

THE SEVENTH SCHEDULE
DRAFT SUMMER USE MANAGEMENT PLAN



**UNIVERSITY
OF LONDON**

GARDEN HALLS, UNIVERSITY OF LONDON

DRAFT Summer Use Management Plan

July 2013

Contents

- 1. Executive summary**
- 2. About the summer use management plan**
- 3. Partnership approach to summer use management & community liaison**
- 4. Operational management**
- 5. During occupation**
- 6. Enhanced security**
- 7. Operational processes**
- 8. Health & Safety**
- Appendix 1 Guest Welfare roles & responsibilities**
- Appendix 2 Occupancy terms & conditions**

1. Executive summary

This Summer Use Management Plan has been prepared to inform the Section 106 requirements for the redevelopment of the Garden Halls in Bloomsbury by the University of London. *This document is intended to be a live document through the planning and post-planning process and hence why it is currently in Draft.*

The plan outlines how the University and its service provider University Partnerships Programme (UPP) will work together to deliver the services, security arrangements, welfare provision and how local feedback will be gathered and used.

The long-term partnership between the University and UPP will provide numerous benefits for both residents and the local community during the summer period, the months outside of academic term time.

These will include;

- A University of London led hospitality team supported by a full time UPP accommodation management team with clear lines of responsibility for welfare and behavior of guests staying at Cartwright Gardens
- The fully staffed management structure to the term time arrangements supplemented with additional staff to cater with higher turnover of residents
- Pre-booked occupancy of rooms only with no 'walk in' trade allowed
- As part of the check in process, all guests to agree to a code of conduct included within terms and conditions
- Increased levels of trained and experienced staff provided by UPP
- The delivery of a range of services including maintenance, security and cleaning by an experienced provider
- The continued involvement of a community liaison group established at the start of term who meet quarterly, to review operations and address issues of common concern to local stakeholders
- Enhanced security arrangements both by design and operation, utilising the latest in technology
- A 24 hour helpline for reporting any issues, operated by specialist, trained staff, with target response times

- Main entrance access for guests and visitors to Garden Halls and separate access for Hughes Parry. If the Townhouses on Sandwich Street are utilised during the summer their access will be restricted to only being through the main reception area.

2. About this summer use management plan

To ensure that the building and the out of term time occupants integrate successfully into the wider community we have drawn from our collective experience in managing buildings of a similar kind in residential areas.

This document sets out the key principles, methods and working practices that will be adopted by UPP to enhance the University's management of the Cartwright Gardens development outside of term time.

This plan supports and is integrated with the term time Student Accommodation Management Plan submitted as part of the planning application process. Particular emphasis has been placed on how we will continue to manage the accommodation and engage with local stakeholders to ensure that the building and its guests respectfully enjoy the local area and contribute to the local economy on an on-going basis.

We are mindful that Cartwright Gardens is a predominantly residential area and have taken this into account when preparing this management plan.

2.1 Introduction to the University of London

The University of London is one of the most prestigious universities offering world class education to a community of over 120,000 students. Many of its constituent Colleges are consistently ranked as some of the best universities in the world. Founded 175 years ago it is also the largest university in the United Kingdom.

The University operates an intercollegiate hall of residence system for the benefit of the 18 self-governing Colleges and 10 specialist research institutes that make up the federation. The University views the accommodation as an essential benefit to students.

The University only charge students for the 40 or so term time weeks that the students are in session. As is the case for all of the University of London Halls and the vast majority of Universities accommodation across the UK, during periods of the year when the accommodation is not required by the students the University lets this commercially this ensures that the financial burden on the students of living in central London is mitigated by releasing them from the need to pay rent at these times. The associated benefit to the local economy is that the building is in beneficial use all year round.

The current makeup of bookings taken during the summer period include;

- 8% Students on extended stays
- 39% Group bookings including students enrolled on education courses
- 46% Group bookings for non-students generally as part of corporate events
- 7% Private individual bookings

2.2 Introduction to UPP

UPP is a leading provider of student accommodation and campus infrastructure. Bringing a wealth of knowledge and expertise, UPP's core business is the provision of student accommodation and asset management to the Higher Education sector.

Following a market tendering process the University of London selected UPP as its preferred partner for the delivery of high quality affordable and well-managed accommodation at the new Garden Halls. UPP are specialists in the UK higher education market, operating a total of 28,000 rooms nationally, and were selected on the basis of their excellent track record in the management of student halls of residence on behalf of Higher Education institutions.

UPP has an extensive knowledge and experience of managing university accommodation to enable its use during the summer period. During summer 2012 UPP operationally managed in excess of 140,000 bednights for its partner universities. A local team will provide all onsite services, from building maintenance to security and cleaning and will be contracted to support the University in delivery of well-managed halls of residence in Bloomsbury for the long term.

Neighbours can rest assured that the halls of residence are in good hands as UPP prides itself on being a primary partner, engaging in long-term partnerships with world renowned University partners, always seeking to enhance the University's reputation and its own through well-managed, stakeholder friendly halls of residence throughout the year.

UPP's wholly-owned, in-house facilities and asset management arm is responsible for ensuring the day-to-day delivery of high quality services to students across the UPP portfolio, ensuring a consistency in approach and implementation of best-practice.

UPP is to provide the University of London with a complete building infrastructure asset management service that includes hard and soft Facilities Management (FM) at the Garden Halls development.

3. Partnership approach to summer use management & community liaison

To ensure that the Garden Halls make a positive impact out of term time on the local community, we will continue the dialogue and beneficial relationships established with neighbours, businesses and others in the local community during term time.

The University and UPP consider this approach to be vital to the long term success and sustainability of the Garden Halls. Our vision is to ensure that the broad range of local interest groups co-exist harmoniously.

The Garden Halls will be fully staffed all year round. During the commercial lettings additional staff will be employed due to the higher turnover of residents. As with all the jobs at Cartwright Gardens these jobs will be advertised locally in the first instance.

The partners are committed to and will be resolute in the drive to mitigate the impact of day to day operations on the local residential and business neighbours.

Noise management will be a key theme and we will provide a manned 24 hour phone line for concerned neighbours to contact suitable staff. There will also be a target time to resolve noise-related issues. The access control system will operate throughout the building and can effectively be used at part of the target time noise management.

3.1 Contact with the Facilities Management team

In addition to the 24 hour phone line, the site-based management team will be available to listen to and discuss any issues or concerns raised by the local community, providing points of contact with the site team for neighbours and businesses.

Concerns or specific problems will be dealt with quickly and effectively. Contact details for our on-site management team, the management office and other key members of staff will be circulated to all neighbours and business occupiers.

3.2 Community Liaison Group

UPP and the University of London will continue to involve the Community Liaison Group (CLG) established at the start of the autumn term during the summer period – a positive commitment to strengthening relationships between the Garden Halls, its neighbours and local stakeholders.

As stated in the Student Accommodation Management Plan the CLG will comprise a broad range of representatives. Minimum composition is expected to include:

- UPP Residence Manager
- Head of Residential Services from University of London
- Wardens and Residential Assistants
- Resident or Management representatives from any adjoining or nearby public or private housing associations
- Representative from local commercial properties
- Police community liaison officers

It is envisaged that the group will comprise approximately 10 representatives from these identified sources. The University and UPP will invite nominations for membership from each of these groups.

The primary purpose of the CLG will be to review the impact of the operations of the Garden Halls on the local community. It will be a forum to discuss areas of common concern in connection with the management of the building and any potential impact that the activities and behaviour of students and guests may from time to time have on the local environment.

The CLG will work to determine practicable solutions to problems identified, with UPP subsequently taking responsibility for ensuring that the agreed actions are implemented. The CLG will also be responsible, on an annual basis, for agreeing the level of use of facilities at the Garden Halls e.g. meeting rooms, by the local community.

CLG meetings will be held in line with the student academic year cycle at the management suite, with the first taking place no later than two months prior to first occupation by students of the new Garden Halls. The meetings will be administered and chaired by UPP, who will be responsible for producing and circulating appropriate agendas and subsequent



minutes to all members. During every fourth quarterly meeting, the agenda shall include an annual review process where members can discuss how effective the CLG is and propose adjustments to its terms of reference and working practices where appropriate. The timing and frequency of meetings will be reviewed at each session.

4. Operational management

The welfare and pastoral care team from the University of London will also have responsibility for guests and visitors hospitality during the summer period. There will be a member of the team on duty every day to assist the UPP staff and management to engender a pleasant environment as well as dealing with any incident of negative behaviour. Collectively they will provide the leadership required to support guest welfare on site, encourage appropriate behaviour and initiate termination of stay procedures when required.

4.1 On site management and staff

The structure of the summer use team will be identical to the term time arrangements. Overall responsibility for the management of the Garden Halls will be with the UPP Management Team comprising a full-time dedicated Residence Manager, supported by a team of administrative, engineering and cleaning staff all of whom will be based at the Garden Halls. Every member of UPP staff, regardless of role or position, will be trained to be a first line of support guests in relation to the day to day operation of the Garden Halls.

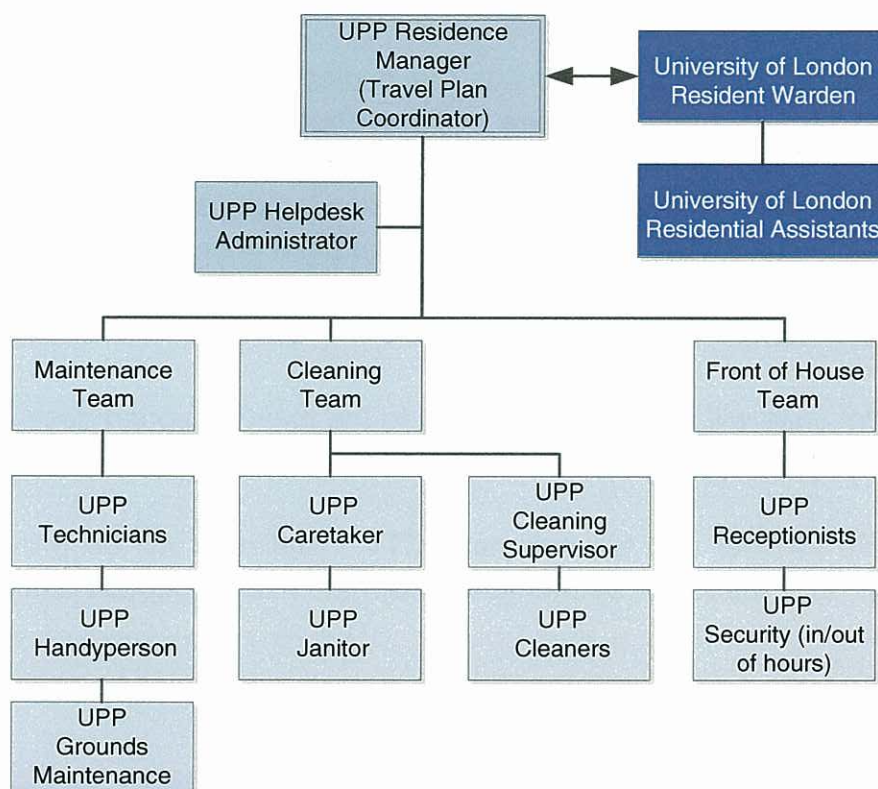
The Garden Halls will be fully staffed throughout the year. There is usually an increased staffing outside of the core academic period to support the needs of the summer business, periodic work and the deep cleaning that takes place at this time. The local community will therefore see no lessening of service, presence or communication outside of term time. All employment opportunities at Cartwright Gardens will be advertised locally in the first instance.

All staff both permanent and temporary summer staff will be regularly briefed on the services, facilities and local business that may be of interest to guests and will promote local business and services throughout this period.

The site will have a 24 hour front of house service staffed by receptionists during the day and by two members of the security team during the night and at weekends. This enables one person to patrol the building or respond to call outs while the other will maintain a presence at reception and vigilance on CCTV feeds. All FM staff will be directly employed by UPP.

UPP is accredited with Investors in People and offers staff the training and support needed to carry out their functions on-site, safely and effectively.

The Site Team



The Garden Halls hospitality needs during the summer will be delivered through the roles and responsibilities assigned to the Warden, Residential Assistant and Facilities Management team. The structure will be reviewed annually, with the most appropriate mix and number in each role being determined to ensure the highest standards of welfare, hospitality and management of guests.

A key responsibility of the team will be to monitor and deal with issues relating to uncontrolled behaviour, 24 hours a day. An example of how disruption caused by poor behavior will be handled is illustrated by the flowchart included under section 5.2.

4.2 Building access arrangements

The layout of the building will allow staff to monitor access, with a visible staff presence and a clear point of contact for guests.

The Garden Halls have been designed with two dedicated lobby areas, accessed by a row of card-operated security barriers in view of the reception desk. There is one for Hughes Parry tower and one for the main reception located in the new Garden Halls, which will be staffed 24 hours a day. This will allow staff to monitor guests and visitor access to the building and will provide a visible staff presence and point of contact. If the Townhouses on Sandwich Street are utilised during the summer their access will be restricted to only being through the main reception area.

