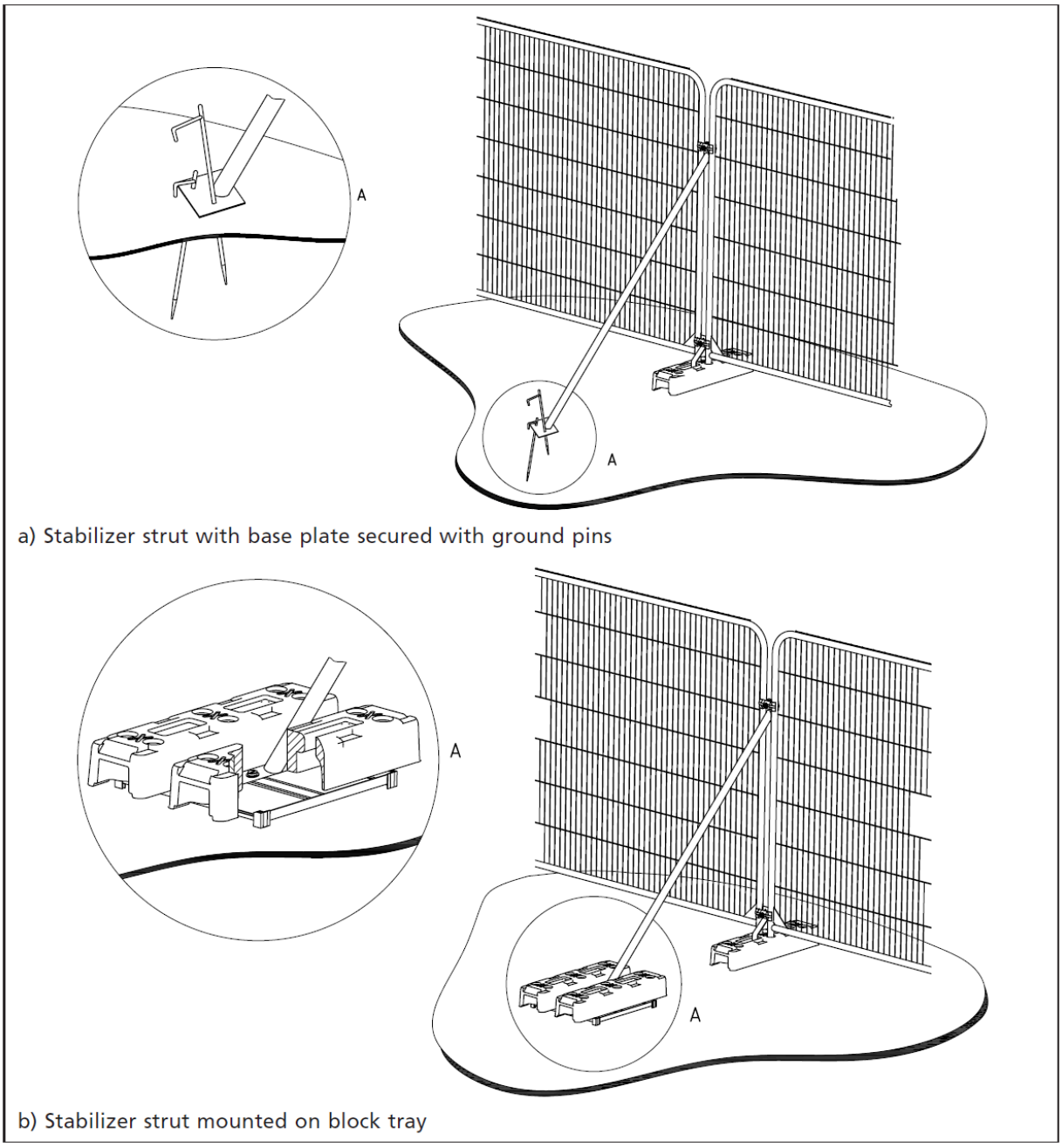
Architect
TP BENNETT ARCHITECTURE

Title
EXISTING BASEMENT SECTION INDICATING EXISTING/PROPOSED SHEET 3

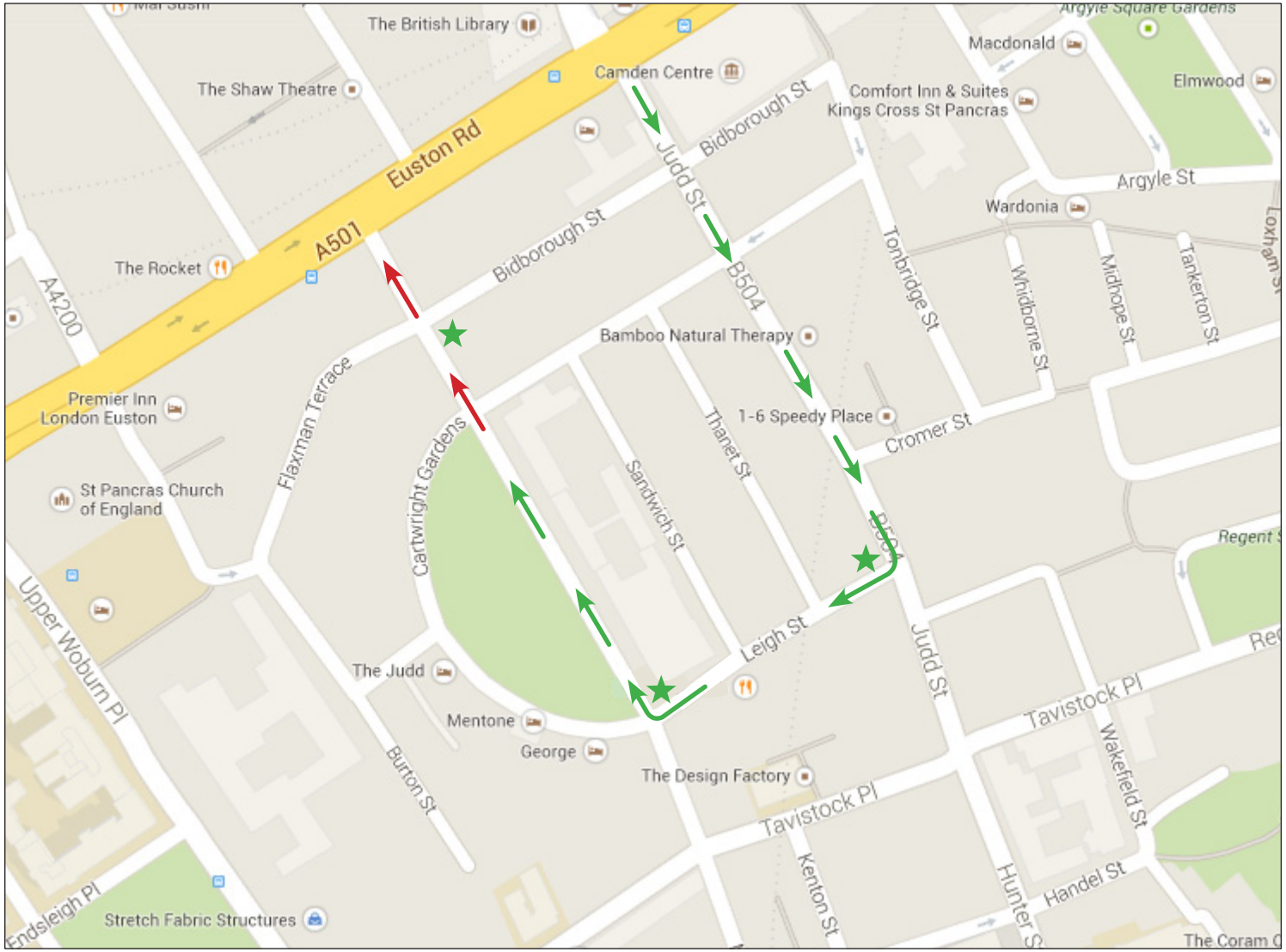
Drawing No. 1004327_SLXX(28)5062 — Issue C
Job No. 1004327_ — Scale As Indicated
Drawing Status STAGE 'E'

CUNDALL
Consulting Engineers
Horsley House
Regent Centre
Gosforth
Newcastle upon Tyne
NE3 3LU
Tel: +44 (0)191 213 1515
Fax: +44 (0)191 213 1701
Website: www.cundall.com

Appendix D


A
A
a) Stabilizer strut with base plate secured with ground pins
A
A
b) Stabilizer strut mounted on block tray

Appendix H – Traffic Management Plan



GENERAL NOTES:

1. All construction vehicles over 9.5m (articulated) will access the Cartwright Gardens site via Judd Street and Leigh Street. This is so they make Right Hand turns only. They would exit the Cartwright Gardens site north bound onto Mabledon Place back to the Euston Road

KEY:

- Access for 15.0m Articulated vehicles
- Egress for 15.0m Articulated vehicles
- Traffic Marshal

MUNNELLY LOGISTICS

Devonshire House
84-88 Pinner Road
Harrow
HA1 4LP

T: 08450758484
F: 08450758485
www.munnellys.com

CLIENT:

Brookfield MULTIPLEX BM

TITLE:
ACCESS / EGRESS FOR 15.0M ARTICULATED VEHICLES

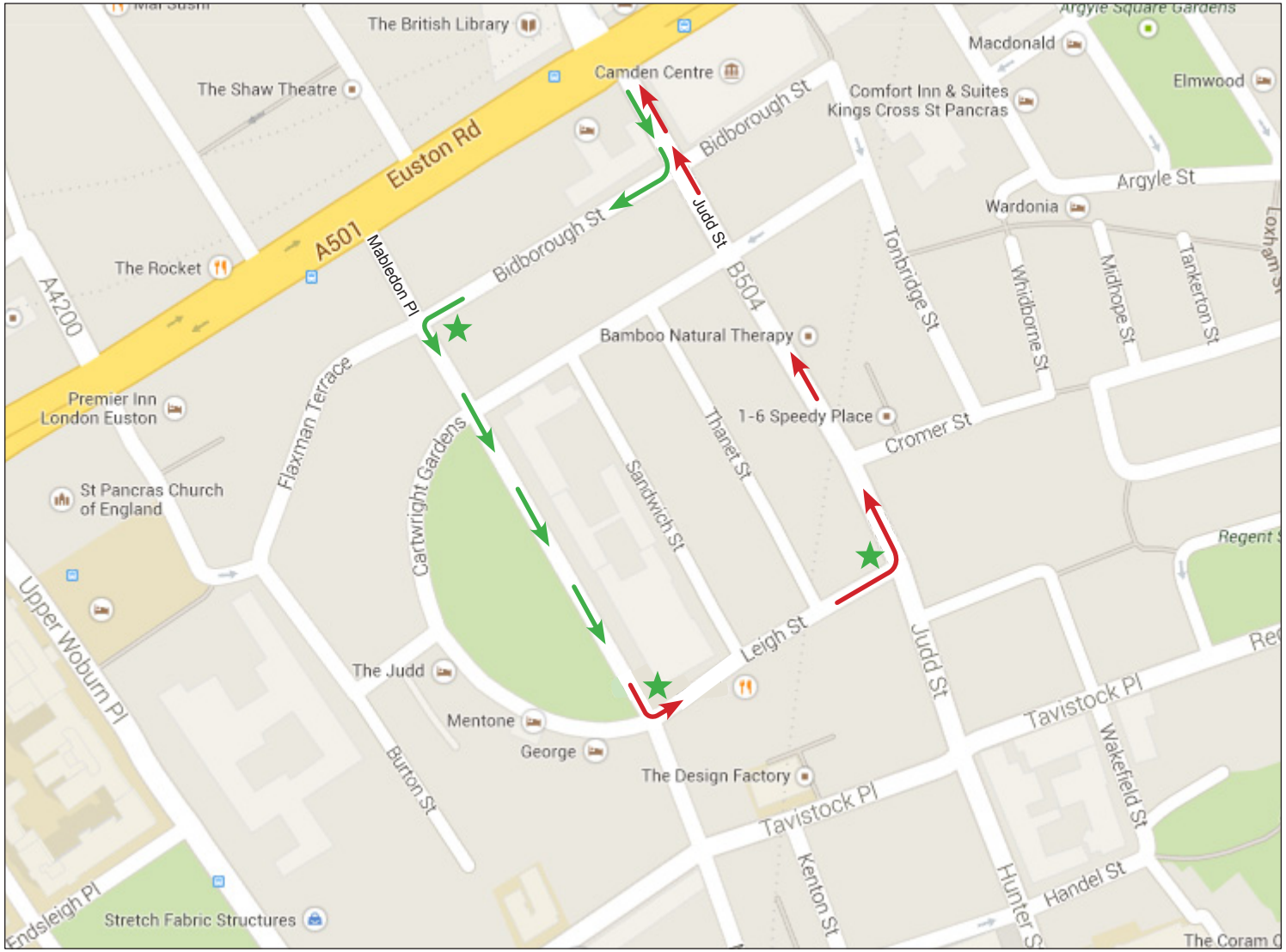
PROJECT:
CARTWRIGHT GARDENS

STATUS:
FOR INFORMATION

JOB NUMBER:
CW1405_22

DRAWN:	CHECKED:	APPROVED:
CB	WN	WN
SCALE:	**DATE:**	**JOB NO:**
NTS	22/05/14	23

DRAWING NUMBER:	REVISION:
001405_22_4	



GENERAL NOTES:

1. Construction vehicles under 9.5m will access the Cartwright Gardens site from the north (Judd Street, Bidborough Street and Mabledon Place). During the majority of the Construction phase the vehicles will exit the Cartwright Gardens site north bound (having turned around in the confines of the site). For a limited time the vehicles under 9.5m will exit the Cartwright Gardens site via Leigh Street and Judd Street.

This will be over the first 9 weeks of the project (1 July 2014 to early September 2014) subsequently they will also have to use this route between the beginning of January 2015 and the end of May 2015. Vehicles less than 9.5m in length will egress Cartwright Gardens using Leigh Street and Judd Street outside the hours of the Cartwright Garden Road Closure.

KEY:

- Access Route for 9.5m vehicles
- Egress Route for 9.5m vehicles
- Traffic Marshal

MUNNELLY LOGISTICS

Devonshire House
84-88 Pinner Road
Harrow
HA1 4LP

T: 08450758484
F: 08450758485
www.munnellys.com

CLIENT:

Brookfield MULTIPLEX BM

TITLE:
9.5M VEHICLE ACCESS / EGRESS ROUTE - TURN

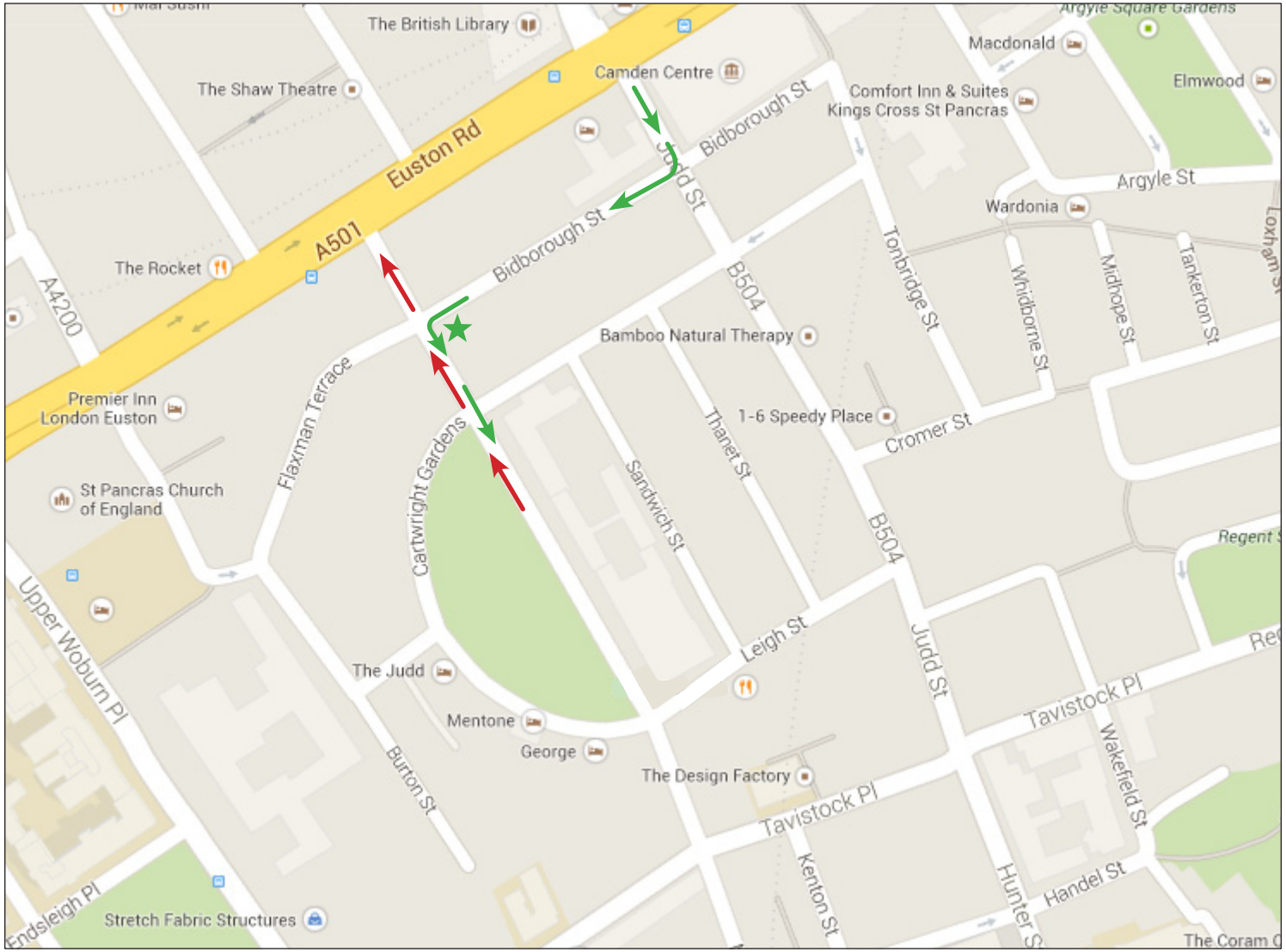
PROJECT:
CARTWRIGHT GARDENS

STATUS:
FOR INFORMATION

JOB NUMBER:
CW1405_22

DRAWN:	CHECKED:	APPROVED:
CB	WN	WN
SCALE:	**DATE:**	**JOB NO:**
NTS	22/05/14	23

DRAWING NUMBER:	REVISION:
001405_22_5	



GENERAL NOTES:

1. Construction vehicles under 9.5m will access the Cartwright Gardens site from the north (Judd Street, Bidborough Street and Mabledon Place). During the majority of the Construction phase the vehicles will exit the Cartwright Gardens site north bound (having turned around in the confines of the site). For a limited time the vehicles under 9.5m will exit the Cartwright Gardens site via Leigh Street and Judd Street.

This will be over the first 9 weeks of the project (1 July 2014 to early September 2014) subsequently they will also have to use this route between the beginning of January 2015 and the end of May 2015. Vehicles less than 9.5m in length will egress Cartwright Gardens using Leigh Street and Judd Street outside the hours of the Cartwright Garden Road Closure.

KEY:

- Access Route for 9.5m vehicles
- Egress Route for 9.5m vehicles
- Traffic Marshal

MUNNELLY LOGISTICS

Devonshire House
84-88 Pinner Road
Harrow
HA1 4LP

T: 08450758484
F: 08450758485
www.munnellys.com

CLIENT:

Brookfield MULTIPLEX BM

TITLE:
9.5M VEHICLE ACCESS / EGRESS ROUTE - TURN

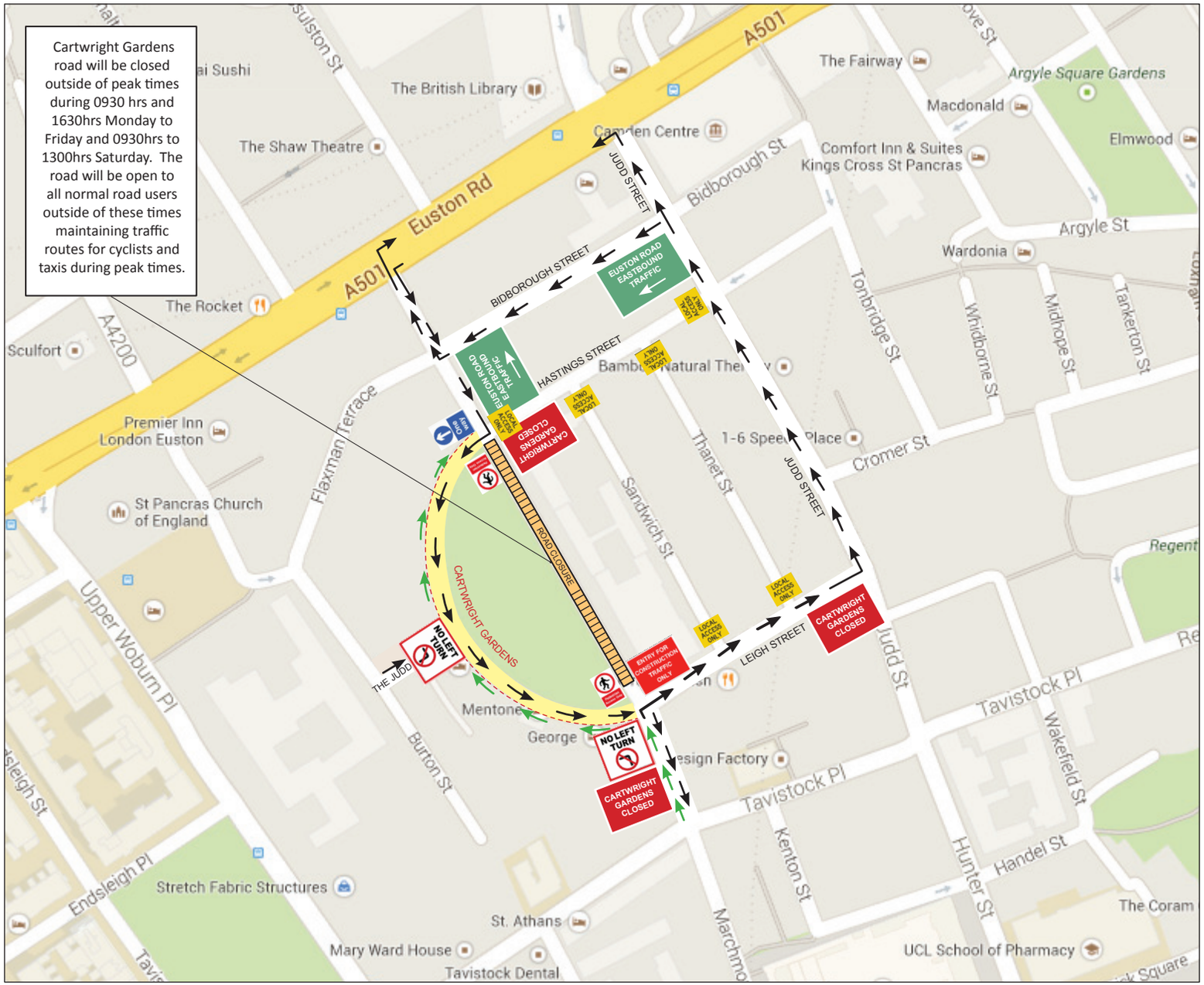
PROJECT:
CARTWRIGHT GARDENS

STATUS:
FOR INFORMATION

JOB NUMBER:
CW1405_22

DRAWN:	CHECKED:	APPROVED:
CB	WN	WN
SCALE:	**DATE:**	**JOB NO:**
NTS	22/05/14	23

DRAWING NUMBER:	REVISION:
001405_22_5	



GENERAL NOTES:

1. No left turn from The Judd onto Cartwright Gardens Crescent.
2. No left turn from Marchmont Street onto Cartwright Gardens.
3. Section of Cartwright Gardens closed to create contruction traffic unloading zone whilst other section becomes a one way traffic zone.
4. Pedestrian traffic is redirected via park.
5. Local traffic access / egress only on Sandwich Street, Thanet Street and Hastings Street.
6. Cycle Traffic diverts via Crescent.
7. Cartwright Gardens road will be closed outside of peak times during 0930 hrs and 1630hrs Monday to Friday and 0930hrs to 1300hrs Saturday. The road will be open to all normal road users outside of these times maintaining traffic routes for cyclists and taxis during peak times.

KEY:

Public Traffic

Cycle Route

MUNNELLY LOGISTICS

Devonshire House
84-88 Pinner Road
Harrow
HA1 4LP

T: 08450758484
F: 08450758485
www.munnellys.com

CLIENT:

Brookfield MULTIPLEX BM

TITLE:

TRAFFIC MANAGEMENT SCHEME DURING PERIOD WHEN CARTWRIGHT GARDENS IS CLOSED

PROJECT:

CARTWRIGHT GARDENS

STATUS:

FOR INFORMATION

JOB NUMBER:

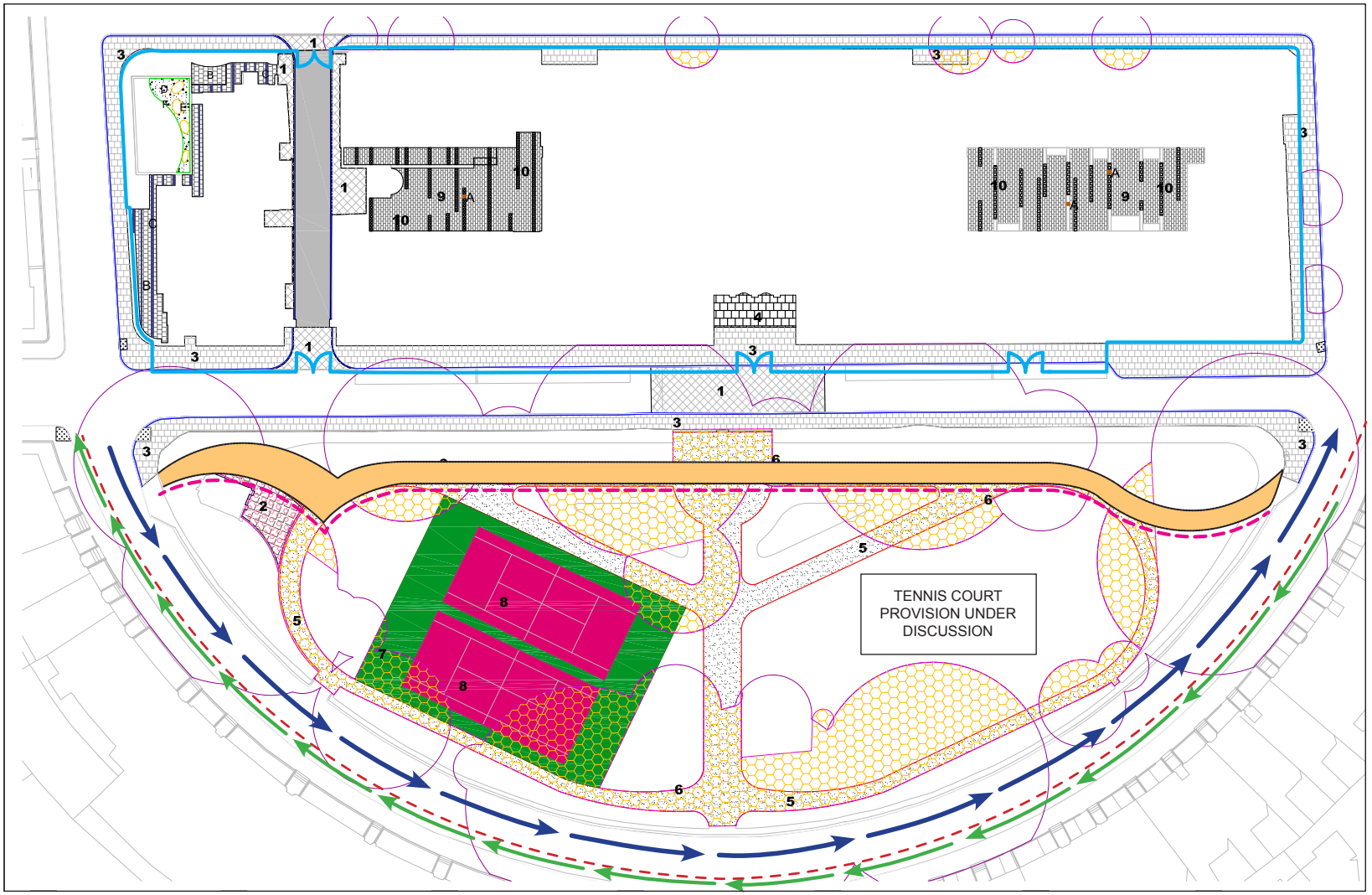
CW1405_28

DRAWN:	CHECKED:	APPROVED:
CB	WN	WN
SCALE:	**DATE:**	**JOB NO:**
NTS	28/05/14	22

DRAWING NUMBER:

001405_28_2

REVISION:



GENERAL NOTES:

KEY:

- Vehicle and Cycle Route around Crescent
- Cycle Route North bound around Crescent
- Perimeter hoarding line
- Temporary pedestrian footpath
- Line of Heras Fencing

MUNNELLY LOGISTICS

Devonshire House
84-88 Pinner Road
Harrow
HA1 4LP

T: 08450758484
F: 08450758485
www.munnellys.com

CLIENT:

Brookfield MULTIPLEX BM

TITLE:
CYCLIST DIVERSION WHEN CARTWRIGHT GARDENS IS CLOSED

PROJECT:
CARTWRIGHT GARDENS

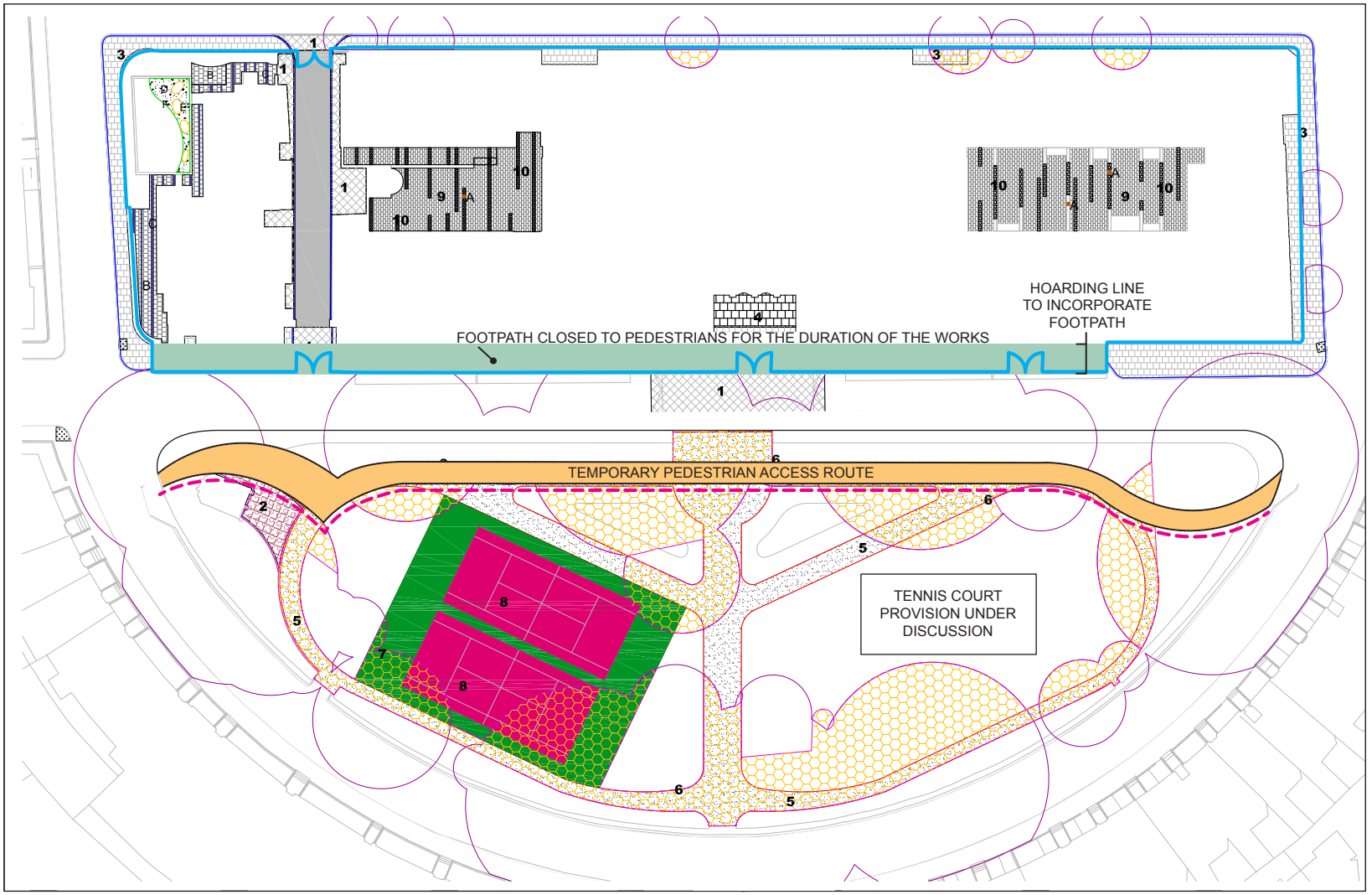
STATUS:
FOR INFORMATION

JOB NUMBER:
CW1405_22

DRAWN:	CHECKED:	APPROVED:
CB	WN	WN

SCALE:	DATE:	JOB NO:
NTS	22/05/14	22

DRAWING NUMBER:	REVISION:
001405_22_3	



GENERAL NOTES:

NOTE:
Pedestrian footpath to building frontage to be closed for the duration of the works. Temporary footpath to be formed within the gardens as shown.

KEY:

- Temporary pedestrian footpath
- Line of Heras Fencing adjacent to temporary footpath with the garden
- Footpath adjacent to building frontage closed
- Perimeter hoarding line

MUNNELLY LOGISTICS

Devonshire House
84-88 Pinner Road
Harrow
HA1 4LP

T: 08450758484
F: 08450758485
www.munnellys.com

CLIENT:

Brookfield MULTIPLEX BM

TITLE:
CARTWRIGHT GARDENS TEMPORARY FOOTPATH ROUTE

PROJECT:
CARTWRIGHT GARDENS

STATUS:
FOR INFORMATION

JOB NUMBER:
CW1405_22

DRAWN:	CHECKED:	APPROVED:
CB	WN	WN

SCALE:	DATE:	JOB NO:
NTS	22/05/14	23

DRAWING NUMBER:	REVISION:
001405_22_1	

Appendix J – Construction Noise, Vibration and Dust Management Plan.

MANAGING DIRECTOR
MATTHEW PALAVIDIS

ASSOCIATE
PAUL GORING

CARTWRIGHT GARDENS, LONDON

CONSTRUCTION NOISE, VIBRATION AND DUST

0149/140417A/PG

UKAS TESTING
8009

London
A: Charter House,
12 Russell Gardens, London
W14 8EZ
T: 020 7603 5196

SYDNEY MELBOURNE
BRISBANE CANBERRA
LONDON DUBAI
SINGAPORE ATHENS

Accredited Contractor
www.chas.gov.uk

www.acousticlogic.com.au

The information in this document is the property of Acoustic Logic Consultancy (UK) Ltd Company No. 06487654 and shall be returned on demand. It is issued on the condition that, except with our written permission, it must not be reproduced, copied or communicated to any other party nor be used for any purpose other than that stated in particular enquiry, order or contract with which it is issued.

DOCUMENT CONTROL REGISTER

Project Number	0149
Client	Brookfield Multiplex Construction Europe Limited
Client Address	99 Bishopsgate, 2nd Floor, London EC2M 3XD
Project Name	Cartwright Gardens, London
Document Title	CONSTRUCTION NOISE, VIBRATION AND DUST
Document Reference	0149/140417A/PG
Addressed To	Mr A Richardson
Issue Type	☒ Email ☐ Mail Out

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
00	15-04-2014	0149/140415A/PG	PG	PG	PG
01	13-05-2014	0149/140415A/PG	PG	PG	PG

THIS REPORT AND ALL THE INFORMATION THEREON IS THE PROPERTY OF ACOUSTIC LOGIC CONSULTANCY (UK) LTD AND SHALL BE RETURNED ON DEMAND. IT IS ISSUED ON THE CONDITION THAT EXCEPT WITH OUR WRITTEN PERMISSION IT MUST NOT BE REPRODUCED, COPIED OR COMMUNICATED TO ANY OTHER PARTY NOR BE USED FOR ANY PURPOSE OTHER THAN THAT STATED IN PARTICULAR ENQUIRY, ORDER OR CONTRACT WITH WHICH IT IS ISSUED.