The management suite will be located adjacent to the main reception desk allowing a quick and effective response to any issues that cannot be dealt with directly by the reception staff.

A comprehensive internal and full external CCTV installation will be provided with night vision capability. Live feeds will be monitored from the main reception desk by the security team.

4.3 Day-to-day monitoring

A discreet but effective security and behaviour monitoring role, encouraging appropriate behaviour, will be provided by all staff moving around the buildings during the day.

To maintain a good quality living and working environment for all guests, bedrooms and communal areas of the building (including lifts, common rooms, lounges, townhouse kitchens, laundry, courtyard gardens, amenity space and all entry and exit points) will be inspected and cleaned regularly by a team of directly employed cleaning staff. This provides a further effective method for monitoring the welfare and behaviour of the students and guests.

As part of their role the Residence Manager and their service management team will perform daily inspections to ensure that;

- Operational staff are performing in accordance with applicable service level agreements
- Guests are benefiting from a good living and working environment free from the inconveniences caused by poor service delivery and disruptive behaviour
- Guests and neighbour issues are dealt with promptly and appropriately

This will help guarantee that service delivery is to the University and guests satisfaction. A focus on high quality service delivery, reducing response times and promoting a beneficial living environment for guests will have a positive impact on the local environment.

4.5 Building design

UPP's experience across a student accommodation portfolio comprising over 28,000 rooms has informed the design and fit out of the Garden Halls.

Examples of design intended to mitigate the impact on our neighbours include:

- Windows with restricted opening position so as to control noise transmission and provide a high level of security. In lounges and kitchens ventilation will be controlled through the use of acoustically treated vents.
- Extraction systems from the kitchens will filter the output from the kitchen to the extent that it will be odourless. The outlet will be at a high level which will also dissipate extracted air most effectively. The system will incorporate sound attenuation in order to meet the required acoustic limits.
- Enclosed central courtyard – a main hub of activity within the Garden Halls – thereby providing an all-weather amenity within the building for guests and at the same time attenuating the sound within the structure of the building.
- Dedicated music practice rooms so that guests do not need to practice in their rooms which could cause nuisance to others.

5. During occupation

5.1 Terms of occupation

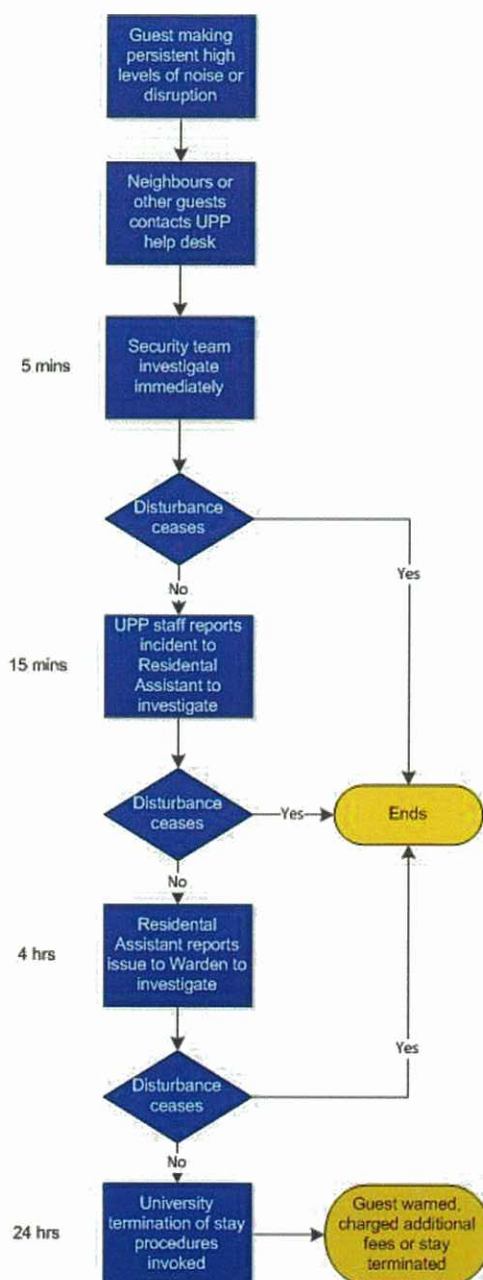
All out of term business will be pre booked and no 'walk in' business will be allowed. The guests staying during the summer will, as part of the check in process, agree to a code of conduct included within the terms and conditions of the booking both group and individual.

5.2 Acceptable Behaviour

The encouragement of acceptable behaviour is critical to the success of the Management Team.

UPP and the University will promote a living environment where all guests can enjoy their stay, considering and respecting others. For example guests will be encouraged to bring headphones with them to listen to music.

The flowchart below shows the process for dealing with any noise and disturbances. A target time is shown on the left.



The site management team will have complete discretion to decide immediately if the disturbance caused warrants further action such as formal warning, additional charges or termination of stay. Should a local resident have raised an issue with the site team and after their action remain dissatisfied with the decision of the site management team they will have the opportunity to appeal directly to the Regional Director South East Region. The Regional Director or if on leave a nominee will investigate the issue and respond within no more than a week.

5.3 Maintenance issues

Where room repairs and/or maintenance is required, the UPP helpdesk will log the requirement and schedule a repair by the on-site maintenance staff, according to urgency. Information relating to all Service Level Agreements and response times for maintenance repairs will be communicated to students via their welcome packs.

Once a maintenance issue has been reported, information relating to progress and the outcome is updated by the helpdesk administrator, enabling those logging calls to be advised of progress.

6. Enhanced security

In addition to the 24 hour on-site security presence at the property, the following security measures will be put in place to enhance the safety of guests at all times.

6.1 Electronic access control

The building will feature an electronic access control system. This centrally managed system will allow areas for guests to be restricted to particular rooms or areas and can be time-sensitive.

Entry to and from the building, all common areas and individual flats, townhouses and bedrooms will be controlled. All guests will be issued with personal fobs, individually registered to the person and strictly controlled, at check in.

Access to areas not in use during the evening, will be prevented.

In the event of a key being lost or stolen, the system will cancel the original key and a new one will be issued to the guest.

6.2 CCTV & external lighting

A comprehensive perimeter CCTV system with night-vision capabilities will act as a deterrent to anti-social behaviour in the vicinity. It will also make it easier to identify anyone making a disturbance.

The development will have a comprehensive internal and external perimeter CCTV installation with full night-vision capability. Experience shows this to be a major deterrent. Live feeds will be monitored on-site and can also be viewed remotely if required. Recorded video data of all activity in and around the building will be stored for 1 month. This will support the on-site security presence.

6.3 Emergency contact

The reception desk will be manned 24 hours per day, with contact details provided to neighbours, should they need to contact our site security team in an emergency.

7. Operational processes

7.1 Operational procedures

The team will deliver the services all year round, not just during term time. The Service Level Agreement, which UPP will adhere to, forms part of the contract between the parties.

A set of standard policies and procedures will be utilised to ensure there is clarity and consistency in the way the FM team operates. This will ensure guests have a positive and safe experience during their stay.

The policies and procedures cover all aspects of the management of the accommodation, from managing individual/group booking arrivals and departures to planning building maintenance and cleaning procedures.

Deliveries will be managed in line with the Service Delivery Management Plan submitted as part of the planning application as well as in accordance with the Service Level Agreements and Key Performance Indicators required by the University. Actual performance will be regularly audited as part of the performance monitoring system, per the contract documents.

7.2 Catering services

A University of London catering service tailored to the needs of the guests will be provided for seven days per week in the lower ground floor dining hall in the Gardens Halls. A separate coffee bar area open all day will enable a longer meal service, creating a relaxed environment for group working and social interaction.

The kitchen service will operate on a 7 day per week basis catering for breakfast and dinner every day. At the weekends breakfast will be replaced by a brunch service. Our opening times will be from 7.30am – 9.30am for breakfast, 11am until 12.30pm for brunch and 5.30pm until 7.30pm for dinner.

It is proposed that vending machines selling hot and cold drinks and crisps and snacks are introduced on the ground floor for an out of hours service provision.

Payment for all food and drink would be via either a cashless system linked to the security access passes or cash and credit cards.

7.5 Waste management

Waste generated at the site will be contained in a storage area located on the lower ground floor. Site management will ensure that waste collections will be at times that do not disturb neighbours unnecessarily early in the mornings. The new vehicle access and service area arrangements will ensure a forward gear only drive through approach to vehicle management.

A full preventative pest control regime will also be in place at the site.

7.6 Vehicle management

Roads will be kept free as delivery vans will be able to park off street by entering the service area in the development.

Postal deliveries will be made directly to the reception post-boxes in the two buildings with parcels being handled by reception staff.

No parking will be provided at the halls and guests will be reminded of the excellent transport links in the area. All coaches bringing guests to the halls will be dealt with in a similar manner as during intake at the beginning of the academic year with clear instructions on where the set-down area is on Cartwright gardens. All coaches will be met and guests arriving will be directed by a member of staff. Departure of guests will also be managed in a similar manner.

8. Health & safety

UPP are extremely vigilant in the approach to all Health & Safety issues and legislation and have recently been awarded Occupational Health and Safety Assessment System (OHSAS) 18001.

An external Health & Safety consultancy will undertake risk assessments of the completed development in the following areas:

- Fire Risk Assessment (Fire Safety Regulatory Reform Order 2005)
- Health and Safety Risk Assessment including Control of Substances Hazardous to Health (COSHH), Portable Appliance Testing (PAT) testing and Gas safety certification
- Legionellosis(water) Risk Assessment

Comprehensive reports will be commissioned annually and all site safety issues will be managed in-house. The initial assessments will be undertaken towards the end of the construction phase, and will enable all required safety measures to be put in place prior operational commencement.

UPP will deal with all site risk assessments, safety compliance issues, site specific task management, and will ensure that it maintains accurate safety data and compliance with legislation as governed by the Health & Safety Executive.

To safeguard staff safety and compliance, all on-site staff at the building will undertake training in general Health & Safety issues as appropriate for their area of responsibility. All employees required to work during the night will be eligible for night working health assessments as required under the Health & Safety at work Act 1974.

UPP site Health & Safety procedures are regularly audited both externally and internally to ensure compliance with legislation and best practice.

Appendix 1 – Guest welfare roles and responsibilities

Wardens

Wardens are resident members of staff responsible for welfare & pastoral care during term time will continue in this role throughout the year including the summer period. Apart from responsibility for discipline & conflict resolution (including noise complaints), re-admissions, out-of-hours emergency cover, community and social life at the halls, out of term time the team will continue to deliver welfare services to the University's guests as part of the hospitality team. The Wardens will also continue to be supported by a full team of Residential Assistants.

Residential Assistants

Residential Assistants are experienced, usually postgraduate students, who live at the halls throughout the year and work under the direction of the Wardens in connection with welfare & pastoral care, discipline & conflict resolution (including noise complaints), re-admissions, out-of-hours emergency cover, and community and social life during term time and out of term time as part of the hospitality team. The Residential Assistants work as a team and there will always be people available at evenings and weekends.

The full team of Wardens and Residential Assistants will be available during the summer period to ensure guests enjoy their stay respectful of others and the community within which the accommodation is situated. Together with the site management team they will action warning, charging and termination procedures as a result a guest's breach of the occupancy terms and conditions.

Occupancy Terms and Conditions

Definitions/Interpretation

'The University' means University of London Senate House Services Limited, which is a wholly owned subsidiary company of University of London, trading as 'UoL Accommodates'

'The Client' means the organisation, company, person or persons hiring facilities and or services at any of University of London's Halls of Residences.

General Terms and Conditions of Group Accommodation Bookings

These Terms and Conditions form the basis of the Booking between the Booking Organiser and the University of London.

The University will not enter into, accept or sign any third party's terms & conditions

Making a Booking

Any booking request for 7 or more bedrooms is considered as a Group Booking.

All bookings remain provisional - and can be cancelled without penalty - until the booking contract / terms and conditions and quote has been signed by the client, returned to the University and deposit payment has been received. Once received, your booking will be confirmed. We will hold a provisional booking for 14 days and during this time we will not allocate the facilities that you have provisionally booked to other customers unless you agree. All deposits are non-refundable.

Your quote will outline the accommodation, meals and other facilities which you have booked and the rates applicable.

By confirming your booking you agree to pay all charges set out in the quote or any other future quotes which will then outline any amendments made to the booking.

The prices of all rooms, facilities and services at the University will be in accordance with the current quoted tariffs.

All rates are inclusive of VAT at the current rate, unless otherwise stated. If your company is exempt from VAT, proof of this must be provided at the time of making a booking so the quote can reflect the correct charges. The University reserves the right to decline any booking or part thereof.