TABLE OF CONTENTS

1 INTRODUCTION 4
2 PROJECT DESCRIPTION 5
3 POTENTIALLY AFFECTED RECEIVERS 5
4 BASELINE NOISE SURVEY 6
4.1 WEATHER CONDITIONS 6
4.2 SURVEY DETAILS 6
4.3 CALIBRATION 6
4.4 NOISE DATA 7
5 CONSTRUCTION EMISSIONS CRITERIA 8
5.1 NOISE GOALS 8
5.1.1 Noise from Construction and Demolition 8
5.1.2 Noise Control Measures 9
5.1.3 Construction Noise Threshold and Trigger Level Exceedances 10
5.1.4 Public Notification 11
5.2 VIBRATION GOALS 12
5.3 DUST GOALS 13
5.3.1 Prevention 13
5.3.1.1 Design Control Measures 13
5.3.1.2 Control Measures 13
5.3.2 Suppression 14
5.3.3 Containment 15
5.3.4 Dust Inspections 15
6 MONITORING LOCATIONS 16

1 INTRODUCTION

This document has been prepared by Acoustic Logic Consultancy UK (ALC) on behalf of Brookfield Multiplex Construction Europe Ltd (BMCE) for the purpose of assessing the noise, vibration and dust from the Cartwright Gardens development, London. The document summarises the noise, vibration and dust monitoring procedure and best practice for the construction management stage of the project.

These operations include;

1. Soft strip out.
2. Demolition and site clearance where applicable.
3. Excavation works.
4. Sheet piling works.
5. Structural steel works.
6. Construction of remaining building structure including concrete etc.
7. External facade installation.
8. Internal fit out.

This assessment was conducted in accordance with the requirements set out by the London Borough of Camden (LBC) as presented in this report.

BMCE is committed to avoiding unnecessary noise, vibration and dust levels during the de-construction and construction programme for Cartwright Gardens through the adoption of Best Practicable Means (BPM) as defined in Section 72 of the Control of Pollution Act 1974. BMCE recognises the importance of good planning in achieving these goals and ensuring that BPM are employed and as a part of this process ongoing monitoring will be used to evaluate the noise, vibration and dust regulation strategies and ensure that they are effective.

The principal issues which will be addressed in this document are:

- Identification of the noise, vibration and dust standards applicable to this project.
- Formulation of a strategy to comply with the standards identified above.
- Development of a monitoring programme to measure and regulate noise, vibration and dust at all potentially affected locations

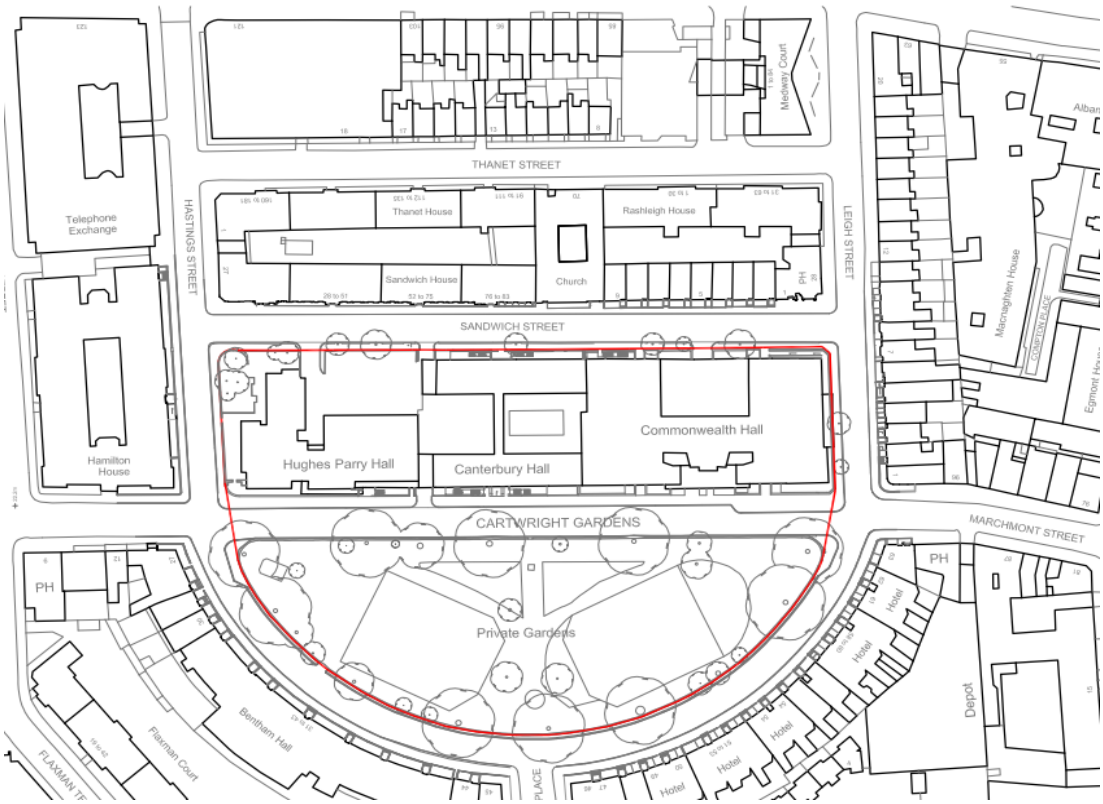
LBC specify in their document '*Camden's minimum requirements building construction general*' the time of operations and ancillary works which are audible at the site boundary shall normally be carried out between the following hours:

Mondays to Fridays *08.00 – 18.00*
Saturdays *08.00 – 13.00*

And at no time Sundays and Bank Holidays.

The location of the site and its boundary is identified by a red border in Figure 1.

Figure 1 – Cartwright Gardens Site Boundary



2 PROJECT DESCRIPTION

The proposed Cartwright Gardens development is to be situated within the London Borough of Camden bounded by Hastings Street to the North, Sandwich Street to the East, Leigh Street to the South and Cartwright Gardens to the West.

3 POTENTIALLY AFFECTED RECEIVERS

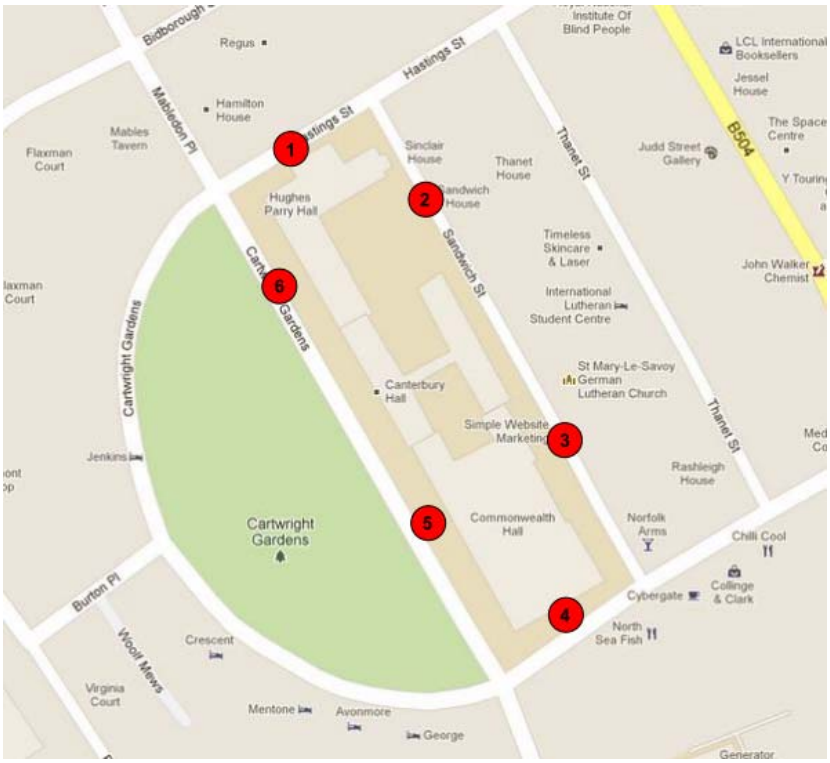
The potentially affected noise sensitive premises (NSPs) include the following:

1. Residential premises located to the east of the site.
2. Residential premises located to the south of the site.
3. Commercial/Residential premises located to the north of the site.
4. Commercial/Residential/Hotel premises located to the west of the site.

4 BASELINE NOISE SURVEY

A baseline noise survey was conducted by Sound Research Laboratories (Report No. C13150\13163A dated 15th August 2013) during the period 9th and 10th October 2012. Noise levels were measured at six positions around the development site. Figure 2 details the measurement locations.

Figure 2 – Noise Monitoring Locations



4.1 WEATHER CONDITIONS

Weather during the survey period was cool and dry with a light breeze.

4.2 SURVEY DETAILS

Survey carried out by Mr A Smalls of SRL Technical Services Limited

4.3 CALIBRATION

Manufacturer	Equipment	Type Number	Serial Number
Brüel & Kjær	Sound Level Meter	2231	1470178
Brüel & Kjær	Calibrator	4230	Not given

SRL Technical Services Limited's calibration statement: '*Before and after the survey the measurement apparatus was check calibrated to an accuracy of± 0.3 dB using the type 4230 Sound Level Calibrator. The Calibrator produces a sound pressure level of 93.8 dB re 2 x 10^{-5} Pa at a frequency of 1 kHz.*'

4.4 NOISE DATA

The noise data is presented below and in full in the Appendix.

Table 1 Summary of ambient noise levels – dB

Measurement Position	Day	Night	
	$L_{Aeq,16hr}$ *	$L_{Aeq,8hr}$ *	L_{Amax}
1	61	52	79
2	55	48	67
3	54	43	65
4	62	56	84
5	67	53	79
6	64	55	79

* Average day and night time noise levels have been calculated using a shortened measurement procedure based on sample measurements over a 24 hour period with a minimum of three measurements per location.

Table 2 Summary of ambient noise levels – dB

Measurement Position	Lowest measured background noise level L_{A90}	
	Day	Night
1	50	41
2	43	45
3	45	42
4	50	43
5	51	42
6	54	45

The dominant noise source at the site is road traffic to all façades. On Leigh Street, noise from the pub was the cause of measured night-time maximum noise levels.

5 CONSTRUCTION EMISSIONS CRITERIA

5.1 NOISE GOALS

5.1.1 Noise from Construction and Demolition

The guidance contained in British Standard BS 5228 Part 1:2009 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise does not extend to providing criteria against which to assess construction and demolition noise. This Standard presents an overview of the legislative background to the control of environmental noise and vibration. The Standard takes a realistic and practicable view of construction noise and vibration management, recognising that simply the application of numeric criteria does not resolve the ongoing issues. In this sense the standard is limited to only providing guidance on the importance of community relations, training site personnel, protecting people in the work environment, neighbourhood nuisance, project supervision and the control of noise and vibration.

Criteria are commonly applied on a site-specific basis to large civil engineering contracts in order to obtain a threshold value for acceptable demolition and construction noise levels. On behalf of BMCE, ALC has discussed the noise criteria with Mr Houska an Environmental Health Officer with the London Borough of Camden.

For this development, it is proposed to utilise a two stage criteria to allow proper management of the noise issues. In addition, a 3D noise model will be developed to show the expected noise contours, due to the ongoing works, surrounding the development site.

A criterion of **72 dB(A)** $L_{Aeq,1\ hr}$ **is a first stage alert level**, at which BMCE is alerted and becomes aware that noise levels are rising to critical limits.

A **second stage alert level is triggered at of 75 dB(A)** $L_{Aeq,1\ hr}$**,** which is not to be exceeded at the nearest noise sensitive façade, within or in proximity to the site unless required by best practicable means (BPM).

At the 75 dB(A) $L_{Aeq,1\ hr}$ trigger level BMCE will to take immediate action and resolve the works which generate the level to reduce levels back to within the Stage 1 trigger levels. These thresholds have been successfully used within many other urban development schemes similar to the Cartwright Gardens' site.

It should be noted that the noise levels presented above are Construction Noise Thresholds rather than target values. Noise levels may be permitted up to 75dB $L_{Aeq,1\ hr}$, for specific works of short duration where Best Practicable Means (BPM) have been demonstrated to the Local Planning Authority and noise sensitive receptors/premises have been informed at least 48 hours in advance.

Noise monitoring equipment will be deployed at locations adjacent to the development site boundary (see Figure 2) and will be programmed to issue an automatic notification to BMCE and ALC of a Construction Noise Trigger Level exceedance. The trigger level exceedance represents a proactive means of informing the project that noise emissions measured at sensitive receptors are approaching the Construction Noise Threshold and that contractors should review their methods of operation to ensure that noise exceedances are not caused by on-site construction work activities.

5.1.2 Noise Control Measures

a) No External Positioned Amplified Sound

No amplified sound shall be generated at any time within the site or at any time in the course of carrying out any phase of works for the development. This constraint shall not apply in the event of emergencies or emergency drills to the extent necessary to deal with an emergency or drill, or other health and safety requirements. This constraint will also not apply to the amplified noise generated by construction plant as a reversing alarm.

b) Reversing Alarms

Where possible all mobile construction plant will be fitted with low noise or "white spectrum" reversing alarms to minimise the annoyance to local residents due to noise generated from construction plant. White noise reversing alarms emit bursts of noise consisting of randomly generated frequencies reproduced equally across the audible frequency range. This serves to reduce the tonality and coherent nature of traditional 'beep' style alarms, therefore reducing its nuisance factor. The requirement for low noise reversing alarms will be placed on all contractors undertaking work activities on the site.

c) Mitigation measures

All construction contractors will be required to follow standard good construction practice as outlined in BS 5228-1:2009 and BS 5228- 2:2009. This will include the following measures:

- electrical items of plant will be used instead of diesel plant where possible particularly in sensitive locations;
- plant will be started up sequentially rather than all together;
- internal haul roads will be well maintained and avoid steep gradients where possible;
- loading/unloading activities will be located away from residential properties and shielded from those properties where practicable;
- drop heights of materials will be minimised;
- continuous noisy plant will be housed in acoustic enclosures, where practicable;
- effective exhaust silencing and plant muffling equipment will be fitted and maintained in good working order;
- static plant known to generate significant levels of vibration will be fitted with vibration dampening features;
- each item of plant used will be carefully selected so as to comply with the noise thresholds quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701;
- consideration will be given to the recommendations set out in Annex B of Part 1 of BS 5228 noise sources, remedies and their effectiveness;
- equipment will be well maintained and where possible will be used in the mode of operation that minimises noise;
- plant and equipment will be shut down when not in use;
- semi-static equipment will be sited and orientated as far as is reasonably practicable away from occupied buildings and, where feasible, will be fitted with suitable enclosures;
- mobile construction plant will be located, as far as is reasonably practicable, away from

adjacent occupied buildings or as close as possible to noise barriers or site hoardings to provide additional screening from sensitive noise receptors;
- materials will be handled in a manner that minimises noise;
- vehicles will not wait or queue on the public highway with engines idling;
- reversing alarms will incorporate one of the following features where practicable: directional sounders, broadband signals, self-adjusting sounders or flashing warning lights. Alternative comparable systems may be used to minimise noise and nuisance from reversing alarms;
- all appropriate BMCE staff and their contractor's personnel will be instructed on BPM measures to reduce noise and vibration as part of their induction training, and followed up by 'Tool Box' talks;
- noisy activities will be staggered in time and space where feasible;
- site layout (on-site construction traffic routes) shall be designed to minimise the need for reversing; and
- only designated haul routes (on-site) will be used.

d) Site Area

All construction/post-operation work activities will be undertaken within the designated operational site boundaries; including areas designed to accommodate stockpiles and haul routes.

e) Erection of Physical Barriers

Where deemed appropriate (through risk assessment), physical barriers will be erected around activities that are expected to generate particularly high noise levels to provide screening attenuation.

f) Training

All site personnel will receive training appropriate to the nature of their roles and responsibility; the training will include specific information in relation to noise and vibration management. All staff will receive induction training that will incorporate environmental awareness training, plus specific training in relation to noise and vibration if their work activities are assessed as being particularly noise/vibration emission prone. On-site 'Tool Box' training will enable site workers to understand how their actions will interact with the environment and potentially impact upon sensitive receptors near to their work areas.

5.1.3 Construction Noise Threshold and Trigger Level Exceedances

In the event of a Construction Noise Threshold exceedance (including during deconstruction activities), the noise monitoring equipment would be programmed to send an automatic notification (SMS) to the BMCE representative. The BMCE representative will act upon this notification.

Upon receipt of notification of an exceedance, BMCE will instigate the following measures:

- Immediately undertake an investigation of construction/deconstruction activities on-site, to ascertain if any work activities are being implemented contrary to specified noise control measures. If the exceedance is directly attributable to BMCE's work activities then the BMCE will stop the specific work activity suspected of causing noise

emissions as soon as it is safe to do so and determine why the appropriate measures of this plan were not being implemented. The remedial measures to ensure no repeat of the Construction/Deconstruction Noise Threshold Level exceedance will be determined by BMCE. Work activities that were identified to have caused the exceedance would not be allowed to continue/resume until the agreed remedial measures have been implemented to the satisfaction of BMCE.

- Rectify any identified causes, record actions in Site File.
- If the cause of the Construction Noise Threshold being breached is not related to site operations, record the outcome of the investigation in the Site File.

In the event of a series of repeated exceedances of the Construction Noise Threshold within a short period of time, for example, should two or more exceedances occur at the same monitoring location within consecutive monitoring periods, the following course of action will be carried out:

- Automatic text message notification of exceedances issued to the BMCE project specific Construction Manager;
- BMCE to inspect all works currently being undertaken across the site to determine if the noise control measures as outlined within this document are being implemented appropriately.
- BMCE to report back to the project specific Construction Manager within one hour of multiple exceedance notifications that a site inspection has been completed and with confirmation of the root cause of the exceedance. If the exceedance was identified to have been caused by off-site activities, details and location of these activities would be recorded in the Site File. If the exceedance is directly attributable to BMCE activities then the site manager will stop the specific work activity suspected of causing the exceedance as soon as is safe to do so and determine why the appropriate measures of this plan were not being implemented. The remedial measures to ensure no repeat of the Construction Noise Threshold Level exceedance would be determined by BMCE, and relevant parties from the contractor. Work activities that were determined to have caused the Construction Noise Threshold exceedance would not be allowed to continue/resume until the agreed remedial measures have been implemented to the satisfaction of BMCE.
- Within 48 hours of the exceedance or sequential exceedances BMCE will undertake an investigation to determine which activities and/or decisions resulted in the exceedances occurring. A report would be compiled detailing the findings of the investigation, which would be issued to relevant elements of the BMCE project management team, to relevant contractors and the local authority as appropriate.

5.1.4 Public Notification

Amongst other duties, BMCE are responsible for managing the interface between the project and the communities in which the works are being undertaken. In respect of the Noise and Vibration Management Plan (NVMP) the following procedures will be implemented:

- Local residents will be informed of the commencement and likely duration of the construction work activities via a letter drop. The letter will include a contact telephone number which will be manned during all times that construction activities are being undertaken on-site.
- For construction activities with the potential to generate noise levels in excess of the Construction Noise Thresholds, written agreement will be obtained from LBC and local residents will be informed of the works at least 48 hours prior to works commencing.

- BMCE will respond appropriately to any complaints received from local residents and will investigate the source of the noise.
- Furthermore BMCE will co-operate with all reasonable requests made from LBC in relation to noise and vibration matters.

5.2 VIBRATION GOALS

Construction activity, depending on the equipment and methods employed, can result in varying degrees of ground vibration which can be transmitted through different strata from rock or solid concrete, varying soil types (e.g. sand, clay, loam, clay-loam, silt-loam etc.) and water. Vibration, unlike noise, can propagate in many different wave forms (e.g. bending, torsional, compression etc.). In addition, vibration can propagate in two different elements at the same time and soil conditions affect not only the vibration magnitude but also its frequency content and wave form. For the prediction of ground vibrations there are approximately three different types of models; theoretical, empirical and engineering models.

Note that a prediction model should be reliable in all cases where it is meant to be used; current empirical models have the advantage that they are easy to use and require relatively small amounts of input data but cannot be considered reliable as they tend to highly overestimate the vibration level. Theoretical prediction models are somewhat more reliable requiring vast amounts of input data and time but still overestimate the vibration level. The engineering models, by their very nature, are bespoke and lack validation in order to be considered reliable.

Due to the complexities and uncertainties of the propagation of ground vibration there are no technically accurate vibration modelling software packages. Accordingly, the generation of vibration by construction works at the Cartwright Gardens' site will be physically monitored.

Construction vibration criteria associated with the Cartwright Gardens site when measured at the potentially affected receivers should not exceed the following set of vibration criteria agreed with Mr Houska from the London Borough of Camden.

All available techniques will be used to minimise, as far as is appropriate, the level of vibration to which operators and others in the neighbourhood of site operations will be exposed. The priority will be to avoid the generation of vibration, and where vibration is unavoidable, to control vibration at source.

Vibration should not exceed 1mm/s PPV at the nearest sensitive residential receivers.

Vibration should not exceed 2mm/s PPV at the nearest sensitive commercial receivers.

5.3 DUST GOALS

5.3.1 Prevention

5.3.1.1 Design Control Measures

a) Materials Storage

Areas designated for stockpiling of friable materials or materials susceptible to generating wind borne dust will be positioned away from sensitive receptors, where possible. As far as is reasonably practicable, stockpiles intended for long-term storage will be placed directly in their planned position rather than via temporary storage so as to avoid the need for double handling that could give rise to emissions.

Stockpiles of materials that are consumed as part of a construction process will be assessed to determine the necessity for dust suppression techniques to minimise dust generation. In each case, stockpiles will be shaped to avoid steep sides and sharp edges so as to reduce entrainment of dust by exposure to wind.

b) Site Area

All construction work activities will be undertaken within the designated construction site boundaries; including areas designed to accommodate stockpiles and haul routes.

c) Training

All site personnel will receive training appropriate to the nature of their roles and responsibility; the training will include specific information in relation to air quality management. All staff will receive induction training that will incorporate environmental awareness training and specific training in relation to air quality if their work activities are assessed as potentially producing fugitive emissions. On-site 'Tool Box' training will enable site workers to understand how their actions will interact with the environment and potentially impact upon a work area's sensitive receptors.

5.3.1.2 Control Measures

a) Emissions from Plant Equipment and On-site Vehicles

The following mitigation measures will be implemented to limit emissions from construction plant and equipment used on each construction site:

- engines of vehicles and equipment shall not be left running unnecessarily;
- vehicles and equipment shall be maintained by a programme of routine servicing in accordance with the manufacturers' recommendations, with records kept of the work undertaken;
- haul routes shall be located and equipment operated away from sensitive receptors, where possible, including, but not limited to, houses and commercial properties;
- avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable; and
- only use road vehicles that meet a minimum of Euro 4 standards during the works.

b) Dust and Particulate Measures

The following prevention measures will be implemented to minimise dust and particulate generation and dispersion:

- the burning of material and or waste on-site shall be strictly prohibited;
- maintain all dust control equipment in good condition and record maintenance and servicing activities;
- keep site fencing, barriers and scaffolding clean using wet methods; not blowing with compressed air lines etc;
- provide easily cleaned hard standing for vehicles as appropriate;
- ensure regular cleaning of hard standings using wet sweeping methods;
- avoid dry sweeping of large areas;
- provide and ensure the use of wheel wash facilities near the site exit wherever there is a potential for carrying dust or mud out of the work areas onto the public highways;
- inspect haul routes for integrity and instigate necessary repairs to the surfaces as soon as is reasonably practicable;
- position the exhausts of vehicles working on-site to minimise the risk of re-suspension of ground dust (exhausts point upwards);
- ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of materials and overfilling during delivery;
- avoid double handling of friable/dust yielding material wherever practicable;
- sheet or otherwise enclose loaded bins and skips;
- seal or re-vegetate completed earthworks as soon as practicable following completion;
- design and prefabricate where feasible to reduce the need for grinding, sawing and cutting on site; and
- ensure slopes of stockpiles are no steeper that the natural angle of repose of the material and maintain a smooth profile.

5.3.2 Suppression

The following suppression measures will be implemented to minimise dust and particulate dispersion:

- implement a programme of wet sweeping for site access and egress points and include area of public road potentially affected by dust accumulation from our working areas;
- ensure an adequate supply of water and means of deployment is available at all work areas for dust suppression measures;
- as dictated by site conditions, regularly damp down unsurfaced haul routes and working areas in dry conditions;
- ensure all vehicles transporting loose or potentially dust generating materials to and from working areas on the public highways are fully sheeted;
- minimise, as far as is reasonably practicable the amount of excavated material stockpiled in the work areas and sheet, seal or damp down unavoidable stockpiles of excavated material held in the working areas. Where appropriate consider sealing or seeding materials and soil stockpiles if they are not to be used for a long period of time;
- use water suppression during demolition operations;
- use enclosed rubble chutes and conveyors on crushing or grinding equipment or use water to effectively suppress dust emissions;

- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment; and
- use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.

5.3.3 Containment

The following containment measures will be implemented to minimise dust and particulate dispersion:

- where appropriate, physical barriers will be erected around particularly dust generating activities;
- dispose of runoff water from dust suppression activities in accordance with the appropriate legal requirements such as discharge consents and/or surface water discharge consents as appropriate;
- ensure that appropriate spill kits, clean up and containment materials are available and that they are used immediately in the event of a spillage; and
- identify work activities that have a high potential for dust emissions, enclose fully and maintain the enclosure for the duration that the specific work activity is in operation.

5.3.4 Dust Inspections

The dust inspections outlined below will be applied by BMCE and undertaken by the BMCE nominated competent person. Records of inspections will be maintained within the relevant site office. The dust inspections will include the following elements:

- record all inspections of haul routes and any subsequent action in the dust log pro-forma at least once per day;
- conduct inspections to monitor compliance with dust control procedures in accordance with the measures outlined within this document. Record the results of the inspections, including nil returns, in the dust log pro-forma at least once per day;
- increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and
- record any exceptional occurrences causing dust episodes on or off the site and the action taken to resolve the situation.

The air pollutants impact assessment criterion applicable to the site with regards to health concerns are:

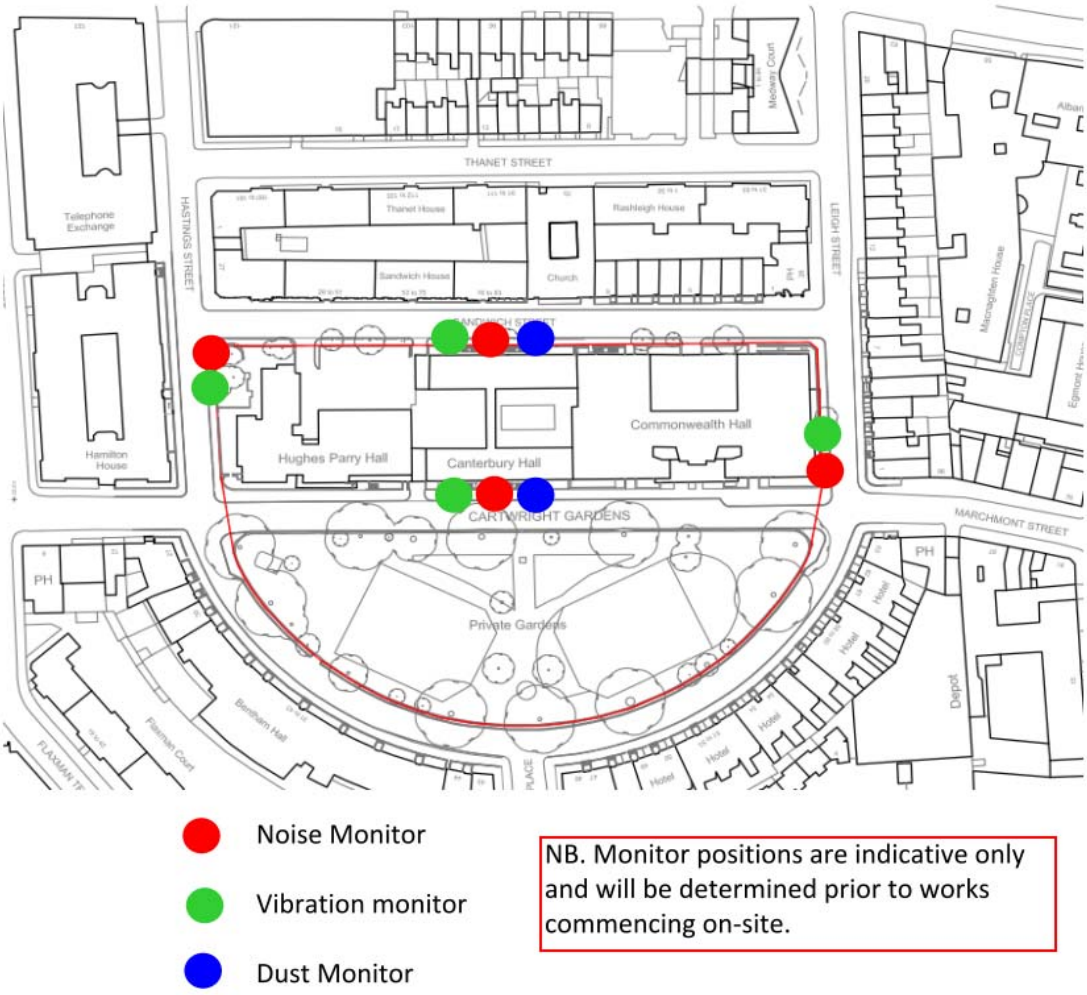
PM_{10} less than 50 $\mu g/m^3$ averaged over a 24 hour period.

The construction dust criteria to be measured, associated with the Cartwright Gardens' site, will be PM_{10} and $PM_{2.5}$.

6 MONITORING LOCATIONS

It is proposed that four noise and four vibration monitors will be placed around the development site in addition to two dust monitors. Figure 2 identifies the locations of these monitors. Please note that the monitoring equipment locations are subject to change due to the activities on site.

Figure 2 Monitoring Equipment Locations



APPENDIX

Measured ambient noise levels – dB(A) re: 20 µPa

Night time data

Measurement Position	Start	End	LAeq	LA10	LA90	LAmax
6	22:58	23:02	61	63	53	79
1	23:03	23:07	56	59	48	68
2	23:08	23:12	51	53	46	67
3	23:14	23:18	48	50	43	65
4	23:19	23:23	58	59	45	77
5	23:25	23:29	58	56	47	79
6	23:30	23:34	60	60	49	78
1	23:36	23:40	52	54	45	69
2	23:41	23:45	47	48	45	60
3	23:47	23:51	44	45	41	62
4	23:52	23:56	54	57	45	70
5	23:57	00:01	53	56	45	71
5	05:58	06:02	56	53	42	76
6	06:04	06:08	50	53	45	57
1	06:10	06:14	60	60	44	79
2	06:15	06:19	50	54	45	63
3	06:21	06:25	44	44	42	54
4	06:26	06:30	54	56	43	72
5	06:31	06:35	56	59	44	75
6	06:36	06:40	61	61	51	78
1	06:40	06:44	50	52	45	62
2	06:46	06:50	53	56	48	64
3	06:52	06:56	47	49	44	58
4	06:57	07:01	69	72	54	84

Daytime data

Measurement Position	Start	End	LAeq	LA10	LA90	LAmax
5	09:57	10:06	69	71	63	78
6	10:07	10:08	66	68	60	79
1	10:18	10:27	63	65	53	78
2	10:28	10:38	53	54	49	72
3	10:39	10:48	57	59	46	73
4	10:49	10:59	63	66	50	81
5	11:01	11:11	69	72	53	81
6	11:10	11:19	63	65	56	81
1	11:20	11:29	60	61	51	80
2	11:30	11:39	54	55	49	73
3	11:40	11:49	53	55	46	73
4	11:50	11:59	62	65	54	79
5	12:00	12:09	64	66	51	86
6	12:10	12:19	64	67	54	81
1	12:20	12:29	61	63	50	84
2	12:30	12:39	57	59	43	78
3	12:40	12:49	53	55	45	82
4	12:50	13:00	61	64	52	79

Appendix K – Rodent Management Plan.

UNIVERSITY OF LONDON

CARTWRIGHT GARDENS, UNIVERSITY OF LONDON

Cartwright Gardens Rodent Management Plan – Revision B

Active and Preventative Rodent Control Measures

The following pest control measures will be undertaken by the University of London (UoL) and Brookfield Multiplex (BM) as part of the development of Cartwright Gardens. These measures will be incorporated within revision 04 of the Construction Management Plan (CMP).

Noting the pest control requirement of Camden Council and the points raised by the CLG as part of the review of revisions 01 and 02 of the CMP Brookfield Multiplex in conjunction with the University of London have undertaken a review of the current site and have developed following procedures and controls relative to the control of pests.

On 8th April 2014 representatives from the University of London, Camden Council and Brookfield Multiplex met at Cartwright Gardens to review the existing building including the external areas to consider the following points:

- Current pest control measure which the University of London operate.
- Ascertain the history of any pest activity on the site.
- Agreeing enhanced pest control measures which will be employed by the University of London until the building is vacated and the redevelopment works commence.
- Reviewing the existing drainage configuration.
- Agreeing what measure will be put in place once the redevelopment works commences.

The meeting was attended by the following:

David Coleman	Camden Council - Operations Manager
David Stephens	University of London - Head of Residential Accommodation
Andrew Richardson	Brookfield Multiplex – Project Director
Alex Dos Reis	Cofely - Support Services Manager who employ EBS on behalf of the UoL

Control Measures

David Stephens of the UoL confirmed that bait boxes for both mice and rats are in place, with engineer's monthly visits, focussing particularly on the usual areas of concern: kitchens, rubbish stores etc. David Further confirmed that in the past twelve months there had only been one instance of 'light activity'. This activity was located to one of the external bin stores, with the current pest control contractors, EBS, being confident that the preventative measures are currently successful. In addition the University of London confirmed that from mid April 2014 EBS will increase the frequency of visits to fortnightly until the beginning of

June and weekly throughout June until the 30th June 2014 when the re-development works will commence.

The University committed to respond to any additional recommendations that are made to prevent rodent activity and ensure the housekeeping, particularly of the higher risk areas, is maintained at the very best level.

Preventative Measures

David Coleman went on to explain the requirements which Brookfield Multiplex would need to consider during the development period. These being:

- Ensure that where existing building drainage connects onto the public sewer that the catch pits, access chamber and inspection covers are retained and kept in place.
- Any outfall which is not being used during the redevelopment period should be sealed ensuring that rodent activity cannot re-establish.
- Continue to process of baiting and controlling mice and rodent activity.
- Control of food and beverage waste generated as part of the construction process.

Following a review of the external areas it was noted that all catch pits, access chambers and inspection covers were in place and in good order. Andrew Richardson confirmed that the covers to the chambers which connect to the public sewer would be maintained for the duration of the development or sealed where this is not practical.

The appendix of this management plan includes the proposed drainage scheme which identifies the location of the existing drainage connections to the public sewer. These connections will be retained and utilised during the development works and incorporated into the final scheme.

We will implement these controls by appointing a competent pest control company from the offset of the project. Rodent control will consist of an initial site audit which will identify current rodent activity and causes and devising a strategic treatment plan if necessary with recommendations and control measures. Following inspections, treatments are carried if required out in line with specific infestations requirements.

Andrew Richardson went on to explain that as part of the management and logistic procedures associated with the development that the following control regimes would be employed through the full duration of the works:

- A full survey of all the existing buildings would be conducted to review the current pest activity, proofing issues, hygiene issues and any environmental considerations within the buildings and any building works or environmental issues in the surrounding areas.
- Once the survey has been completed a report will be produced recording results and identifying and measures which are required.

- The report will identify any rodent activity to the internal or external areas of the development and the proposed location of lockable metal bait stations. The bait stations would contain either break back traps or rodenticide.
- If required a three week intensive trapping or baiting programme would be implemented which would involve an engineer visiting site for three consecutive weeks where all of the bait stations will be checked, reset or replenish as necessary. Following the intensive trapping period a further report will be provided detailing the level of rodent activity. Should rodent activity still be present the programme will be repeated. Following the eradication of any rodent activity periodic inspections will take place. Where necessary the technician would carry out the same the same routine as the three week intensive trapping period.
- The treatment for an internal heavy infestation of mice, we would follow the same routine, only paying more attention to internal proofing and if necessary using ULV tracking dust to determine where the mice are gaining ingress.

Construction sites if not managed correctly can provide an ideal habitat for pests if they are not correctly and diligently managed and controlled.

It is therefore imperative that measures are put in place to protect existing infrastructure and surrounding area from the problems associated with pest infestations.

To ensure that the redevelopment works does not encourage rodent activity and that the pest control is managed correctly BM will instigate a process which will provide preventative measures.