Advance Bookings

We may need to increase our charges if you book more than a year ahead. When you book, you agree to pay our charges for the accommodation, meals and other facilities set out on the current rates. VAT rates charged are subject to the current rate as at the date of service. We reserve the right to increase our charges from the rates we quote to you at the time of booking and will inform you in writing. However, we will not increase our charges in the 6 months before the event.

Payment Terms

All bookings are subject to a deposit payment as outlined below. All deposits are non-refundable.

- 50% of agreed total Quote value of bookings made more than 30 days in advance

- 100% of agreed total Quote value of bookings made less than 30 days in advance

A final invoice for all facilities and services hired (less the deposit payment amount) will be raised after the event and is payable within 30 days in accordance with the University's standard payment terms. All payments must be made in British Pound Sterling to Senate House Services Limited, with payment details outlined on the invoice.

Amendments and Cancellation

Amendments (e.g; increasing room numbers or releasing rooms, changes to catering arrangement) to room hire requirements or services must be confirmed to the University in writing or via email at least 14 days prior to the start of the event.

If you ask us for any extra accommodation, meals or other services / facilities in addition to your signed quote, we will make the best effort to accommodate your request but we cannot guarantee that we will be able to do so. If you alter the booking and we are able to accommodate the changes, we will send you a written confirmation from us and an updated quote which will then specify the new booking details and charges and confirm that the changes are accepted. Your amendments are only confirmed once you have received the new quote from us.

Cancellation of the Booking by the Client

All cancellations must be made in writing or via email. Cancellation charges as quoted below shall apply if the booking is cancelled by the client:

- 60 - 30 days prior to start of event - 50% deposit will not be returned
- Less than 30 days prior to the start of event - 100% of the booking charges will apply

Cancellation by the University

The University reserves the right to cancel the booking:

- If the client becomes bankrupt or insolvent or enters into liquidation or receivership.
- If the client is more than 30 days in arrears in respect of payments due to the University in respect of previous and/or current Bookings or part(s) thereof
- If the booking might, in the University's reasonable opinion, prejudice the reputation of University of London
- If the behaviour of individual guests/delegates or a group as a whole or in part is deemed by the University to be unacceptable. Partial termination could result in a number of guests/delegates being asked to leave University premises.
- If there is any breach of these Terms and Conditions of booking

Liability & Insurance/Indemnity/Damages

The University shall not be liable for:

- Any direct loss or damage to goods or property of the Client, guests/delegates
- the death or injury to any guest/delegate attending an event organised by the Client, or for any indirect or consequential losses or claims, demands, actions, proceedings, damages, costs or other liability incurred by the Client in connection with the hiring of the University's facilities, except where such
- death, injury or loss is due to the negligence of the University
- any inconvenience or loss caused to any party as a result of cancellation or termination

The Client shall indemnify the University and hold the University harmless from and against all losses or claims, demands, actions, proceedings, damages, costs or other liabilities without limitation and legal and other fees arising out of and in connection with the Client's hiring of/use of the University's facilities hired under these terms and conditions.

You agree to pay us for any loss or liability of any kind to any person that results from you, any member of your party or person visiting you at the accommodation failing to obey any University ordinance regulation or rule.

Under 18s

If any of your guests are under the age of 18 then you agree that you will provide supervision for them at all time with the ratio of 1 supervisor to 10 guests.

Behaviour on the premises

Organisers of events held on the University's premises must ensure that their activities and those of their participants conform with Health & Safety practices and regulations.

The University operates a strict No Smoking policy throughout its buildings in accordance with Health Act 2006.

Users of the premises must not do anything that may cause or pose a risk of loss, damage or significant

expense to the University or harm the reputation of the University.

Care must be taken to ensure that any private statement made is not described as University policy, nor is in any way attributable to the University.

Also all statements, especially those made in 'public' messages, should not be defamatory.

Data Protection Act

We are registered under the Data Protection Act 1998 and will only use your and your guests' personal details for our business and will not sell them to a third party.

Copyright

You cannot hold any press conferences nor make any television or radio recordings at our venues without prior written agreement.

Jurisdiction

This agreement is subject to English Law.

I have read and understood the Terms and Conditions

Signed on Client`s behalf

Signed on the University`s behalf

Signature		Signature	
Printed Name		Printed Name	
Date		Date	
Position Held		Position Held	
Company Name		Company Name	University of London Senate House Services Limited

THE EIGHTH SCHEDULE

CARTWRIGHT GARDENS DRAFT OPEN SPACE OPERATIONAL MANAGEMENT PLAN



Cartwright Gardens Draft Operational Management Plan

Introduction

This draft operational management plan has been prepared to inform the Section 106 requirements for the redevelopment of the Garden Halls in Bloomsbury by the University of London. This document is intended to be a live document through the planning and post-planning process and is provided in draft.

The plan describes how the University of London (the applicant) and its service provider University Partnerships Programme (UPP) will manage the private gardens adjacent to the halls of residence, to which it is proposed access will be provided to the general public for the lifetime of the development as part of the proposals.

The operational management plan for the gardens will be guided by the following key objectives, to be:

- A welcoming place for all visitors
- An environment that is healthy, safe and secure
- A well maintained and clean space
- A place where the principles of sustainability and biodiversity are encouraged

Section 1) A welcoming place

The Gardens will be re-landscaping in accordance with the landscaping proposals submitted to the Council for approval as part of the submission. Thereafter, the gardens will be maintained so that they are a welcoming green space that enhances the area, providing an accessible, leafy retreat from the hustle and bustle of city life for students, residents and visitors.

Facilities will include bookable tennis courts, seating areas, open grassed areas and areas shaded by mature trees which will be complemented by a variety of shrubs and planting designed to attract local wildlife to the gardens.

UPP's on site grounds maintenance and caretaking staff will ensure that the gardens remain attractive and safe to visitors. Security staff will secure the gardens each evening at sunset. Staff will always adopt a respectful attitude when dealing with members of the public particularly around closing time while at all times maintaining vigilance for any potential acts of vandalism and undesirable behaviour.

Permanent notices will be provided clearly stating the conditions associated with any visitor's use of the gardens including details of unacceptable activities and behaviours as well as advertising the specific seasonal daily opening and closing times of the gardens. Further information in relation to the gardens, its history and role within the community will also be prominently displayed at the main entrance.

Section 2) Healthy, safe & secure

Security of the gardens will be provided by UPP's site based security staff. Staff will open the gardens at sunrise each day, first conducting a patrol of the area, checking for any issues or hazards to ensure the area is safe for the public to enter.

Security staff will then be responsible for a final patrol, ensuring that all visitors have left the gardens prior to securing the gates at sunset each day.

The grounds staff will be on site throughout the day either in the gardens on the adjacent halls of residence site attending to external landscaped areas. Grounds staff will monitor the use of the gardens acting in the capacity as park wardens. They will be provided with regular training on how to deal effectively and safely with the public relying mostly on gentle, friendly persuasion given they will not have any powers to fine, apprehend or prosecute offenders. The University and UPP will also deal with undesirable behaviours through targeted education and awareness campaigns through neighbourhood media, contact with the community, signage and specific events.

Should it become necessary any of the UPP staff on site will be able to quickly contact the local police.

Grounds staff will regularly inspect paths and walkways for signs of obstruction, trip or slip hazard and will take appropriate action at the time to reduce or eliminate these risks.

A programme of regular tree surveys will be undertaken to monitor and preserve the health of trees in the gardens and to ensure the safety of visitors.

During the day UPP's grounds team will also undertake regular patrols of the gardens litter picking and emptying waste bins for the safety of visitors, their pets, local fauna and flora but also to discourage the establishment of vermin.

The grounds team will not be using any vehicles on site, nor will vehicles be allowed to enter the grounds under normal circumstances, which will increase the desirability of the grounds as a safe place for everyone including small children.

No toxic plants or chemicals will be allowed on site.

Dog owners will be expected to keep their pets under control at all times and to prevent or remove dog waste from all areas.

Where events are held in the gardens an 'Event Plan' along with Risk Assessments and proof of Public Liability Insurance will have to be provided and stakeholders will be notified before the event is allowed to proceed.

Anyone wishing to hold an event will be directed towards the University in the first instance and contact details will be provided.

Section 3) Well maintained and clean

Maintenance of the gardens will be undertaken by UPP's site based grounds maintenance staff and caretakers.

A schedule of seasonal maintenance will be undertaken including path clearance, lawn mowing and edging, pruning, weeding, replanting, tree inspections and arboriculture.

Bird boxes will be cleaned out annually outside the breeding season.

Fences, gates and furniture will be regularly checked for damage and repaired expediently; by the on-site team wherever possible.

Litter bins will be appropriately distributed throughout the gardens next to seats and along the main paths. These will be emptied daily by the caretaking staff and more frequently at peak times e.g. during the summer months.

All trees in the gardens will be surveyed annually for signs of disease and dealt with appropriately.

Section 4) Sustainability

Bat boxes and nesting boxes for birds will be provided and habitat will be provided to encourage birds and butterflies to visit the gardens.

Bins will be provided to encourage waste segregation for recycling. An organic approach to garden maintenance will be taken using non chemical alternative methods of weed control and no harmful chemicals used in the gardens.

Plants will be sourced from local growers and suppliers where ever possible.

In order to reduce land fill waste green waste will be recycled by composting and using chipped wood to cover borders, preventing weeds and protecting plants.

Appendix Grounds Team Job Description

POST DETAILS

JOB TITLE	:	MAINTENANCE ASSISTANT (GROUNDS)
ORGANISATION	:	UPP RESIDENTIAL SERVICES LIMITED
LOCATION	:	CARTWRIGHT GARDENS (UoL)
POST REPORTS TO	:	RESIDENCES MANAGER

BACKGROUND

UPP Residential Services Limited (URSL) primarily delivers a full range of Facilities Management (FM), and Asset Management services to the university sector. URSL's aim is to be the leading provider of quality accommodation and estate management services in partnership with the Higher Education Sector.

At each university partnership URSL supply a local team, which manages, and provides services for, the scheme to which they are assigned. The team provides the day-to-day face of the partnership, providing a high level of customer service and effective and efficient facilities management, ensuring every aspect is delivered to URSL's high standards.

PURPOSE OF JOB

To maintain and operate Cartwright Gardens and Residential Planting to a high standard of presentation in compliance with all relevant service level agreements and to take 'park warden' responsibility for the gardens.

PRINCIPLE DUTIES AND RESPONSIBILITIES

Grounds Maintenance

- Carry out regular patrols of the residence and gardens, identifying, prioritising and carrying out corrective measures in a timely manner
- Monitor and control health, safety and maintenance standards within grounds and gardens, reporting H&S issues and concerns to the help desk administrators
- Carry out routine maintenance checks of equipment, such as tennis courts, to ensure they are fit for use at the start of each day, informing the help desk of any maintenance issues
- Carry out planned maintenance of grassed areas, flower beds, hedges, shrubs' and borders
- Assist with litter clearing and general tidiness
- Assist in winter snow and ice management and clearance
- Complete all necessary reports including incident reports, noise reports, accident reports and others as required acting as 'Park Warden'
- Respond effectively to antisocial behaviour in the gardens
- Liaise with the emergency services as and when required

Customer and colleague liaison

- Liaise, as necessary, with sub-contractors, URSL staff, residents and visitors to the gardens
- Deal with queries and complaints in an efficient, professional and courteous manner
- Be available to assist with resident intake and move out weekends

Maintenance

- Carry out minor maintenance work, equipment checks and water checks
- Assist maintenance technicians with repairs as and when requested

Other Duties

- Assist with events, open days and other university events
- Work overtime, with reasonable notice, to cover for colleagues' absences and during student arrival/departure periods
- Perform other general duties as and when required

PERSON SPECIFICATION

Attributes	Essential criteria	Desirable Criteria
Experience	Previous grounds/facility maintenance experience	
Skills/Ability/ Knowledge	Self motivated Health and safety awareness and familiarity in a similar environment and culture Knowledge and understanding of grounds maintenance Strong organisational skills Good understanding of security issues Good verbal and written communication skills	Minor maintenance skills Motivated and goal orientated
Personal Qualities	Excellent communication and customer care skills Proactive approach to problem solving Capable of working with minimum supervision Work as a team player and pass on knowledge to others Flexible and willing Prepared to work extra hours as necessary Prepared to travel to other sites within the Company, if required	Driving Licence

THE NINTH SCHEDULE
DRAFT CONSTRUCTION MANAGEMENT PLAN

THE
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THE
ROYAL ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND
VOLUME 100, PART 1, 2000



**UNIVERSITY
OF LONDON**

GARDEN HALLS, UNIVERSITY OF LONDON

Draft Construction Management Plan

March 2013



Contents

1. Introduction
2. Construction Programme
3. Site Access
4. Site Logistics
5. Environmental Impact

1. Introduction

This Construction Management Plan (CMP) has been developed for London Borough of Camden to demonstrate that the applicant, the University of London, and the developer, University Partnerships Programme (UPP) will provide due care in minimising and managing the detrimental effects of construction on the local amenity and highway safety.