To ensure that the potential rodent infestation is eradicated we will implement the following controls via:-

- Keeping all welfare waste rubbish in metal or plastic containers with tight fitting lids and discard immediately.
- Seal any holes to the welfare area where food and beverage are consumed.
- Ensure that food and beverage is only consumed within the welfare areas.

By noting that the current level of rodent activity is very low and by adopting the simple but effect preventative measures as noted above the rodent activity will be managed in a considered and practical manner.

Appendix - Cartwright Gardens Drainage Drawings

NOTES:

EXISTING SURVEYS HAVE HIGHLIGHTED THAT 3 DRAINAGE OUTFALLS FROM THE SITE CURRENTLY EXIST. (OUTFALLS A, B & C). IT IS ASSUMED FROM A SITE VISIT BY DRAINAGE SURVEY CONTRACTORS THAT TWO ADDITIONAL OUTFALLS EXIST NEAR TO THE EXISTING PLAN ROOM IN COMMONWEALTH HALL (OUTFALLS D+E). ADDITIONAL SURVEY SHOULD BE UNDERTAKEN TO CONFIRM THE EXISTENCE OF THIS OUTFALL. THESE INVESTIGATIONS SHOULD BE CARRIED OUT PRIOR TO DEMOLITION WORKS, WHERE INTRUSIVE INVESTIGATIONS CAN BE CARRIED OUT.

THERE MAY BE ADDITIONAL OUTLETS TO THE PUBLIC SEWERS FROM THE DEVELOPMENT SITE, WHICH HAVE NOT BEEN IDENTIFIED BY PREVIOUS DRAINAGE AND RADAR SURVEYS. ADDITIONAL SURVEY SHOULD BE UNDERTAKEN TO CONFIRM THE EXISTENCE OF ADDITIONAL OUTFALLS. THESE INVESTIGATIONS SHOULD BE CARRIED OUT PRIOR TO DEMOLITION WORKS, WHERE INTRUSIVE INVESTIGATIONS CAN BE CARRIED OUT.

THERE IS CURRENTLY INADEQUATE CAPACITY IN THE IDENTIFIED OUTFALLS FROM THE SITE TO ACCOMMODATE BOTH FOUL AND SURFACE WATER FLOWS. UNLESS ADDITIONAL OUTFALLS ARE FOUND AS PART OF THE ABOVE SURVEYS ATTENUATION WILL BE REQUIRED TO LIMIT ROOF DRAINAGE TO AROUND 10L/S TO OUTFALLS B, C AND D. THIS WILL REQUIRE AROUND 20m3 PER OUTFALL.

THE EXISTING PERIMETER SLAB AT THE BASE OF THE LIGHTWELLS FORMS PART OF THE RETAINING WALL AND ANY CUTTINGS FOR DRAINAGE MUST CONSIDER BOTH TEMPORARY AND PERMANENT STABILITY AND REINSTATEMENT.

THERE ARE A SIGNIFICANT NUMBER OF BURRIED SLABS, FOUNDATIONS AND OTHER BELOW GROUND OBSTRUCTIONS AND THE CONTRACTOR SHALL FAMILIARISE THEMESLVES WITH THESE AND ACCOUNT FOR THE IMPLICATIONS ON THE DRAINAGE WORKS.

HUGHES PARRY RWP'S TO UTILISE EXISTING UNDERSLAB DRAINAGE.

RETAINED EXISTING MANHOLES AND DRAIN RUNS TO BE INSPECTED PRIOR TO CONSTRUCTION, AND RECONSTRUCTED IF NECESSARY.

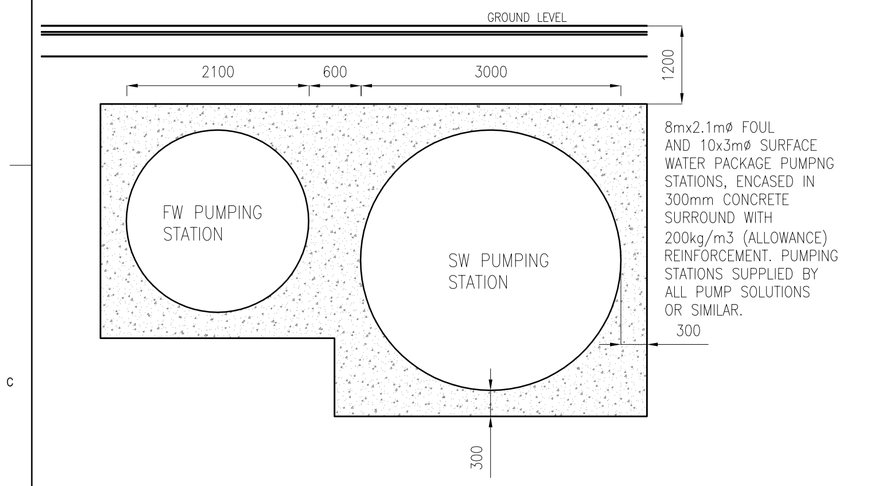
ANY CONNECTIONS TO EXISTING ABANDONED DRAINAGE TO BE INVESTIGATED TO CONFIRM REDUNDANT.

EXISTING BELOW SLAB DRAINAGE FOR HUGHES PARRY IS TO BE RETAINED. NEW RWPS FOR HUGHES PARRY TO CONNECT TO EXISTING BASEMENT DRAINAGE OUTLETS.

ALL FOUL & SURFACE WATER DRAINAGE 150mmø UNLESS NOTED OTHERWISE. ALL DRAINAGE FOR THE COLLECTION OF GROUND FLOOR AND ABOVE TO BE DUCTILE IRON AND A SEALED SYSTEM. (DRAINAGE SHOWN COLLECTING FROM SVP'S AND RWP'S)
ALL DRAINAGE FOR THE COLLECTION OR BASEMENT LEVEL DRAINAGE TO BE CLAY, PRIOR TO CONNECTION TO PUMPING STATIONS.

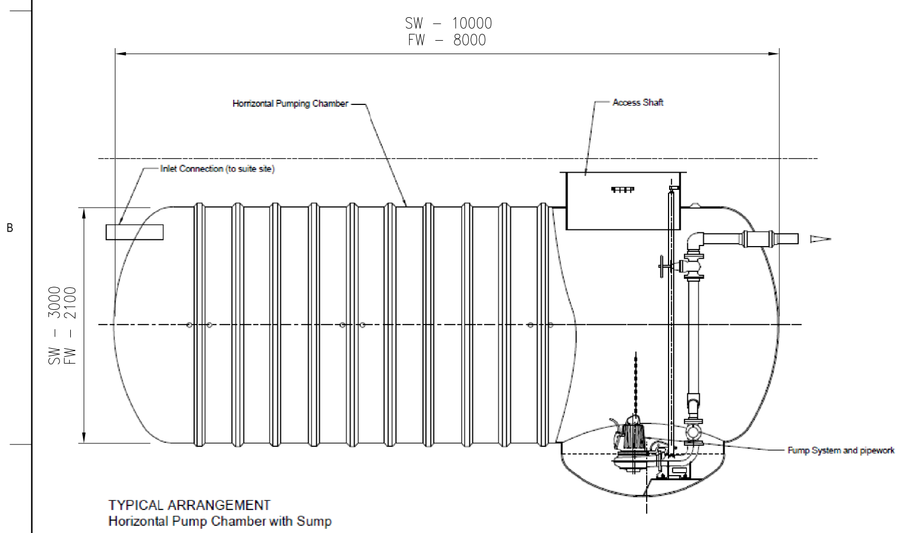
DRAWING TO READ IN CONJUNCTION WITH 4002 & 4003

ALL GULLIES, SVP, S/S, AND RWP CONECTIONS TO BE SUITABLE FOR ROD AND JET ACCESS.

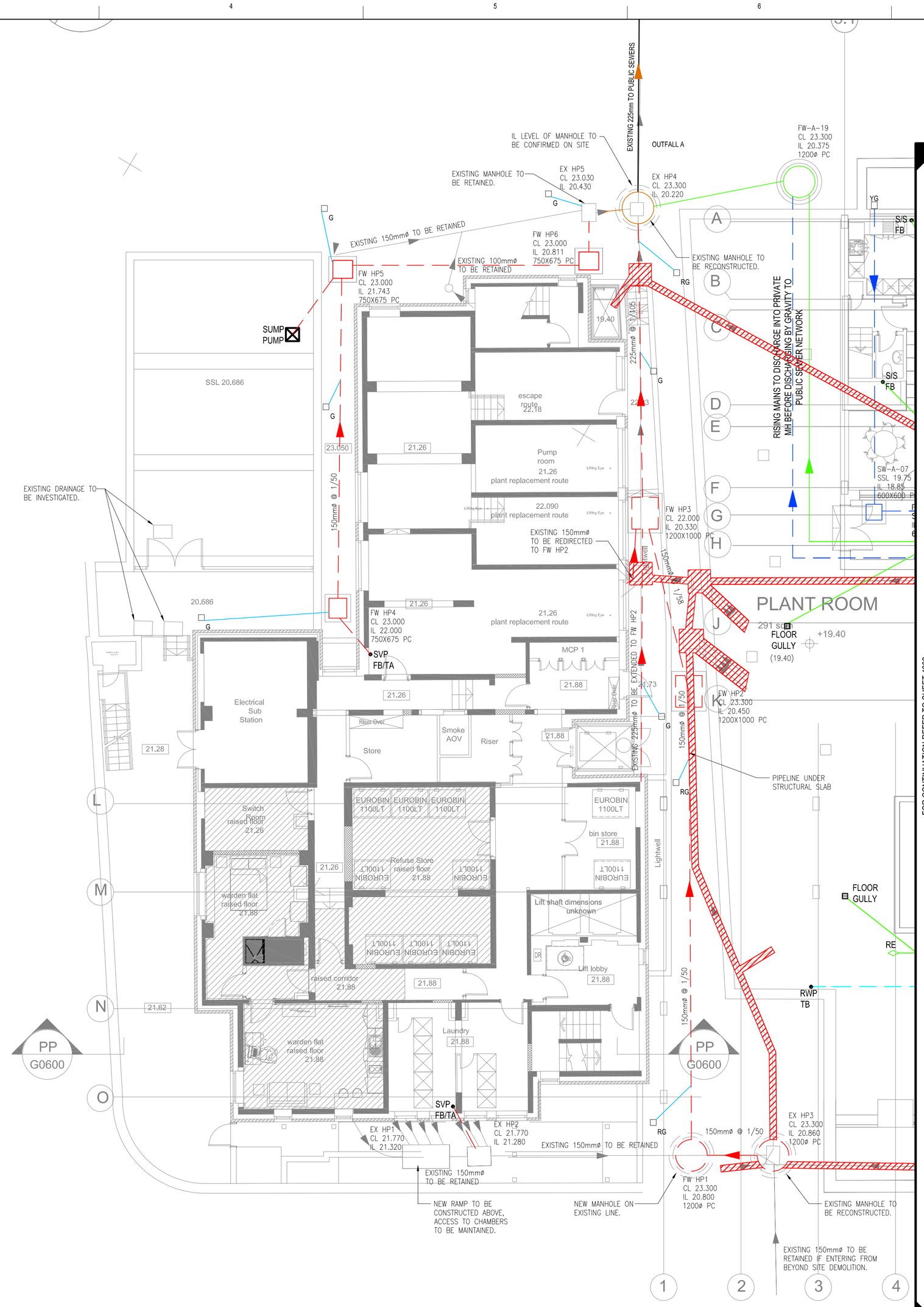


8mx2.1mø FOUL AND 10x3mø SURFACE WATER PACKAGE PUMPNG STATIONS, ENCASED IN 300mm CONCRETE SURROUND WITH 200kg/m3 (ALLOWANCE) REINFORCEMENT. PUMPING STATIONS SUPPLIED BY ALL PUMP SOLUTIONS OR SIMILAR.

SECTION A–A
TYPICAL PUMPING STATION SECTION
SCALE N.T.S



TYPICAL ARRANGEMENT
Horizontal Pump Chamber with Sump



© Copyright Cundall 2010

Notes

EXISTING ABANDONED DRAINAGE

EXISTING RETAINED DRAINAGE

PROPOSED BASEMENT SURFACE WATER DRAINAGE

PROPOSED GROUND FLOOR AND ABOVE SURFACE WATER DRAINAGE

PROPOSED BASEMENT FOUL WATER DRAINAGE

PROPOSED GROUND FLOOR AND ABOVE FOUL WATER DRAINAGE

PROPOSED COMBINED DRAINAGE

G	GULLYS
RG	ROAD GULLYS
PC	PRECAST CONCRETE
BW	BRICK WORK
MON	MONOLITHIC WITH STRUCTURAL SLAB
/S	SEALED MANHOLE

Issue	Date	Description	By	Chkd	Verfd
F	24.04.14	UPDATED FOLLOWING OUTFALL INVESTIGATION	TC	DD	DD
E	18.03.14	UPDATED FOR CONTRACT ISSUE	TC	DD	DD
D	07.03.14	EXISITNG & PROPOSED DRAINAGE CLARIFIED. ABANDONED DRAINAGE ROUTES SHOWN. PROPOSED DRAIANGE REFINED. UNDERSLAB DRAINAGE REMOVED. EXTERNAL GULLIES ADDED.	TC	DD	DD
C	16.10.13	SW PUMPING STATION VOLUME REVISED.	AF	DD	DD
B	07.10.13	GENERAL REVISIONS. COVER AND INVERT LEVELS ADDED.	AF	MC	DD
A	01.08.13	ALL DRAINAGE RUNS PREVIOUSLY SHOWN WITHIN LIGHTWELLS NOW REPOSITIONED BENEATH THE BUILDING FOOTPRINT. THEREFORE DRAINAGE LAYOUT IS REVISED TO SUIT. INDICATIVE DEPTHS OF MANHOLES NOW SHOWN. RAINWATER DRAINAGE LAYOUT INCLUDED. SW PUMPING STATION INCREASED TO 45m3.	AF	MC	DD

True scale at 1:1

Project	CARTWRIGHT GARDENS
Client	UPP
Architect	TP BENNETT

Title	BELOW GROUND PROPOSED DRAINAGE LAYOUT SHEET 1 OF 3
Drawing No.	CL-XX-(52)-4001
Issue.	E
Job No.	1004327
Scale	1:100
Drawing Status	CONTRACT

1004327 | A1

Based on Architects Drg No.	Rev
Structural Drg No.	Rev
Survey Drg No.	Rev
Other Drg No.	Rev
Other Drg No.	Rev

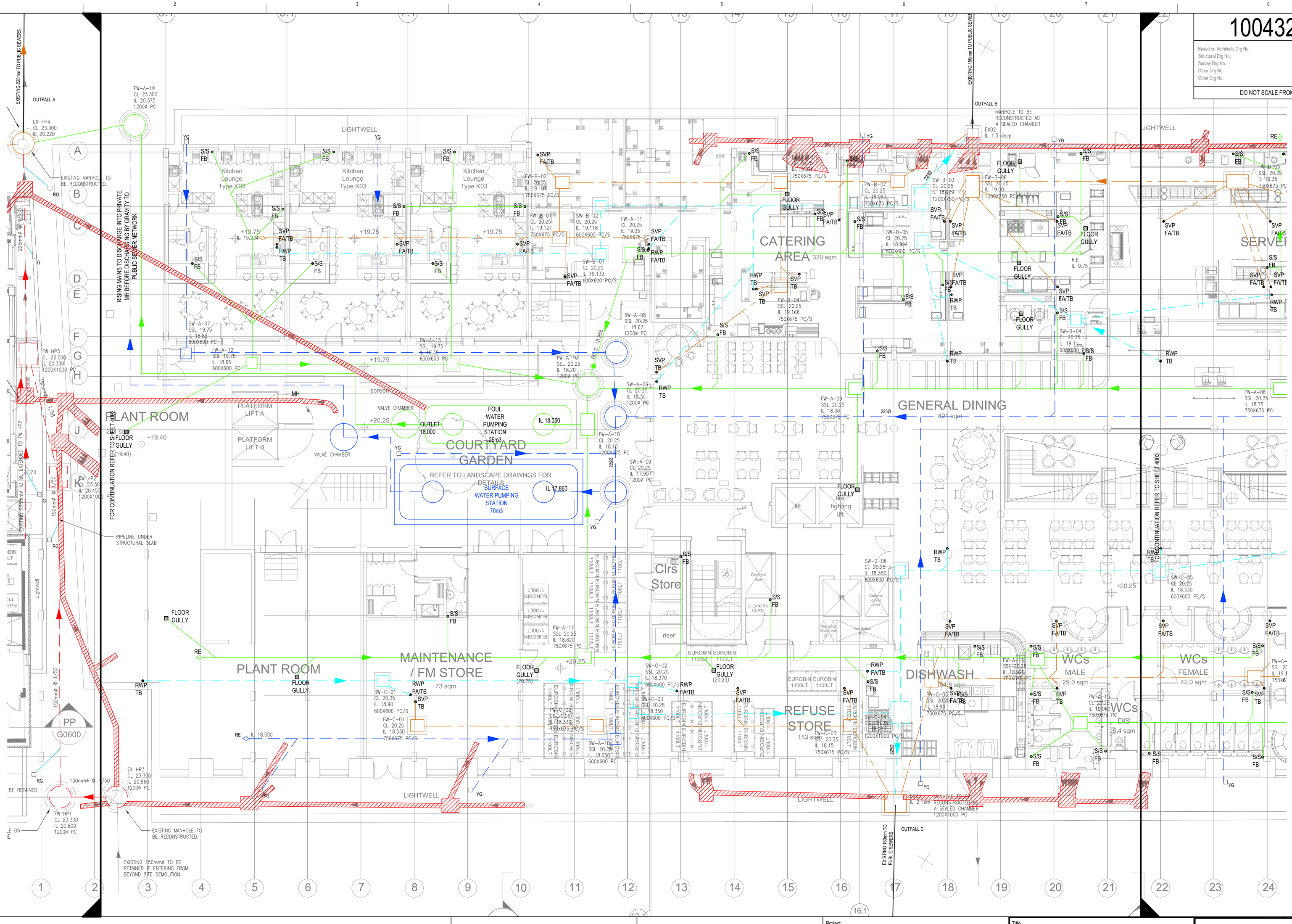
DO NOT SCALE FROM THIS DRAWING

CUNDALL
Consulting Engineers
Horsley House, Regent Centre,
Gosforth,
Newcastle NE3 3LU
Telephone: (0191) 213 1515 Facsimile: (0191) 213 1701
Website: www.cundall.com

1004327	A1

Based on Architects Drg No. Rev
Structural Drg No. Rev
Survey Drg No. Rev
Other Drg No. Rev
Other Drg No. Rev

DO NOT SCALE FROM THIS DRAWING



© Copyright Cundall 2010

Notes

EXISTING ABANDONED DRAINAGE
EXISTING RETAINED DRAINAGE
PROPOSED BASEMENT SURFACE WATER DRAINAGE
PROPOSED GROUND FLOOR AND ABOVE SURFACE WATER DRAINAGE
PROPOSED BASEMENT FOUL WATER DRAINAGE
PROPOSED GROUND FLOOR AND ABOVE FOUL WATER DRAINAGE
PROPOSED COMBINED DRAINAGE

FOR NOTES SEE DRAWING 4001

☐ G GULLYS
☐ RG ROAD GULLYS
PC PRECAST CONCRETE
BW BRICK WORK
MON MONOLITHIC WITH STRUCTURAL SLAB
/S SEALED MANHOLE

Issue	Date	Description	By	Chkd	Verfd
F	24.04.14	UPDATED FOLLOWING OUTFALL INVESTIGATION	TC	DD	DD
E	18.03.14	UPDATED FOR CONTRACT ISSUE	TC	DD	DD
D	07.03.14	EXISITNG & PROPOSED DRAINAGE CLARIFIED. ABANDONED DRAINAGE ROUTES SHOWN. PROPOSED DRAIANGE REFINED. UNDERSLAB DRAINAGE REMOVED.	TC	DD	DD
C	16.10.13	SW PUMPING STATION VOLUME REVISED.	AF	DD	DD
B	07.10.13	GENERAL REVISIONS. COVER AND INVERT LEVELS ADDED.	AF	MC	DD
A	01.08.13	ALL DRAINAGE RUNS PREVIOUSLY SHOWN WITHIN LIGHTWELLS NOW REPOSTIONED BENEATH THE BUILDING FOOTPRINT. THEREFORE DRAINAGE LAYOUT IS REVISED TO SUIT. INDICATIVE DEPTHS OF MANHOLES NOW SHOWN. RAINWATER DRAINAGE LAYOUT INCLUDED. SW PUMPING STATION INCREASED TO 45m3.	AF	MC	DD

Project: CARTWRIGHT GARDENS
Client: UPP
Architect: TP BENNETT

Title: BELOW GROUND PROPOSED DRAINAGE LAYOUT SHEET 2 OF 3
Drawing No.: CL-XX-(52)-4002
Issue.: F
Job No.: 1004327
Scale: 1:100
Drawing Status: CONTRACT

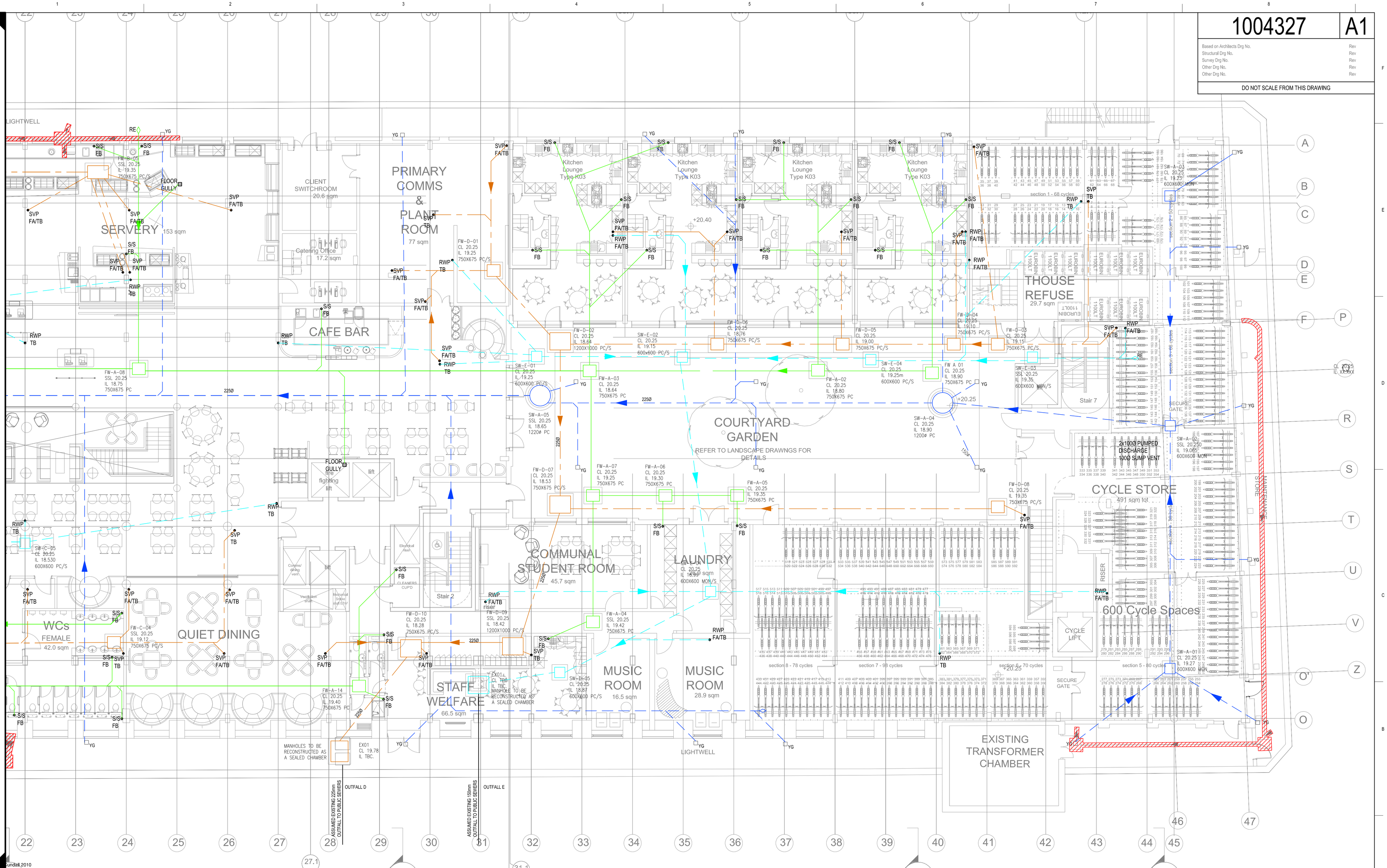
CUNDALL
Consulting Engineers
Horsley House, Regent Centre, Gosforth, Newcastle NE3 3LU
Telephone: (0191) 213 1515 Facsimile: (0191) 213 1701
Website: www.cundall.com

True scale at 1:1

1004327 | A1

Based on Architects Drg No. — Rev
Structural Drg No. — Rev
Survey Drg No. — Rev
Other Drg No. — Rev
Other Drg No. — Rev

DO NOT SCALE FROM THIS DRAWING



FOR CONTINUATION REFER TO SHEET 4002

© Copyright Cundall 2010

Notes

EXISTING ABANDONED DRAINAGE
EXISTING RETAINED DRAINAGE
PROPOSED BASEMENT SURFACE WATER DRAINAGE
PROPOSED GROUND FLOOR AND ABOVE SURFACE WATER DRAINAGE
PROPOSED BASEMENT FOUL WATER DRAINAGE
PROPOSED GROUND FLOOR AND ABOVE FOUL WATER DRAINAGE
PROPOSED COMBINED DRAINAGE

G GULLYS
RG ROAD GULLYS
PC PRECAST CONCRETE
BW BRICK WORK
MON MONOLITHIC WITH STRUCTURAL SLAB
/S SEALED MANHOLE

FOR NOTES SEE DRAWING 4001

Issue	Date	Description	By	Chkd	Verfd
F	24.04.14	UPDATED FOLLOWING OUTFALL INVESTIGATION	TC	DD	DD
E	18.03.14	UPDATED FOR CONTRACT ISSUE	TC	DD	DD
D	07.03.14	EXISTING & PROPOSED DRAINAGE CLARIFIED. ABANDONED DRAINAGE ROUTES SHOWN. PROPOSED DRAINAGE REFINED. UNDERSLAB DRAINAGE REMOVED.	TC	DD	DD
C	16.10.13	FW13B UPDATED.	AF	DD	DD
B	07.10.13	GENERAL REVISIONS. COVER AND INVERT LEVELS ADDED.	AF	MC	DD
A	01.08.13	ALL DRAINAGE RUNS PREVIOUSLY SHOWN WITHIN LIGHTWELLS NOW REPOSITIONED BENEATH THE BUILDING FOOTPRINT. THEREFORE DRAINAGE LAYOUT IS REVISED TO SUIT. INDICATIVE DEPTHS OF MANHOLES NOW SHOWN. RAINWATER DRAINAGE LAYOUT INCLUDED. SW PUMPING STATION INCREASED TO 45m3.	AF	MC	DD

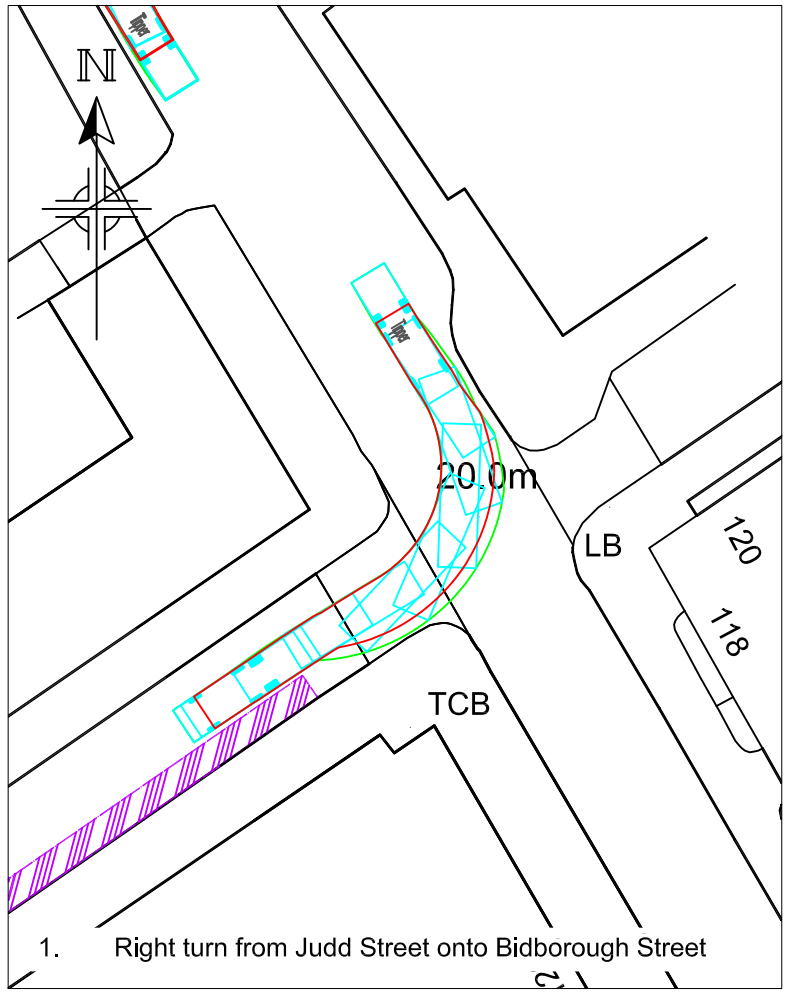
Project: CARTWRIGHT GARDENS
Client: UPP
Architect: TP BENNETT

Title: BELOW GROUND PROPOSED DRAINAGE LAYOUT SHEET 3 OF 3
Drawing No.: CL-XX-(52)-4003
Issue: F
Job No.: 1004327
Scale: 1:100
Drawing Status: CONTRACT

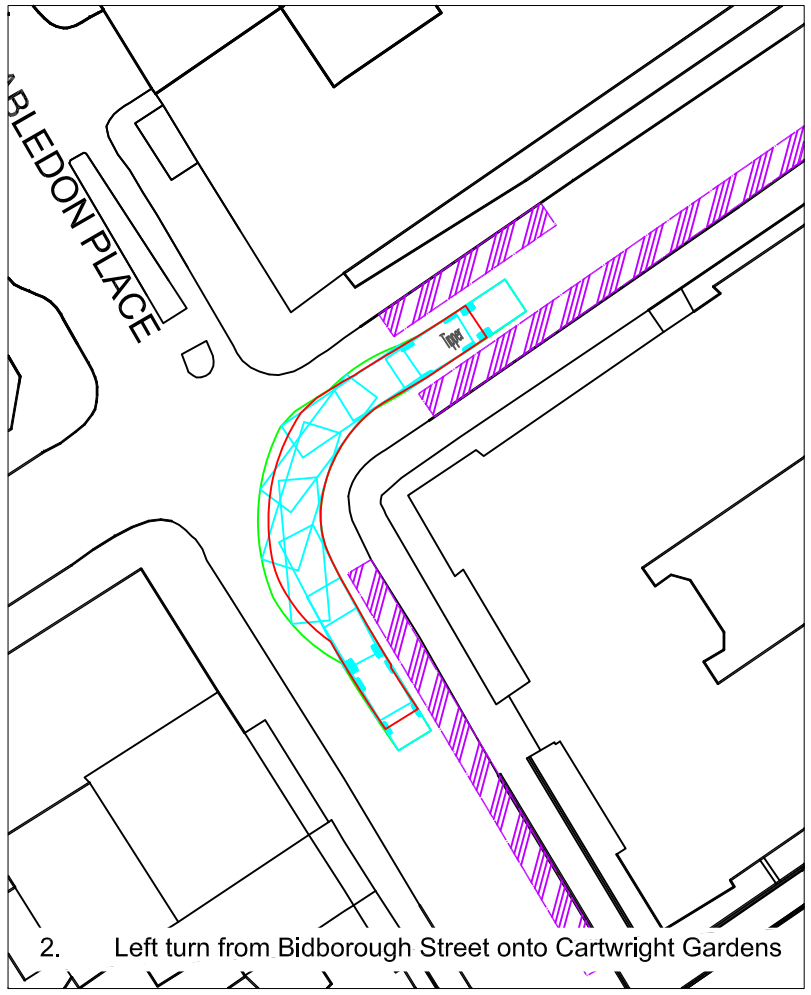
CUNDALL
Consulting Engineers
Horsley House, Regent Centre, Gosforth, Newcastle NE3 3LU
Telephone: (0191) 213 1515 Facsimile: (0191) 213 1701
Website: www.cundall.com

True scale at 1:1

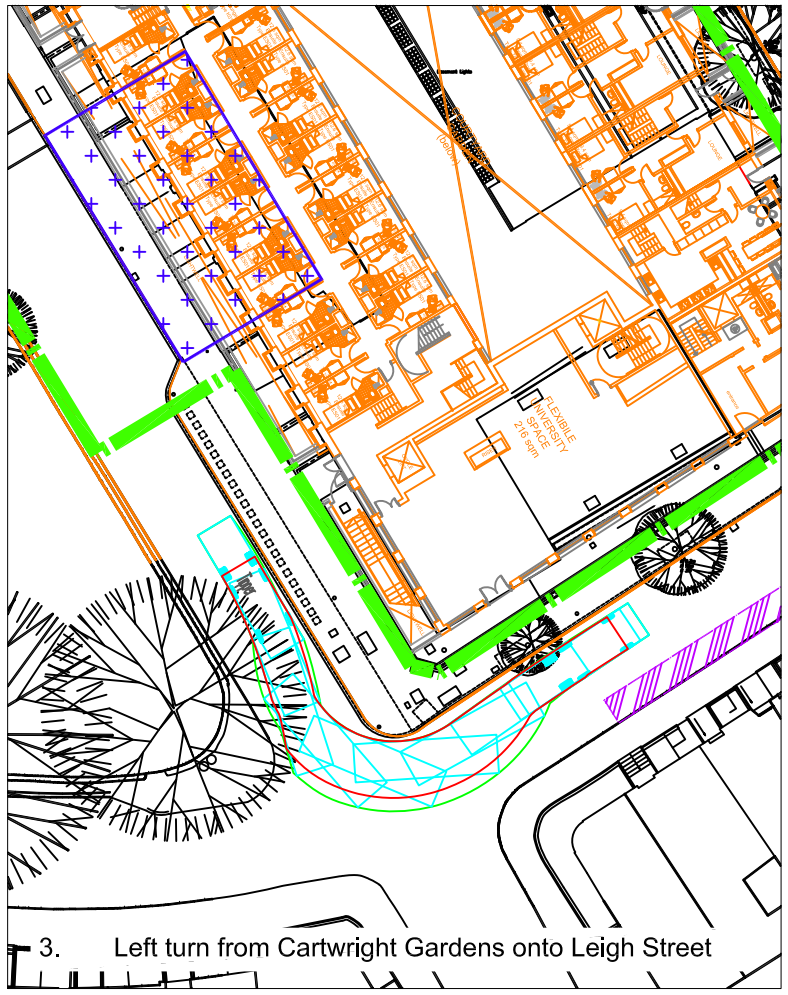
Appendix L – Swept Path Analysis Drawings.