The document will form the basis of the Construction, Environmental and Health and Safety Plan which will be finalised once a main contractor has been appointed for the scheme. The main contractor will be selected from a list of top tier contractors all of whom will have a demonstrable track record for the successful delivery of similar projects in Central London.

The document 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. The document is split into sections. The first section describes the proposed work and the construction programme. The second section looks at site ingress and egress for construction vehicles. The third section looks at the site logistics and the last section addresses the environmental impacts of the development.

The proposed aims of the CMP are:

- Minimise disruption to the local area;
- Ensure best practice is followed which will be further demonstrated by the appointed contractor being a member of the Considerate Constructor Scheme;
- 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;
- Limit hours of working – with no noise created outside of the agreed hours;
- Reduce dust, noise and vibration by monitoring levels on site and following best practice;
- Ensure there is a dedicated point of contact for the construction site and that the community is kept informed throughout the construction process by a regular newsletter;

We have a commitment to working with local communities and The Prince's Trust to provide work experience opportunities for local young people. It is our intention to create opportunities with this project.

The CMP shall be kept on site available for inspection at the request of an authorised Officer of the Council. The CMP shall be reviewed as necessary throughout the duration of the development and all revisions shall be signed and dated in an addendum format forming part of the original CMP.

2. Construction Programme

The Garden Halls development comprises the redevelopment of the existing student accommodation comprising the demolition of Canterbury (including York) and Commonwealth Halls, partial-demolition and refurbishment of Hughes Parry Hall and provision of new student accommodation (Sui Generis) to provide a net increase of 187 units (from 1,013 to 1,200 student bed-spaces); associated ancillary uses (including communal areas); two external courtyards; together with public realm improvements to Cartwright Gardens and the surrounding area. There are two phases of the development:

- Phase 1: The refurbishment of Hughes Parry Tower.
- Phase 2: The redevelopment of Canterbury and Commonwealth Hall

The Existing Site.



The construction programme for the entire development is scheduled to take 25 months. The refurbishment of Hughes Parry tower is scheduled for completion twelve months following commencement. The redevelopment of Canterbury and Commonwealth Hall will commence at the same time and be run in parallel with the refurbishment of Hughes Parry Tower and is programmed to be completed in 25 months following commencement.

Throughout this period the applicant, the developer and the main contractor will seek to act considerately, communicate effectively and put the safety of people and the local environment first.

3. Site Access

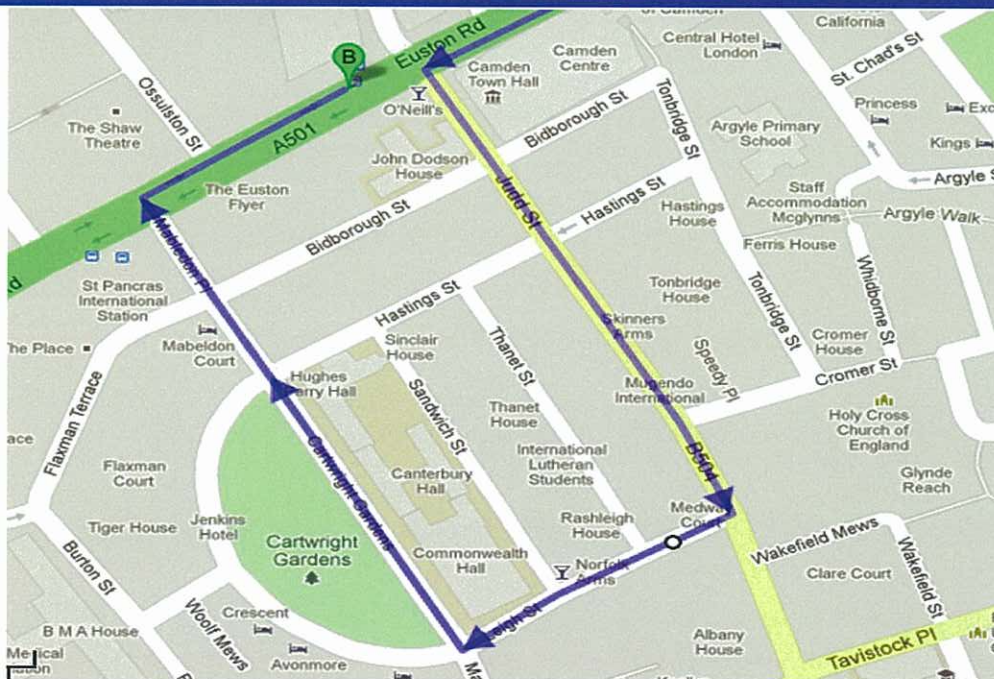
Ingress

The preferred principal access route to the site is proposed to be off the Euston Road which is on Transport for London's Road Network (TLRN). To minimise disruption to the local community we propose to use a one way loop for all deliveries. Vehicles will turn off Euston Road onto Judd Street. At the corner of Leigh Street the vehicles will turn right and right again on to Cartwright Gardens. A delivery drop off/collection point will be set up on Cartwright Gardens. There will no construction vehicle movement around the Crescent.

Egress

Construction vehicles leaving the site will continue down to Mabledon Place and return to Euston Road which restricts traffic to turning right only. We expect that the 'hard material' generated during demolition will head east along the A501 and A13 to Silvertown for crushing.

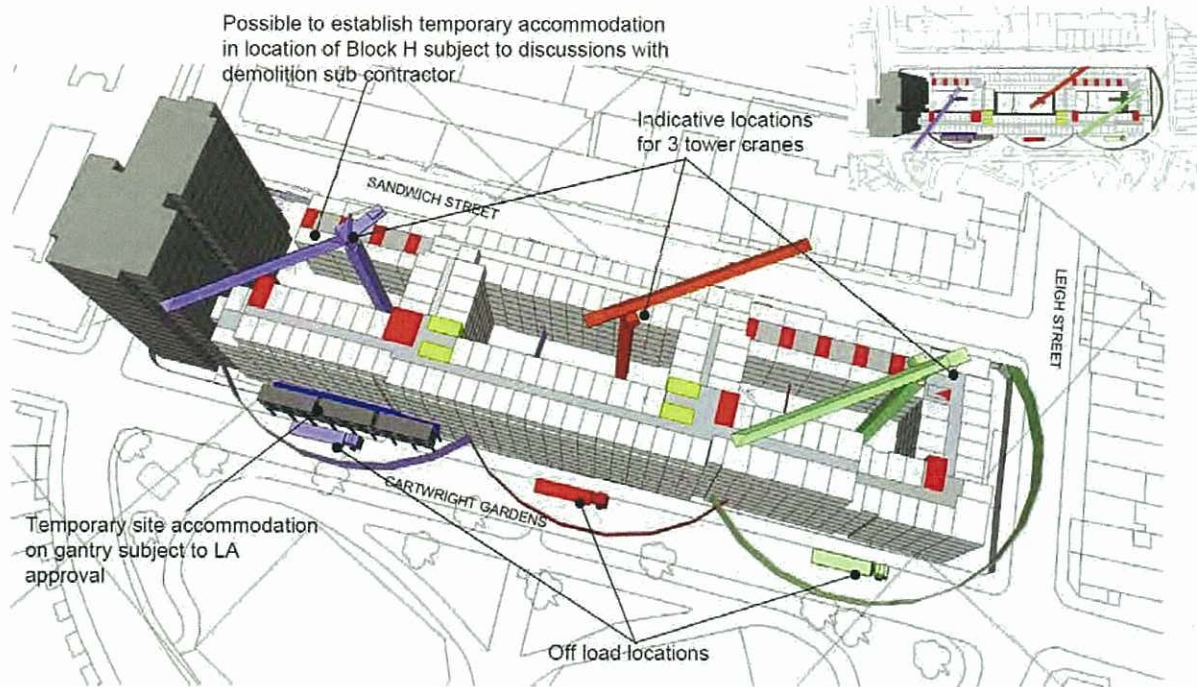
Site Access



To ensure a smooth flow of traffic we envisage the following measures to be implemented; (1) signage will be erected in clear view of pedestrians, cyclists and other vehicle users. This signage will encourage road users to utilise the crescent and to avoid Cartwright Gardens itself, (2) there will be hoarding to physically separate vehicles from pedestrians (3) there will be traffic marshals stationed on site which will aid vehicle movements in the event of unavoidable deliveries during early morning and evening peak hours (4) there will be a logistics supervisor available to respond to any queries from the public and (5) the site will be monitored by CCTV surveillance.

The timing of deliveries will be restricted to prevent congestion in the area and reduce the risk to the local community, especially during peak times.

4. Site Logistics



Site Offices and Welfare Facilities

The site set up is yet to be determined as this will be developed by the appointed contractor. At this stage, and further to our initial discussions with the shortlisted contractors, we propose that from the outset the set up for the main site compound will be a series of elevated temporary cabins on Cartwright Gardens as shown on the above logistics plan. This would allow for the safe access by pedestrians and keeping the footpath open for use. The set up will remain in place for the duration of contract.

Access onto site itself will be controlled by a turnstile pedestrian access system which will be a palm print type entry system.

All people entering the site will be required to attend a site induction. Site specific logistic & safety information is important in ensuring that all operatives and staff including visitors are aware of the potential dangers on construction sites and preventative steps required to ensure their own personal health and safety.

The site rules will be displayed prominently at all times for example in the canteen, drying rooms and reception so operatives and visitors are kept up to date with any changes to the existing systems and any new systems being used or brought into the effect.

Tower Cranes

To assist with the off-loading and distribution of materials, tower cranes will be utilised. These will be used for the frame construction and also the distribution of materials onto loading bays for the envelope works. The internal fit out works will be serviced using the cranes with areas being preloaded as the structure goes up.

The construction programme is based on the use of three 40 meter luffing jib tower cranes which will be used for the installation of the concrete frame, bathroom pods, loading out of cladding and glazing. The proposed location for the tower cranes avoids over sailing of any neighbouring buildings. All cranes are positioned to enable unloading off Cartwright Gardens.

Modern Methods of Construction

The project will utilise modern methods of construction which involves using off-site production techniques. It is currently planned that the building will use structural precast concrete. The benefit of this is the reduced disruption caused to local residents from dust, noise and commercial vehicle movement and the environmental impact of site generated waste.

Materials Storage

Due to the size of building and boundary restrictions materials storage is limited on site. Most deliveries to site will be unloaded and taken directly to their area of work, reducing the requirement for site storage. Deliver times will be tightly controlled and restricted to times in the day that avoid any unnecessary congestion on the local roads e.g. during rush hour and disturbance to the local neighbourhood.

Materials Distribution

Materials will be distributed around the site by means of the cranes. A crane pickup area will be established off Cartwright Gardens within the radius of the crane for unloading HGV's.

The project has been prepared on the basis of distributing materials around the site from within the confines of the site whenever possible with access required from time to time onto adjacent public highways for the movement of goods and materials. A Banksman will be provided with the forklift to assist with the manoeuvring on any public highways.

Time of Operations

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

Mondays to Fridays	08.00 – 18.00
Saturdays	08.00 – 13.00

And at no time Sundays and Bank Holidays.

NB Further to the appointment of the contractor the times incorporated in the updated CMP will be specific to the site and related to the type of work being carried out.

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 (i.e. 1mms^{-1} PPV for potential disturbance in residential and using a suggested trigger criteria of 2mms^{-1} for commercial). Lower limits must be agreed with the Council if there is a risk that vibration levels may interfere with vibration sensitive equipment or other vibration sensitive objects.

Security

Securing a safe working environment is an integral part in the construction works, in both protection of the site from possible damage and theft and the safety of the public gaining access or attempting to gain unauthorised access to the site with the risk of causing injury. We will have a full time gatemen during working hours that will control all access and deliveries on to site. Out of hours a full time security presence will be on site to secure the area. CCTV cameras will also be utilised. The site perimeter will be surrounded by 2.4m height solid painted timber hoarding panels which will frequently advertise safety and security notices.

Staff and Contractor Parking

Parking on or near to the site will be restricted to temporary drop off and pickup. No long term parking of construction vehicles will be permitted. All construction staff will be required to make use of the surrounding excellent public transport links.

Site Cleaning

Our philosophy is that a tidy site is a safe site; a principal that will be adopted throughout the contract. The contractors will be required to clear their rubbish to skips in appointed locations as work proceeds to assist in maintaining a clean site. Disposal of rubbish will be closely monitored on site and whenever possible will be recycled. Separation for recycling will, where space permits, be done on site or off site by the appointed waste contractor under the terms of their contract.

Keeping Clean Roads

In view of the location of the site, our site management will pay special attention to ensure vehicles both delivering to, and leaving the site are in a clean condition. Drivers will be briefed and instructed to inspect their vehicles to prevent the spread of debris onto adjacent roads. We will make frequent use of jet washing to minimise debris carried off site on the wheels of vehicles. Regular inspections will be made of the adjacent and surrounding roads with mechanical sweeping commissioned as and when required.

Pedestrians and Cyclists

We will install safety barriers and appropriate road safety notifications in front of the site to warn pedestrians and cyclists of the presence of construction vehicles and nearby construction activities. With regards to vehicles entering and leaving the site will be controlled by the gatemen and we will ensure that he is particularly vigilant regarding cyclists.

5. Environmental Impact

Dust / Dirt Suppression

We realise the importance of preventing dust and dirt migrating from the site boundary as has been reported within the Air Quality Report (Section 6) and we propose to use the following methods during demolition and construction:

- Damping down areas during demolition using mist sprayed around work areas;
- Damping down site during excavation to prevent airborne dust if required;
- Jet wash at all entrances/exits to site to ensure vehicles leaving site are clean;
- Areas where there is vehicular movement should have a consolidated surface which should be kept in good repair;
- Road sweeper visits throughout construction period on surrounding roads as required;
- All demolition plant will have dust suppression sprays;

Where there is evidence of airborne dust from the building construction/demolition activities the site, the contractor should make their own inspection and assessment, and where necessary undertake ambient monitoring with the aim of identifying those process operations giving rise to the dust. Once the source of the emission is known, corrective action should be taken without delay.

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

Rodent Control

Where the site has been previously developed the contractor shall take the necessary measures to ensure proper control of rodents. 28 days prior to any building works are being carried out the contractors shall submit a method statement on how the dispersion of rodents will be controlled during 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)).

Community Liaison

We will ensure that the surrounding community is kept informed of the progress of construction activities. Before we begin on site there will be a letter drops throughout the local community, explaining the planned construction project which will include key dates for deliveries. Included with the initial correspondence will be proposals for separate and regular meetings for the local community to discuss the progress of the works, each stage of activities and to hear the concerns of neighbours.

At all sites a Contact Board shall be displayed prominently; this is to ensure that problems can be rectified quickly, and that residents and others can channel their questions and complaints to a member of staff who has the authority to take action.

All Contact Boards shall include the following materials:

- The title 'Contact Board'
- Name of the main contractor, address and person to whom correspondence should be addressed.
- Name of the site manager.
- Month and year of completion of works.
- Names and telephone numbers of staff who can take immediate action, so that contact can be made at any time.

The developer will have full time construction implementation manager working in partnership with the contractor. It will be their role to ensure that there is sufficient informative about the construction process and progress. Drawings, progress photos and artists impressions of the finished product will be on display on the hoarding which will contain vision panels.

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

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

Should complaints be received concerning works/activities, then all works/activities being the cause of complaint must cease (Tasks in progress accepted due to structural integrity issues), until such time as further agreement to work is negotiated.

Traffic Management

We recognise the need to maintain access and parking facilities to the local community and other buildings in use during the construction phase. The site hours will be subject to planning. There will be no deliveries outside of these times unless in specific circumstances with prior agreement with the Local Authority.

Close co-ordination and scheduling of materials deliveries will be one of the key elements to the successful management of the contract including 'just in time' deliveries. As a matter of course all contractors will be required to give a minimum of 48hrs notice of deliveries and exceptional loads will be coordinated and covered under separate logistical planning.

Monitor of waste & emissions

A separate enclosed area will be setup for control of waste on site, consisting of skips and bins for both the site and office waste. This will be easily accessible from the site and for collection vehicle. Our focus on using locally employed people is monitored, and the workforces mileage is recorded to monitor carbon emissions with the aim to reduce emissions, from both an 'on site' and 'off site' perspective.

Considerate Constructor

The Contractor will subscribe to the Considerate Constructor Scheme and through compliance with the 'Code of Considerate Practice' will develop sound relations with anyone that may be affected by the works. We will encourage the contractor to obtain a score of 30.5 - 35.5 to ensure we have a very considerate site.



THE TENTH SCHEDULE
DRAFT ENERGY STATEMENT



**UNIVERSITY
OF LONDON**

GARDEN HALLS, UNIVERSITY OF LONDON

Energy Statement

March 2013

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

Table of Contents

Executive Summary	2
1 Introduction	4
1.1 The Development	4
2 Overview of Environmental Standards, Targets and Policies	6
2.1 London Plan Requirements	7
2.2 Camden Core Strategy	10
2.3 Camden Development Policies	11
3 Building Regulation Compliance	12
3.1 Building Energy Model	12
3.2 Baseline Carbon Emission Rate	13
4 Energy Efficient Design of Site, Building and Services	14
4.1 Passive Design Strategies	14
4.2 Energy Efficient Systems	15
4.3 Overheating And Cooling policy	16
4.4 Energy Consumption and Carbon Emission of the Efficient Buildings	17
4.5 Non-Regulated Energy Use	18
5 Decentralised Energy – District Heating	19
5.1 Existing District heating	19
5.2 Site Wide Combined Heat and Power	20
5.3 Combined Heat and Power in the Buildings	22
6 On Site Renewable Energy Technologies	23
6.1 Photovoltaic Panels	23
6.2 Summary of the recommended Systems	24
7 Conclusions	25
Appendix A – Renewable Energy Systems not feasible for the site:	1
I. Biomass Heating	1
II. Heat Pumps (Ground/Water/Air Source)	1
III. Wind Turbines	1
IV. Solar Hot Water System	2
Appendix B – Insolation level on different surfaces	3
Appendix C – PV panels Layout on the roof	5

Executive Summary

This Energy Statement will outline the key features and strategies adopted by the development team to reduce energy use in the proposed redevelopment of Cartwright Gardens Student Accommodation. The strategy for reducing energy use and associated carbon emissions through the design of the scheme follows the London Plan energy hierarchy, namely:

- Reducing the energy demand through passive design strategies and provision of high quality building envelope
- Reducing the energy consumption through best practice design of building services, lighting and control
- Installation of on-site Renewable Energy Technologies

Passive and active energy efficiency features include:

- High performance building fabric
- Excellent air tightness
- Highly efficient building services design
- High efficiency lighting

This energy efficient design proposals achieve the following:

- Carbon emissions reduction of the building is in excess of 28%, compared to the Part L 2010 standards for new buildings.
- A site wide Combined Heat and Power system is proposed to meet the base heating and hot water demand of the development.
- The scheme also incorporates renewable energy systems in the form of photovoltaic panels to provide electricity.

Table 1 demonstrates the reduction in the regulated carbon emission of the development as a result of implementing the abovementioned strategies. The total non-regulated carbon dioxide emission of the development according to NCM guidelines is around 400 tonnes per year. Estimating reductions in non-regulated carbon dioxide emissions is challenging as reductions will generally be based on the operational regime of the site and users behaviour. The building will be operated by UPP (University Partnerships Programme) who have extensive experience of operating student accommodation. Based on other developments they manage we would estimate that the suggested strategies could reduce operational carbon emissions by 10-20%.

Table 1 Carbon Dioxide emissions reduction for the development

Carbon Dioxide emissions (Tonnes CO ₂ per annum)	
Building Regulations 2010 Part L Compliant Development	1,452
After Energy demand reduction	1,330
After CHP	1,064
After Renewable energy	1,041

Table 2 demonstrates the calculated CO₂ savings, which will be realised from each proposed technology. As demonstrated below overall 28.3% reduction in carbon emission can be achieved applying the proposed strategies.

Table 2 Regulated carbon dioxide savings from each stage of the Energy Hierarchy

Regulated carbon dioxide savings		
	Tonnes CO ₂ per annum	%
Savings from energy demand reductions	123	8.4
Savings from CHP	266	20.0
Savings from Renewable Systems	22	2.1
Total Cumulative Savings	411	28.3

Figure 1 is a graphical representation of the total carbon emission saved using the proposed efficiency, low and zero carbon strategies.

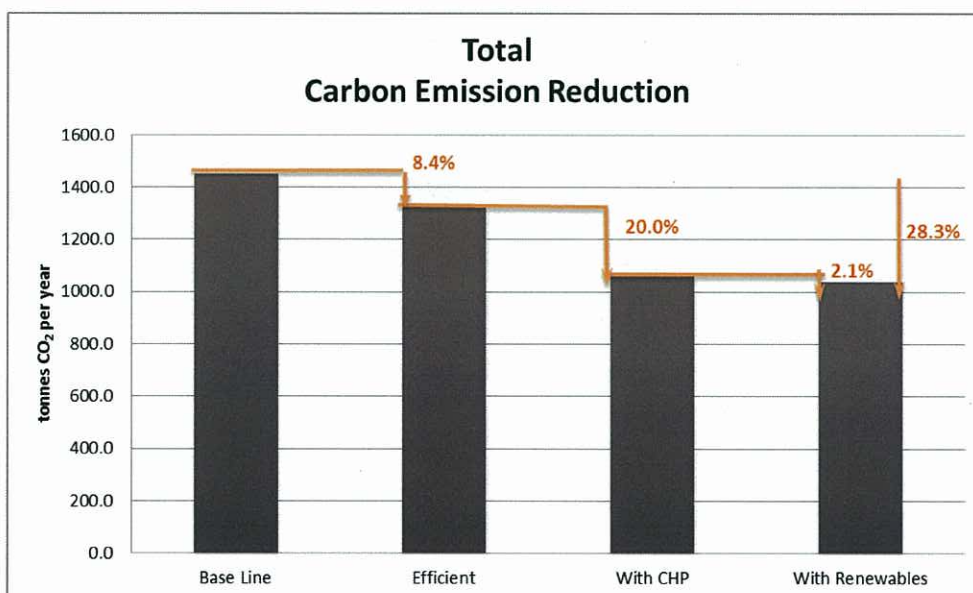


Figure 1 CO₂ reduction achievable from proposed strategies

1 Introduction

This Energy Statement provides an outline of the energy strategy that has been developed and will be implemented in the detailed design of the proposed development.

Over recent years, global public opinion has been increasingly concerned with the state of the environment and the impact of climate change. Buildings account for almost half of the energy consumption and carbon emissions in the UK¹. This highlights the need for building owners, developers and designers to design environmentally sustainable buildings.

1.1 The Development

The Garden Halls are located on Cartwright Gardens to the south of Euston Road in the London Borough of Camden (see Figure 2). The application is for the redevelopment of the existing student accommodation, comprising the demolition of Canterbury (including York) and Commonwealth Halls, partial-demolition and refurbishment of Hughes Parry Hall and provision of new student accommodation (Sui Generis) to provide a net increase of 187 units (from 1,013 to 1,200 student bedspaces); associated ancillary uses (including Communal areas); two external courtyards; together with public realm improvements to Cartwright Gardens and the surrounding area

This Report outlines the proposed energy and sustainability strategy for the proposed refurbishment and new build development at Cartwright Gardens, Camden.

For a detailed description of the proposed development please refer to the Design and Access statement produced by TP Bennett architects and Maccreanor Lavington Architects.

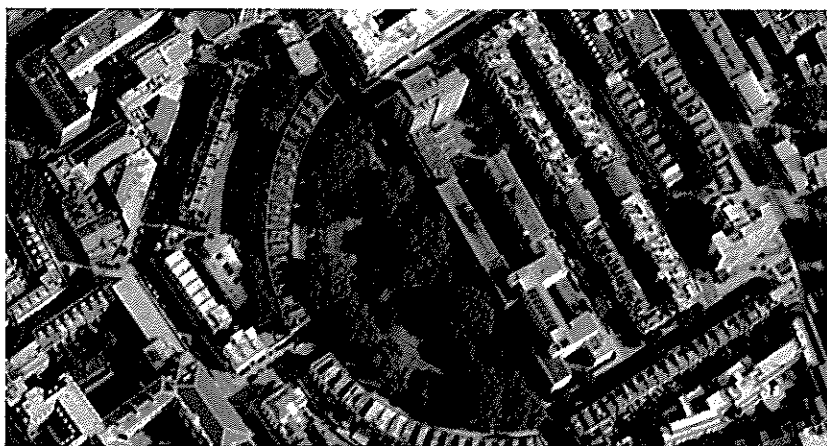


Figure 2 Existing Situation- Plan

Table 3 is a schedule of proposed student accommodation blocks with a breakdown of areas and the total Net Internal Area per block. As demonstrated, the total Net Internal Area of student accommodation units is circa 22,432 m² and the total number of rooms is 1200.

¹ DCLG (Department for Communities and Local Government), 2007, A guide for businesses: Reducing the energy usage and carbon emissions from your heating and hot water systems,

Table 3 Schedule of Proposed Student Accommodation Blocks

Total Development			
	NIA	GIA	GEA
basement	-	-	-
lower ground	4,104	4,015	4,271
ground	2,770	3,789	4,031
1st	2,187	3,436	3,710
2nd	2,288	3,555	3,831
3rd	2,288	3,555	3,831
4th	2,250	3,541	3,821
5th	1,874	2,964	3,189
6th	1,611	2,554	2,763
7th	859	1,421	1,550
8th	836	1,380	1,519
9th	227	382	421
10th	227	382	421
11th	227	382	421
12th	227	382	421
13th	227	382	421
14th	231	368	424
15th	-	-	-
16th	-	-	-
totals	22432	32488	35045

En suite [C]	660
Mini clusters [SC]	61
Dis en suite [C]	48
Dis studio [SC]	12
HP en suite [SC]	245
Wardenial flat [SC]	2
Wardenial ensuite [C]	-
Town House rooms [SC]	172
total rooms	1,200

2 Overview of Environmental Standards, Targets and Policies

This section provides an overview of the environmental rating schemes, mandatory regulations and policy documents applicable to the development.