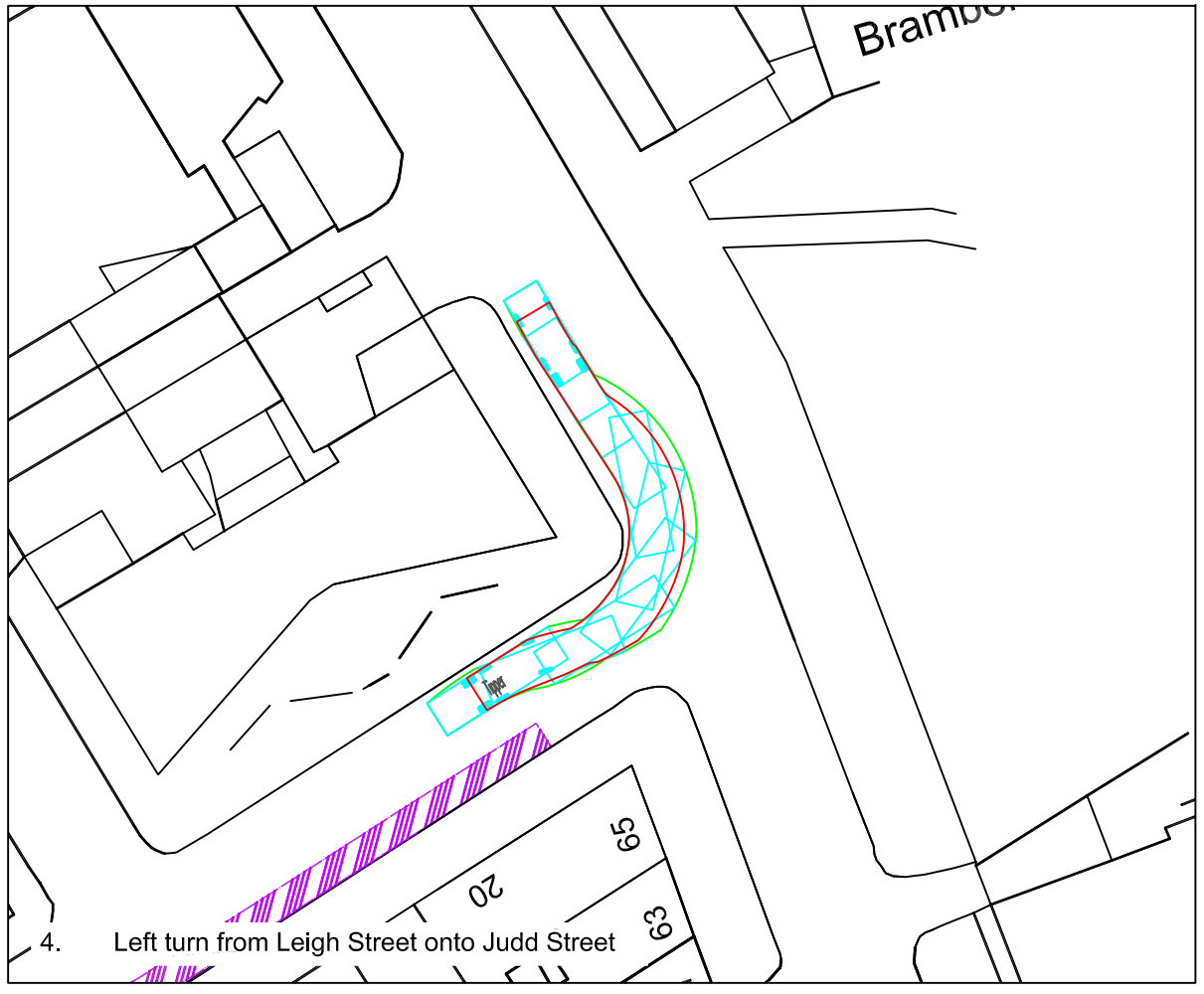
1. Right turn from Judd Street onto Bidborough Street



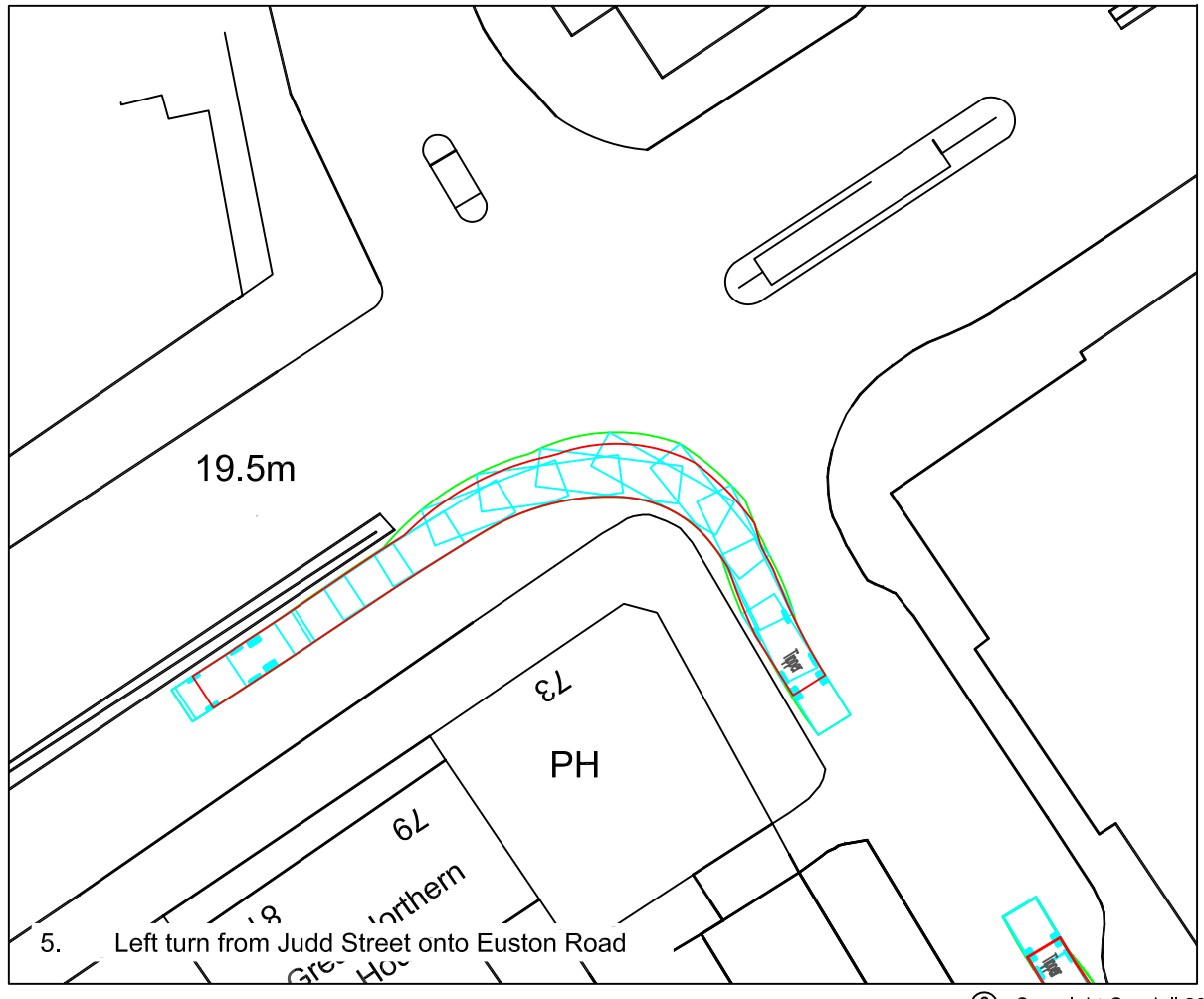
2. Left turn from Bidborough Street onto Cartwright Gardens



3. Left turn from Cartwright Gardens onto Leigh Street



4. Left turn from Leigh Street onto Judd Street



5. Left turn from Judd Street onto Euston Road

© Copyright Cundall 2010

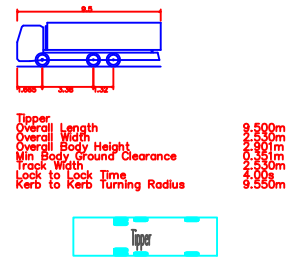
May 23, 2014 - 11:42am plotted by a.dryden

1005633 | A3

DO NOT SCALE FROM THIS DRAWING

Notes

- Site boundary
- Vehicle turning area
- Existing on street parking
- Central island



Issue	Date	Description	By	Chkd	Verfd
A	23.05.14	Updated vehicle tracking	AD	TC	TC

Project
Garden Halls, Cartwright Gardens, London - Student Accommodation

Client
Brookefield Multiplex

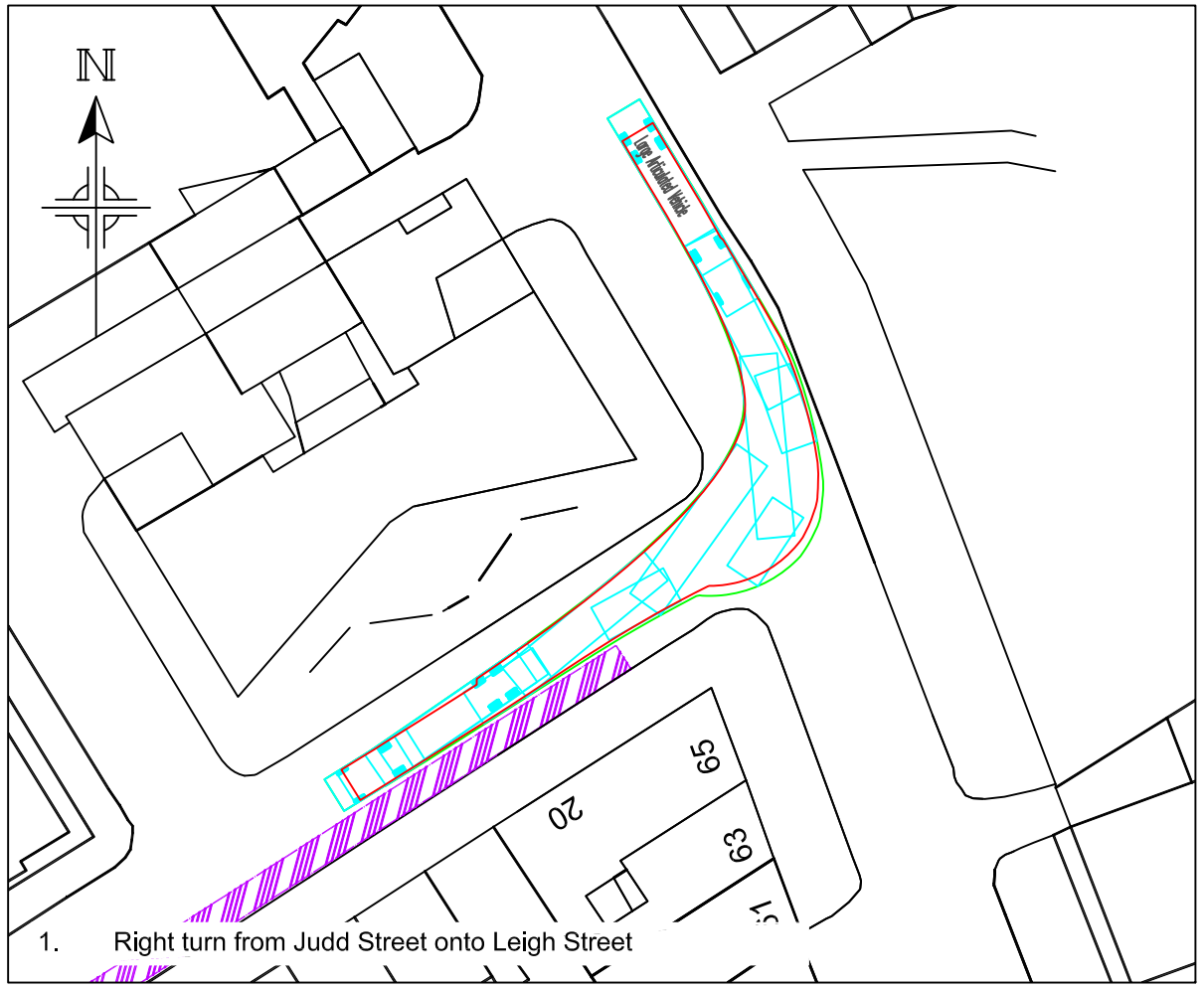
Architect
-

Title
Vehicle Swept Path Analysis
Construction Access - 9.5m Vehicle

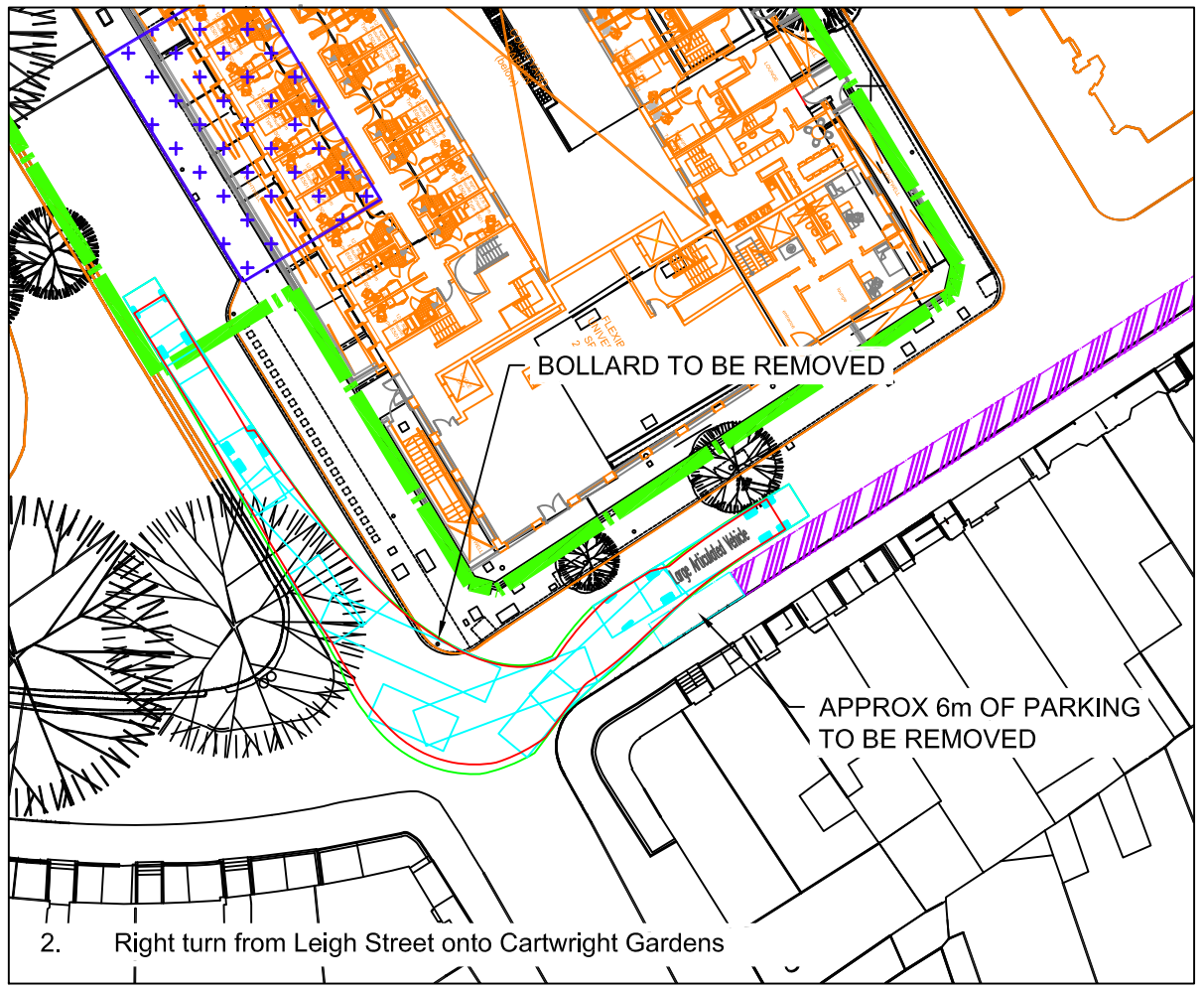
Drawing No.	Drawing Status
TCXX(90)1010	INFO
Job No. 1005633	Scale 1:500

Originator	Checked	Verified	Issue.
AD			A

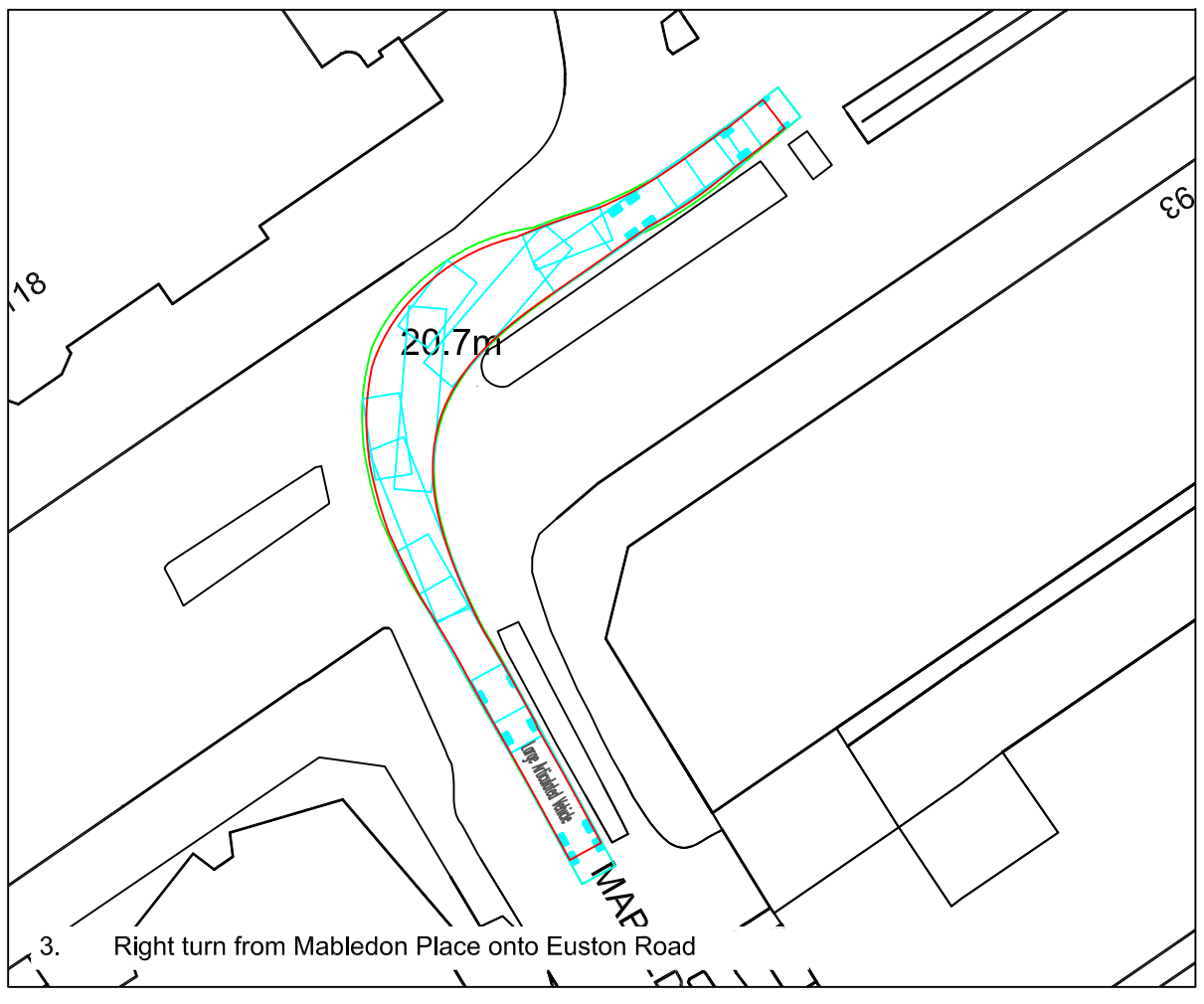
CUNDALL
Consulting Engineers
Horsley House, Regent Centre,
Gosforth,
Newcastle NE3 3LU
Telephone: +44 (0)191 213 1515
Website: www.cundall.com