Key national policy documents consulted in the development of this report and environmental strategies include:

- The European Directive on the Energy Performance of Buildings (EPBD)
- The National Planning Policy Framework (March 2012)
- Energy White Paper, "Creating a Low Carbon Economy"²

In addition to the standards, targets and policies discussed above, the relevant British Standards; and CIBSE Guidelines were used to assist in determining the most appropriate Ecologically Sustainable Design (ESD) initiatives for the development.

Key regional environmental policy and guidance documents consulted in the development of this

- The London Plan – Spatial Development Strategy for Greater London³, July 2011.
- Sustainable Design and Construction - London Plan Supplementary Planning Guidance (SPG)⁴, May 2006

Key local environmental policy and guidance documents consulted in the development of this

- The Camden Council - Core Strategy – adopted 2010
- Camden Development Policies 2010-2025, Local Development Framework
- Camden Planning Guidance, Sustainability (CPG3)

Finally, Part L of the Building Regulations – 2010 is the basis of the calculations and methodology used in this document.

2 Energy White Paper, "Creating a Low Carbon Economy", <http://www.berr.gov.uk/files/file10719.pdf>

3 The London plan – Spatial Development Strategy for Greater London,
http://www.london.gov.uk/mayor/strategies/sds/london_plan/lon_plan_all.pdf

4 Sustainable Design and Construction – Supplementary Planning Guidance (SPG),
<http://www.london.gov.uk/mayor/strategies/sds/docs/spg-sustainable-design.pdf>

2.1 London Plan Requirements

In July 2011 the Mayor published the replacement spatial development strategy for Greater London: The London Plan (2011). This part of the report summarises the relevant energy policies and the project response to each policy.

2.1.1 Carbon Dioxide Emission (Policy 5.2)

POLICY 5.2 Carbon Dioxide Emission

The new London Plan:

- Follows the energy hierarchy (Figure 3) in order to minimise the carbon dioxide emission.
- Requires total carbon emission reduction of 25% in comparison to a Part L compliant building.
- Explicitly asks that the calculation of the energy demand and carbon dioxide emissions from unregulated energy use to be carried out.
- Asks for the energy statements to follow energy assessment methodology (Figure 4)



Figure 4 Energy Assessment Methodology

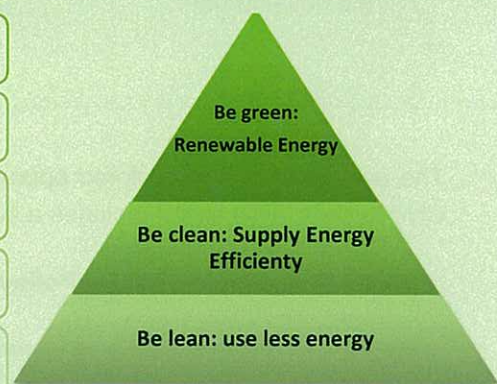
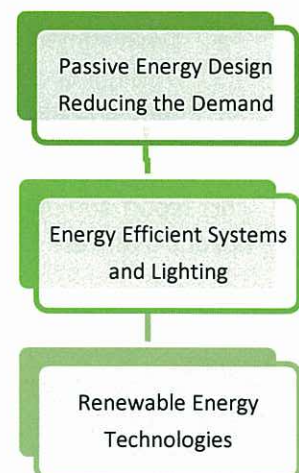


Figure 3 Energy Hierarchy

In order to design an energy efficient development, the design team has followed this hierarchy; i.e.

- a. The development is designed to have highly efficient envelope and passive strategies have been incorporated in the design where possible.
- b. Efficient building services and lighting are chosen for the development for reducing the energy consumption
- c. Renewable Energy options are explored and the most feasible options are used in the development.



This report also covers the non-regulated energy use of the development based on a typical usage of the buildings category and lists a number of strategies in order to reduce this.

The report structure and content is organised based on the London Plan required Energy Assessment Methodology.

2.1.2 Decentralised Energy in development proposals (Policy 5.6)

POLICY 5.6 Decentralised Energy in Development Proposals

- Development proposals should evaluate the feasibility of Combined Heat and Power (CHP) systems, and where a new CHP system is appropriate also examine opportunities to extend the system beyond the site boundary to adjacent sites.
- The London plan requires all major developments to follow a decentralised energy hierarchy when selecting the energy system for the development.

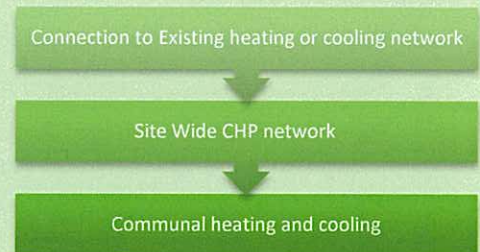


Figure 6 Decentralised Energy Hierarchy

The design team has explored opportunities for installation of decentralised energy system including CHP system. This report includes a summary of the findings.

2.1.3 Renewable Energy (Policy 5.7)

POLICY 5.7 Renewable Energy

- The London Plan Asks that within the energy hierarchy, part of the carbon emission reduction of the development, should come from on-site renewable energy generation where feasible.
- There is a presumption that all major development proposals will seek to reduce carbon dioxide emissions by at least 20% through the use of on-site renewable energy generation wherever feasible.
- Development proposals should seek to utilise renewable energy technologies such as: biomass heating; cooling and electricity; renewable energy from waste; photovoltaic; solar water heating; wind and heat pumps.

This report summarises the feasibility of different renewable systems and explains the output of the options that were chosen as a result of the feasibility studies.

2.1.4 Overheating and cooling (policy 5.9)

POLICY 5.9 Overheating and Cooling Policy

- Major Developments should reduce potential overheating and reliance on air conditioning systems in accordance with the cooling hierarchy (Figure 7)
- Major development proposals should demonstrate how the design, materials, construction and operation of the development would minimise the overheating and also meet its cooling needs.

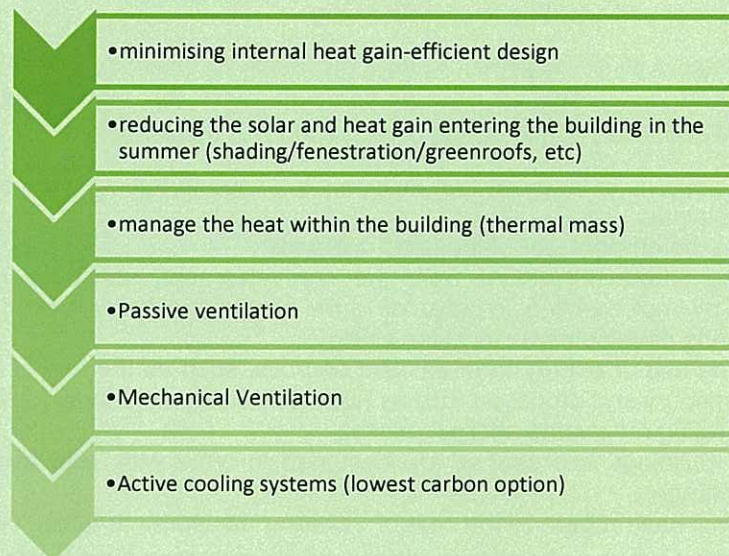


Figure 7 Cooling Hierarchy

Where appropriate, these strategies, which are implemented in order to reduce the overheating risk in the buildings, are covered in this report under passive strategies.

2.2 Camden Core Strategy

Camden Council adopted their Core Strategy in 2010 and subsequently released a set of planning guidance adopted in April 2011.

Camden POLICY CS 13 Tackling climate change through promoting higher environmental standards

➤ Policy CS13 – Tackling Climate Change through promoting higher environmental standards

Reducing the effects of and adapting to climate change

The council will require all development to take measures to minimise the effects of, and adapt to, climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

- a. ensuring patterns of land use that minimise the need to travel by car and help support local energy networks;
- b. promoting the efficient use of land and buildings;
- c. minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, in order, all of the elements of the following energy hierarchy:
 1. ensuring developments use less energy,
 2. making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralised energy networks;
 3. generating renewable energy on-site;
- d. Ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate change as well as the cumulative future costs of delaying reductions in carbon dioxide emissions

Local energy generation

The Council will promote local energy generation and networks by:

- e. working with our partners and developers to implement local energy networks in the parts of Camden most likely to support them, i.e. in the vicinity of:
 - housing estates with community heating or the potential for community heating and other uses with large heating loads;
 - the growth areas of King's Cross; Euston; Tottenham Court Road; West Hampstead Interchange and Holborn;
 - schools to be redeveloped as part of Building Schools for the Future programme;
 - existing or approved combined heat and power/local energy networks and other locations where land ownership would facilitate their implementation.
- f. protecting existing local energy networks where possible (e.g. at Gower Street and Bloomsbury) and safeguarding potential network routes (e.g. Euston Road);

Camden's carbon reduction measures

The Council will take a lead in tackling climate change by:

- j. taking measures to reduce its own carbon emissions;
- k. trialling new energy efficient technologies, where feasible; and
- l. raising awareness on mitigation and adaptation measures.

2.3 Camden Development Policies

Camden Development Policies forms part of the council's Local Development Framework (LDF), the group of document that sets out Camden Planning strategy and policies.

DP22 . Promoting Sustainable Design and Construction

Under DP22, one of the main requirements to do with Energy Efficiency and LZC technology, is following:

- e) expecting non-domestic developments of 500sqm of floor space or above to achieve "very good" in BREEAM assessments and "excellent" from 2016 and encouraging zero carbon from 2019

Sustainable design and construction measures

The Council will require all schemes to consider these general sustainable development principles, along with the detailed elements identified in the table below, from the start of the design process. Developments of 5 or more dwellings or 500sqm of any floor space should address sustainable development principles in their Design and Access statements or in a separate Energy Efficiency Statement, including how these principles have contributed to reductions in carbon dioxide emissions. When justifying the chosen design with regards to sustainability the following appropriate points must be considered:

Design	Fabric/Services
<ul style="list-style-type: none"> the layout of uses floor plates size/depth floor to ceiling heights location, size and depth of windows limiting excessive solar gain reducing the need for artificial lighting shading methods, both on or around the building optimising natural ventilation design for and inclusion of renewable energy technology impact on existing renewable and low carbon technologies in the area sustainable urban drainage, including provision of a green or brown roof adequate storage space for recyclable material, composting where possible bicycle storage measures to adapt to climate change impact on microclimate 	<ul style="list-style-type: none"> level of insulation choice of materials, including - responsible sourcing, re-use and recycled content air tightness efficient heating, cooling and lighting systems effective building management system the source of energy used metering counteracting the heat expelled from plant equipment enhancement of/provision for biodiversity efficient water use re-use of water educational elements, for example visible meters on-going management and review

This document lists the energy efficiency strategies adopted for the development and demonstrates how above issues are addressed in Cartwright Gardens Student Accommodation.

3 Building Regulation Compliance

The proposal includes refurbishment of Hughes Parry Hall and redevelopment of the Garden Halls student accommodation. The refurbishment of the existing buildings requires compliance with Building Regulations Approved Part L1B. The new student accommodation buildings must comply with Building Regulations Approved Part L1A.

Meeting the requirements of Part L1A 2010 for the new development will be achieved through:

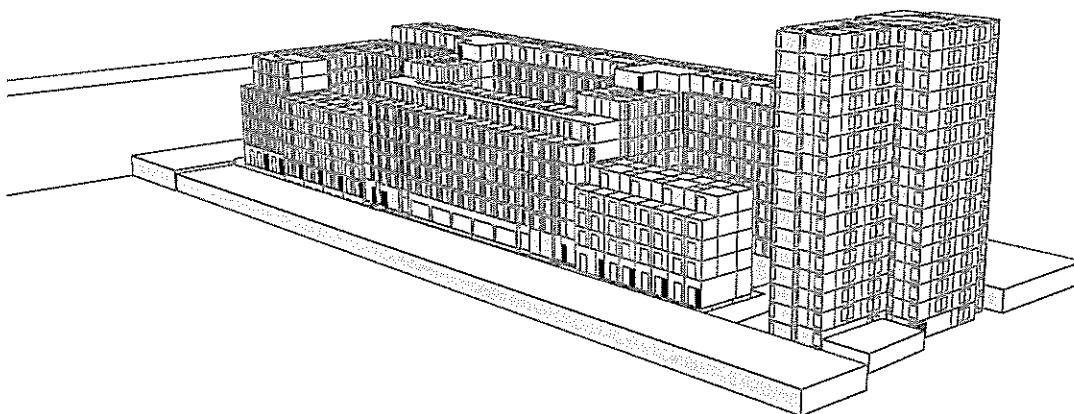
- **Efficient Thermal Elements and Controlled fittings:** the building fabric will be designed to improve on minimum Part L 2010 requirements.
- **Building Services and Lighting:** The new building services will be designed and specified to perform better than the minimum requirements detailed in Non-Domestic Building Services Compliance Guide, 2010 edition.

Meeting the requirements of Part L1B 2010 for the existing building will be achieved through:

- **Efficient Thermal Elements and Controlled fittings:** where feasible, the building fabric will be improved to reduce the energy demand of the building.
- **Building Services and Lighting:** The building services will be replaced and specified to meet current standards.

3.1 Building Energy Model

For the purpose of this study, the buildings are modelled IES-VE software- Version 6.4.0.11. The modelling and analysis have been completed by Mecserve's energy modelling team who are accredited energy assessors.⁵



⁵ Nazli Dabidian; Low Carbon Energy Assessor accredited to work on Level 3, level 4 and level 5 Buildings; accreditation number: LCEA119469

3.2 Baseline Carbon Emission Rate

Although the building is comprised of a new part and a refurbished part (Hughes Parry Hall), both buildings are modelled together and compared against the higher standards of a new building. This is a conservative assumption as the refurbished Hughes Parry Hall is being compared against the targets for a new building. The client and the development team are keen to refurbish the existing building to very high standards in line with the new building. The target emission rate for the combined building based on Part L2A, 2010 is calculated as 1,452 tonnes.

4 Energy Efficient Design of Site, Building and Services

4.1 Passive Design Strategies

The first stage of the energy strategy is to reduce the energy demand as much as possible before considering active and renewable energy technologies. The aspiration is to build a high quality student accommodation scheme with an enhanced energy performance.

This will be achieved through:

- **Building Orientation-** The buildings' orientations are largely dictated by the shape of the site. Having said that, the internal layout of the building has been set out to maximise the number of rooms that can take advantage of solar gain and natural light. This has been achieved by arranging the buildings around a courtyard. This arrangement, also enables a natural ventilation strategy to work effectively.
- **Passive Solar Design and Daylight-** The make-up of the façade balances the proportion of solid wall to glazing in order to seek an optimum amount of daylight and winter solar heating, without excessive solar gain during the summer.
- **Thermal performance of the fabric-** the proposed building fabric exceeds the requirements set in the Part L regulations
- **Thermal bridges** - Appropriate construction details will be used to minimise the impact of thermal bridges within the building envelope in the new development. The refurbishment part of the development will be carried out carefully to reduce the impact of thermal bridging.
- **Air-tightness** - Using enhanced construction skills and rigorous detailing to reduce the air permeability of the buildings

The table below shows the proposed specifications for the fabric of the development including air permeability.

Table 4 Target Specifications

Fabric Specifications		Proposed Specification
Fabric U values [W/m ² .K]	Roofs	0.2
	New Walls	0.25
	Ground floor	0.20
	Windows /Doors	2 (ground floor curtain walling) 1.4 (All other floors)
Air permeability [m ³ /m ² .hr@50pa]		5

Achieving the above values will reduce the energy demand of the development in advance of adding any active energy efficiency measures or renewable energy systems to the development.

4.2 Energy Efficient Systems

After reducing the energy demand of the development, the next stage would be to use energy efficient building services, lighting and controls for the development. This will include:

- **Heating and Hot Water:** best practice design in the heating including highly efficient condensing boilers and very well insulated pipes is proposed for the development.
- **Cooling:** No cooling is proposed for the bedrooms or studios. Cooling will be limited to communal and function areas generally at ground floor level. Cooling may be installed for the ground floor flexible areas depending on the function. Therefore the thermal model includes cooling these areas
- **Ventilation:** the majority of the building is naturally ventilated with extract ventilation in bathrooms and kitchens.
- **Heat recovery:** where mechanical ventilation is installed, they will include heat recovery and demand control systems to reduce the energy associated with mechanical ventilation
- **Building services insulation:** The hot water tanks, pipes and ducts will be insulated to a high standard.
- **Lighting:** The lighting design will consider how to reduce power density for the required lighting level. Daylight control and occupancy sensors will be installed for lighting system in some areas. Inclusion of enhanced controls will help reduce the energy consumption of the building further.

Table 5 Energy Efficient Systems (a summary of the energy efficient systems which will be specified)


System Specifications		Efficient Building			
Boiler Seasonal Efficiency	95%				
Ventilation	Natural Ventilation to bedrooms				
	Extract ventilation to bathrooms (Local Specific Fan Power: 0.5 W/l/s)				
	Common areas provided with central ventilation with 65% Heat Recovery: (Central Specific Fan Power: 1.8)				
Cooling	VRV to front of house areas & DX units in Comms room (SCoP min 3.5; SEER min 4.5)				
Pumps	Variable Speed Pumps				
Hot Water	Boiler fed super insulated tanks				
Controls	BMS control, Temperature and time control within zones, Weather compensation				
Light fittings Efficacy (lm/W)	Efficient lighting design in all areas				
	Bedroom	72	Office	65	
	Bathroom	85	Meeting room	65	
	Living	60	Comms room	60	
	Kitchen	70	Storage	55	
	Dining	70	Food preparation	60	
	Corridor	60	Eating and drinking	60	
	Lounge	55			
	Reception	55	Plantroom	70	
Lighting Controls	Occupancy controls in all communal areas and bathrooms, Manual controls in the bedroom (manual override where necessary), daylight sensors in lounge, office, eating and drinking areas				

4.3 Overheating And Cooling policy

The project design has followed the overheating and cooling hierarchy as required by London Plan.
(See paragraph 2.1.4)




- **Minimising internal heat gain-efficient design:** where possible the internal gains are minimised. This includes highly efficient design of light fittings and Selecting highly efficient A rate equipments to reduce the small power and internal gain




- **Reducing the solar and heat gain:** the areas of the windows are not excessive; in the rooms with higher solar gain, high performance solar control glazing is specified which prevents excessive solar heating during the summer, but does not reduce daylight/ winter solar gain excessively.



- **Manage the heat within the building (thermal mass):** the internal leaf of the walls has high thermal mass and the area of the light weight windows is not excessive, therefore the internal temperature will benefit from the wall's thermal mass where possible.



- **Passive ventilation:** Openable windows are being used to provide natural ventilation to the building where feasible.



- **Mechanical Ventilation:** Mechanical Ventilation is not proposed for the accommodation as above strategies will be sufficient to remove heat and provide fresh air to the units. Mechanical ventilation will be provided to kitchens and bathroom in accordance with Approved Document Part F.



- **Active cooling systems (lowest carbon option):** No Cooling is proposed for the student accommodation. Active cooling systems are provided to front of house areas not suitable for natural ventilation.

4.4 Energy Consumption and Carbon Emission of the Efficient Buildings

4.4.1 Carbon emission savings of the efficient buildings

Implementing all the passive and active energy strategies listed in sections 4.1, 4.1 and 4.3, the carbon dioxide emission of the new student accomodaiton buildings is reduced from 1,452 kgCO₂/m² to 1330. kgCO₂/m². Figure 8 demonstrates that the reduction in Carbon Emission of the buildings is 8.4%.

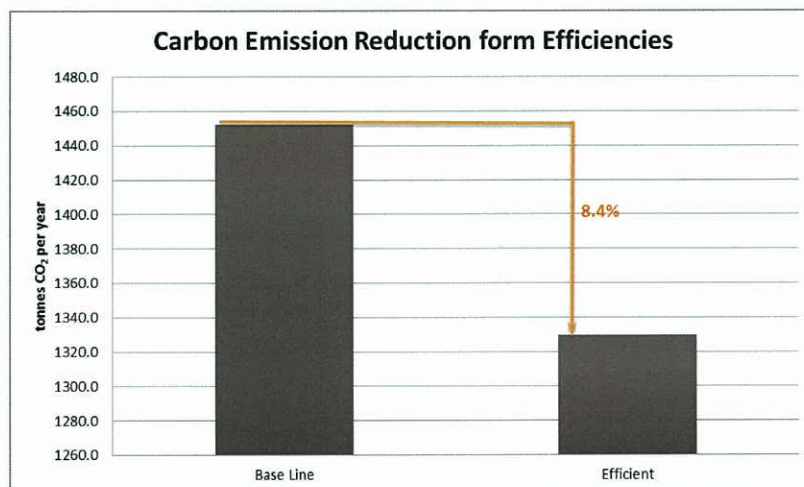


Figure 8 New Development, Carbon reduction due to efficiency measures

4.4.2 Breakdown of the regulated Energy Consumption & Carbon Emission

Based on the energy calculations completed for the development, The graphs below (Figure 9) demonstrate the breakdown of the regulated energy consumption and regulated carbon emission of the development after applying the efficiency measures listed in this report.

The most significant contributions are from Domestic Hot Water and Heating Respectively. Please note that the graphs do not include equipment loads. The non-regulated energy consumption and carbon emission is covered in section 4.5.

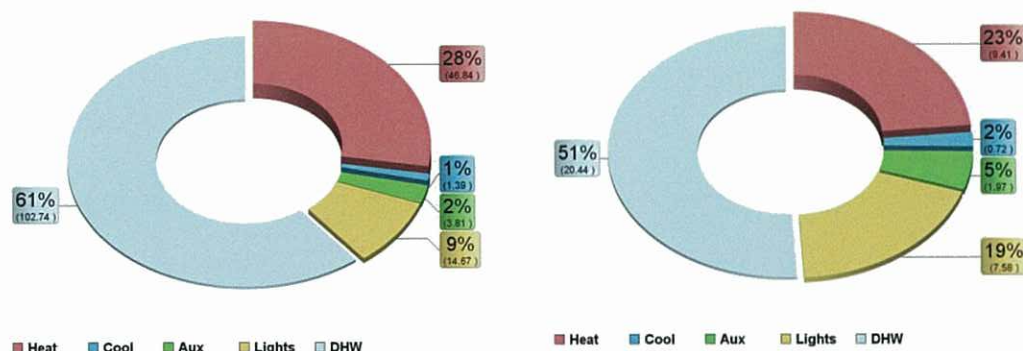


Figure 9 Breakdown of the Energy Consumption and Carbon Emissions for the development

4.5 Non-Regulated Energy Use

The London Plan (2011) requires that the energy demand and carbon dioxide emissions of the non-regulated end uses should also be calculated and reported in the energy assessments.

Based on the National Calculation Methodology, the total Carbon Emission of the non-regulated end users of the buildings is calculated. The total carbon emissions of the development from cooking and equipments is circa 400 tonnes per year.

Following strategies are proposed to reduce the non-regulated energy demand of the development:

- A rated appliance: The kitchens will be fitted out with highly efficient A rated appliances only.
- Installation of energy meters with display monitor for each unit to get the occupants more interested and involved in how energy is being used in their unit.
- Information will be provided to occupants which will explain the operations of energy centre and PV panels and how energy efficient behaviour will reduce the cost/carbon emissions of the development.

5 Decentralised Energy – District Heating

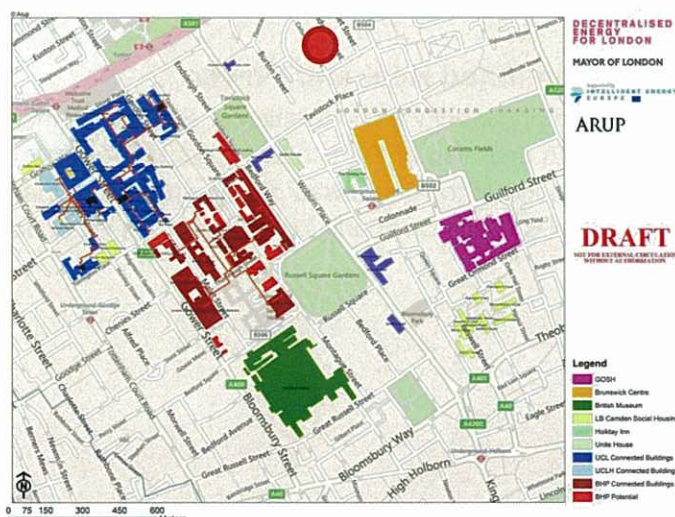
In accordance with the decentralised energy hierarchy, the connection to existing district heat networks, site wide Combined Heat and Power (CHP) and incorporation of CHP in the buildings has been considered for the scheme.

5.1 Existing District heating

There are a number of district heat networks in the local area. The development team have consulted with the parties responsible for these networks to investigate the feasibility of getting the student accommodation to an existing network.