1. Right turn from Judd Street onto Leigh Street



2. Right turn from Leigh Street onto Cartwright Gardens



3. Right turn from Mabledon Place onto Euston Road

© Copyright Cundall 2010

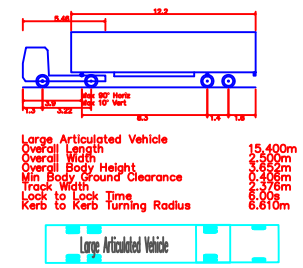
May 23, 2014 - 11:43am plotted by a.dryden

1005633 | A3

DO NOT SCALE FROM THIS DRAWING

Notes

- Site boundary
- Vehicle turning area
- Existing on street parking
- Central island



Issue	Date	Description	By	Chkd	Verfd
A	23.05.14	Updated vehicle tracking	AD	TC	TC

Project
Garden Halls, Cartwright Gardens, London - Student Accommodation

Client
Brookefield Multiplex

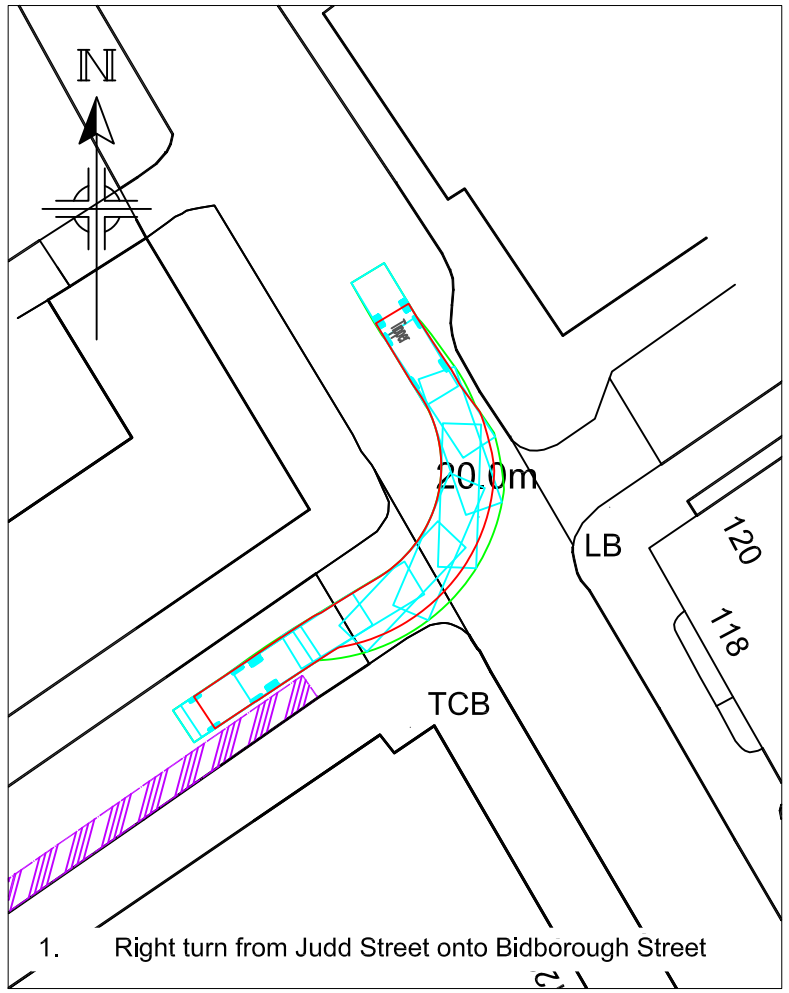
Architect
-

Title
Vehicle Swept Path Analysis Construction Access - 15m Articulated Vehicles

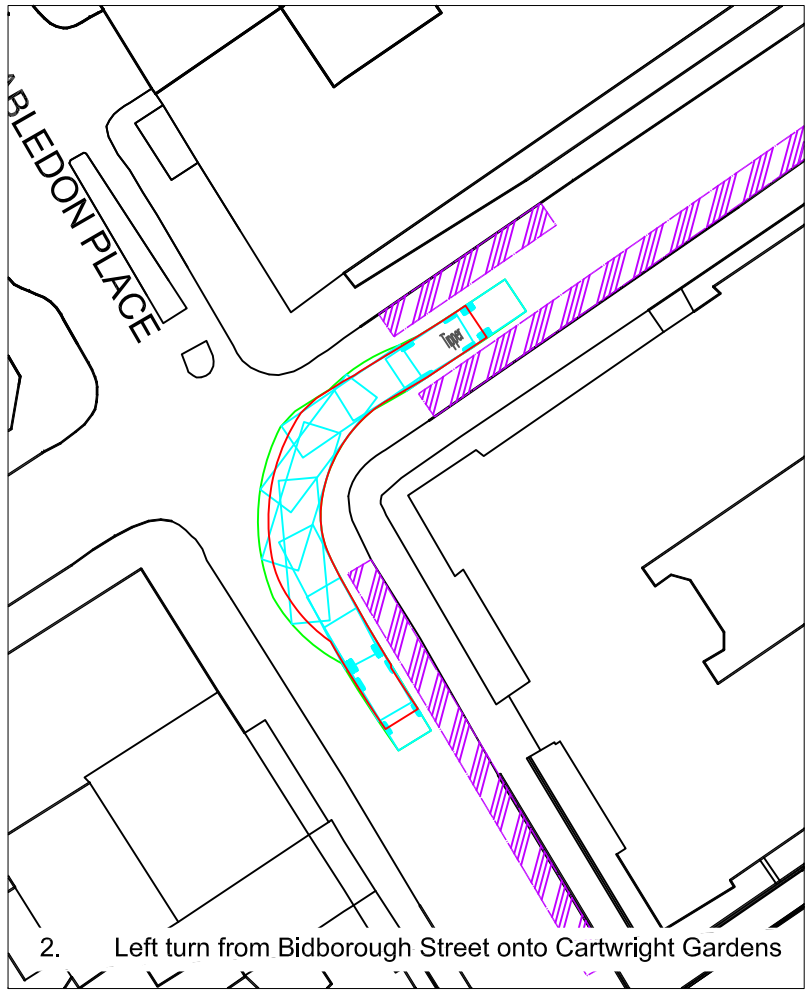
Drawing No.	Drawing Status
TCXX(90)1011	INFO
Job No. 1005633	Scale 1:500

Originator	Checked	Verified	Issue.
AD			A

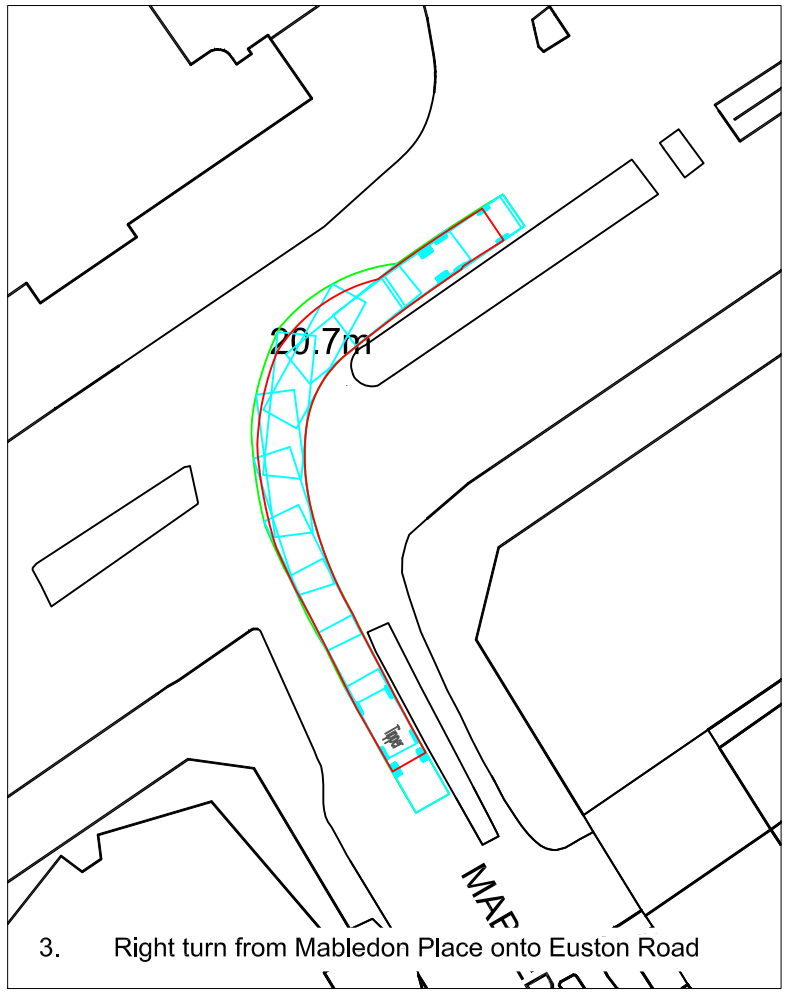
CUNDALL
Consulting Engineers
Horsley House, Regent Centre,
Gosforth,
Newcastle NE3 3LU
Telephone: +44 (0)191 213 1515
Website: www.cundall.com



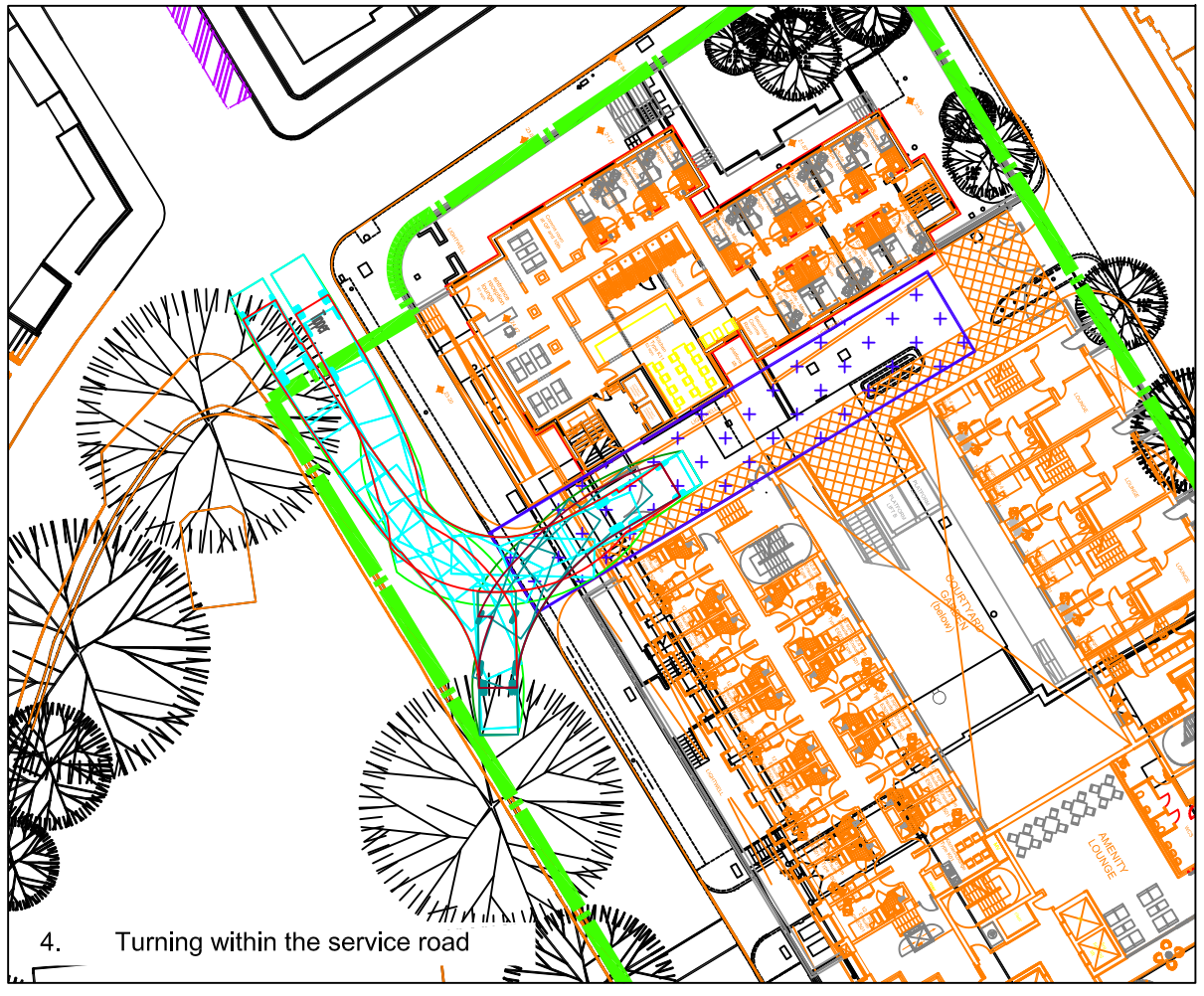
1. Right turn from Judd Street onto Bidborough Street



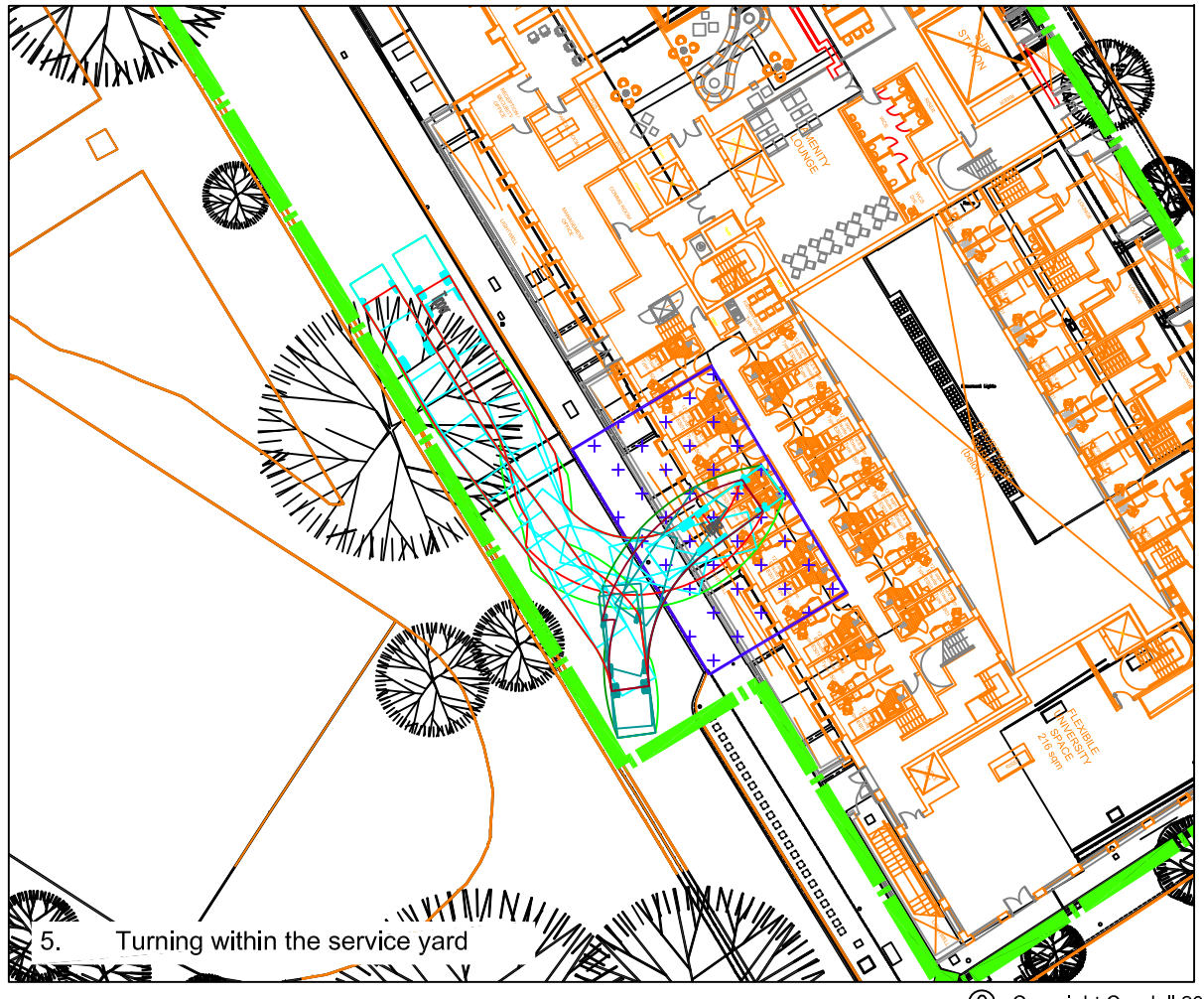
2. Left turn from Bidborough Street onto Cartwright Gardens



3. Right turn from Mabledon Place onto Euston Road



4. Turning within the service road



5. Turning within the service yard

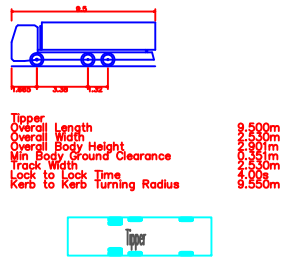
© Copyright Cundall 2010

1005633 | A3

DO NOT SCALE FROM THIS DRAWING

Notes

- Site boundary
- Vehicle turning area
- Existing on street parking
- Central island



Issue	Date	Description	By	Chkd	Verfd
A	23.05.14	Updated vehicle tracking	AD	TC	TC

Project
Garden Halls, Cartwright Gardens, London - Student Accommodation

Client
Brookefield Multiplex

Architect
-

Title
Vehicle Swept Path Analysis
Construction Access - 9.5m Vehicle

Drawing No.	Drawing Status
TCXX(90)1009	INFO
Job No. 1005633	Scale 1:250

Originator	Checked	Verified	Issue.
AD			A

CUNDALL
Consulting Engineers
Horsley House, Regent Centre,
Gosforth,
Newcastle NE3 3LU
Telephone: +44 (0)191 213 1515
Website: www.cundall.com

May 23, 2014 - 11:42am plotted by a.dryden