Our discussions are summarised below:

- We initially spoke to Stephen McKinnell, the energy manager at SOAS who is responsible for the SOAS Energy network. He informed us that they are currently concentrating on investment in the central plant serving their existing network rather than expansion. They do have plans to extend the network, these plans are at their early stages and are in general terms aimed at extending the network south towards Great Ormond Street Hospital and the British Museum. Stephen referred us back to Harold Garner at Camden and Stuart Allison at Arup for a wider perspective.
- We spoke to Stuart Allison at Arup who are spearheading the masterplanning of the Bloomsbury heat network on behalf of the Decentralised Energy Body. Stuart confirmed that although the proposal was to extend the Bloomsbury network there is no fixed timescale in which to do this or any firm plan that it would extend towards our site. The Arup team are in dialogue with the operators of the decentralised networks in the area including the Argent, Kings Cross, Euston Road, UCL Gower Street and SOAS networks. We agreed that we would provide our baseline calculations to Arup so that any future considerations could take into account our scheme. Please find below the map of the proposed Bloomsbury Area DH as it stands.



- Finally, we spoke to Harold Garner at Camden Council. He acknowledged that we had approached the right people in relation to the scheme. We outlined how we were designing the buildings with basement heating and hot water plant which would allow for a technically

straightforward change to a district energy network connection at some point in the future should this become available.

Figure 10 below taken from the London Heat Map shows the location of the site and the location of the proposed Euston Road district heating network (red routes). The purple areas on the maps, shows the areas with potential for district heating network and the site is just outside the opportunity area.

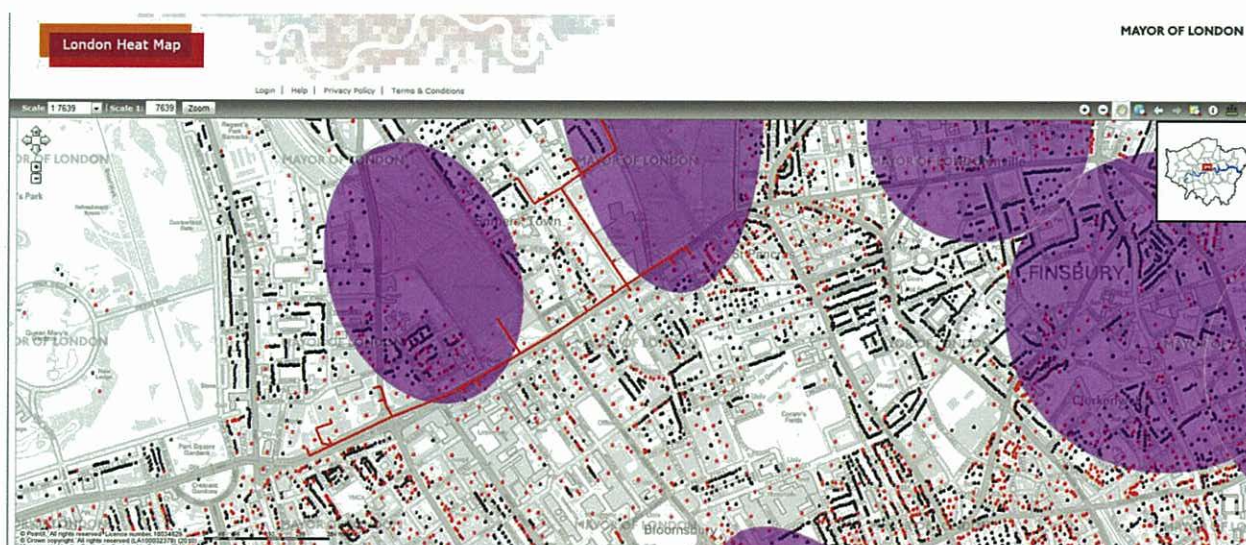


Figure 10 London Heat Map and the location of the site

Connection to an expanded Bloomsbury district heating network may be possible in the future. However, currently there is no clear information available on completion date and details of the operation of the district heating. The building therefore, will have its stand-alone communal heating system, but will be designed to technically allow future connection to district heating network when the network becomes operational. Subject to technical and financial feasibility at the time and subject to commercial agreements, the client will connect the building to the district heating network in future.

5.2 Site Wide Combined Heat and Power

The site represents a good opportunity for installation of site wide combined heat and power. This will help in reducing the carbon emission of the site dramatically. The following graphs show the annual heating and hot water demand of the site based on the energy calculations.⁶ The hot water demand included in the graph below is based on hourly estimation of hot water demand.⁷

⁶ The figures demonstrated on the graphs are based on initial energy calculations only and the real M&E design figures may be slightly different for the development. The CHP will be sized based on the detailed design and heat loss/gain calculations at a later stage.

⁷ The graph here (Figure 11) shows the hourly demand and ignores the hot water tank capacity. The next graphs includes the hot water tank capacity as well. The CHP is sized to be able to fill the Hot Water Tank continuously.

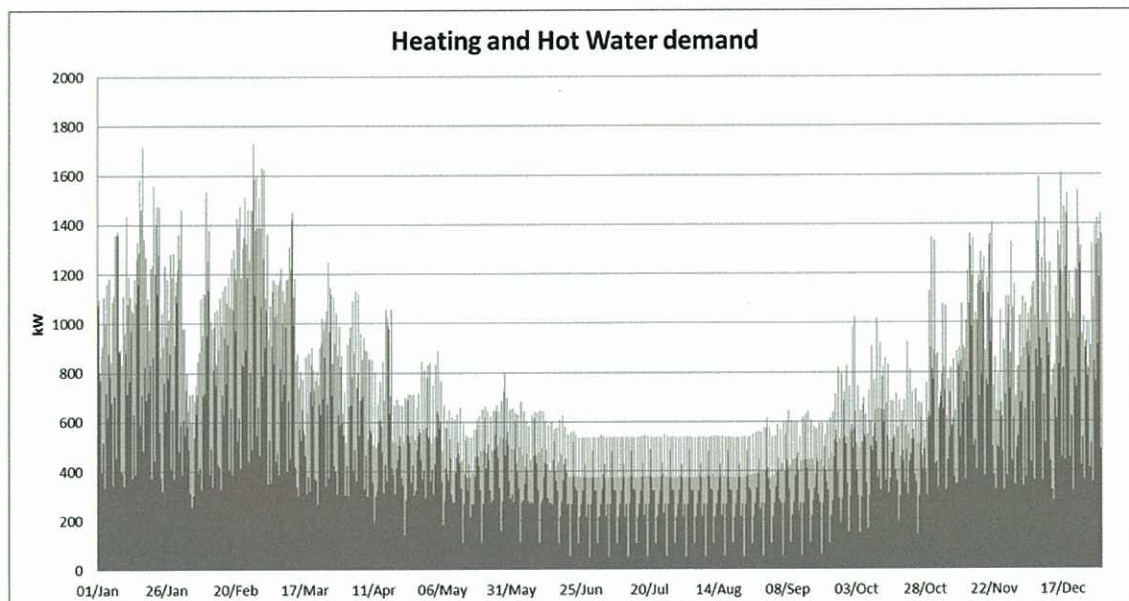


Figure 11 Annual Heating and Hot Water Load

It is recommended that three number CHP units should be installed for the site to allow the system to modulate according to heating/hot water demand. This will allow the system to match the demand closely and therefore to run for longer hours and save more carbon. Figure 12 shows the total heating and hot water requirement of the development throughout a year and it demonstrates how 3No.CHP units, with circa 109 kW heating output each⁸, could meet the base demand of the development in winter. Under normal operation all three CHP units will work for more than 6500 hours per year whereby the first unit works almost continuously.

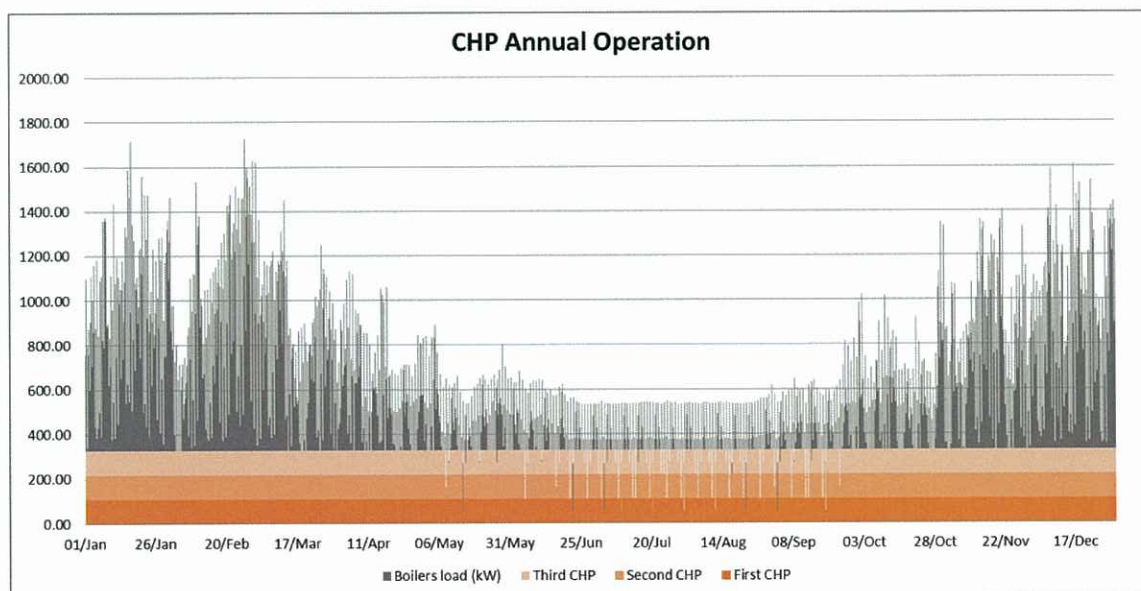


Figure 12 Annual Heating demand met by CHP units

⁸ As noted before, the figures are based on initial energy calculation and not detailed M&E design. The appropriate size of CHP can be only determined after full heat loss analyses is completed for the site.

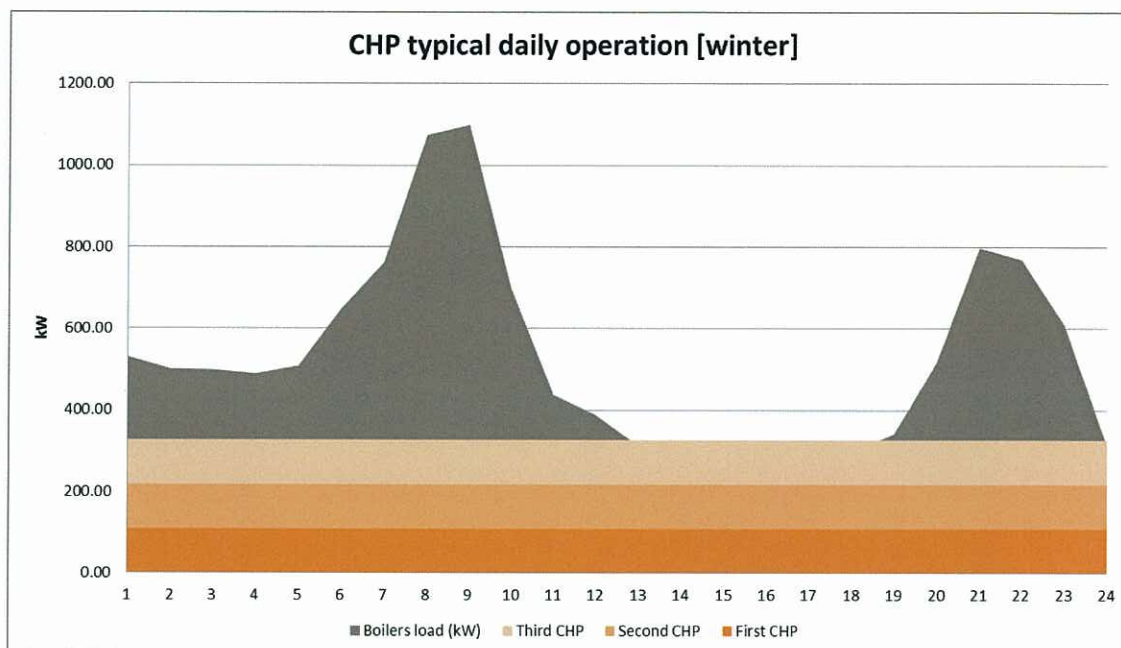


Figure 13 typical winter day CHP operations

Around 65% of the total annual heating/hot water requirement of the site will be provided through communal CHP system. Total CO₂ savings from this is approximately 311 tonnes per year.

Table 6 Total Carbon Emissions saved through CHP system

CHP Carbon Saving	Energy [MWh]	Carbon [Tonnes CO ₂]
Heating output	2,099	462
Electricity output	1,348	713
Total Natural gas input (gross)	4,364	864
Saving		311

Provisionally, the scheme is designed such that the energy centre will be located in the basement of the building and will serve both buildings together. The buildings on the site, including Hughes Parry Tower and Garden Halls, will be connected to the central network.

5.3 Combined Heat and Power in the Buildings

Since Site Wide CHP is proposed for the site to cover the base line heating demand, small scale CHP will not be considered for the site.