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Sustainability Statement

Land at Midland Crescent
Finchley Road, Camden

On behalf of
Stadium Capital Holdings

18/04/13
Job Ref: 5171

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Revision	Changes	Date
0	Document created for approval	18/04/2013

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1.0 EXECUTIVE SUMMARY

1.1 This Sustainable Design and Construction Statement for the proposed development of the site at Midland Crescent, Finchley Road in the London Borough of Camden follows the Mayor of London's Supplementary Planning Guidance (SPG), as noted in London Plan Policy 5.3: Sustainable Design and Construction.

1.2 This report details how the design team has considered the site's potential environmental impacts and how those impacts can be managed and mitigated in line with the prevailing spatial planning policies and the BREEAM 2011 New Construction environmental assessment scheme.

1.3 The proposed development has targeted sustainability throughout the lifetime of the proposal. In particular, energy and water efficiency measures will be integral to the building's design and specification. Passive design measures will also feature within the building to prevent overheating and avoid excessive requirements for heating/cooling.

1.4 All of the proposed measures in this report will reduce the site's impact on the environment and contribute to its sustainability. The proposed development satisfies the high standards of sustainability as prescribed by the relevant tiers of planning policy. The BREEAM 2011 New Construction pre-assessments for the student accommodation and commercial uses demonstrate that the proposed development can achieve a rating of Very Good with scores of 61.32% (student accommodation) and 58.60% (commercial).

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2.0 INTRODUCTION

2.1 This Sustainable Design and Construction Statement (SDCS) has been prepared by Metropolis Green to accompany the planning application submitted to the London Borough of Camden on behalf of Stadium Capital Holdings for the development of the site at Midland Crescent, Finchley Road in the West Hampstead ward.

2.2 This SDCS addresses local and regional policies on sustainable buildings and addresses issues that are covered by BREEAM to assess the sustainability of the various parts of the development. This SDCS is laid out according to Section 1.6 in the Mayor's SPG Sustainable Design and Construction, as noted in London Plan Policy 5.3: Sustainable Design and Construction.

2.3 This SDCS highlights where a sustainability standard can be potentially met and how the principle will be achieved. This report assumes a basic understanding of the BREEAM assessment methodology; however, for further information please refer to the BREEAM 2011 New Construction Technical Manual[1].

2.4 This SDCS should be read alongside the Energy Strategy prepared by Metropolis Green, the Design and Access Statement produced by CZWG Architects and other supplemental environmental reports submitted with the application (please see the References listed in Section 14.0 of this report).

[1] (http://www.breeam.org/BREEAM2011SchemeDocument/)

3.0 SITE BACKGROUND AND PROPOSED DEVELOPMENT

3.1 The site is located on the west side of Finchley Road in the West Hampstead ward of the London Borough of Camden. The site is 0.16 hectares in size and located to the north of the O2 Centre and Blackburn Road. Immediately to the north of the site on Finchley Road are a series of 3 storey brick buildings with retail/commercial at the ground floor level and residential units above. The site is triangular in shape, tapering approximately 120 m to the west, and is surrounded on the north and south by Network Rail lines.

3.2 The site previously contained a crescent-shaped retail and commercial building and was also previously used as a railway station. The last buildings on site were demolished in the mid-1980s and the site is currently vacant.

3.3 The description of development for this planning application is set out below:

"Erection of a part-4 and part-5 storey building with a double level basement comprising flexible commercial space (Use Classes A1/A2/A3/A4/B1/D1 & D2) at lower basement and ground floor levels, 140 student bedrooms with communal kitchen, lounge and common room areas at upper basement to fourth floor levels, common room at fifth floor and associated landscaping to site."

3.4 A detailed review of the site background/context and the proposed development can be found in the Design and Access Statement prepared by CZWG Architects.

4.0 POLICY CONTEXT

4.0.1 Sustainable development is the core principle underpinning planning. At the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone, now, and for future generations. A widely used definition was drawn up by the World Commission on Environment and Development in 1987: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

4.0.2 Planning has a key role to play in the creation of sustainable communities: communities that will stand the test of time, where people want to live, and which will enable people to meet their aspirations and potential.

4.1 National Policy

National Planning Policy Framework

4.1.1 The National Planning Policy Framework (NPPF) was published in March 2012 and sets out the Government's planning policies for England, and how these policies are expected to be applied. The policies in the document, taken as a whole, constitute the Government's view of what sustainable development in England means in practice for the planning system.

4.1.2 Paragraph 14 of the NPPF states that:

> At the heart of the NPPF **is a presumption in favour of sustainable development**, which should be seen as a golden thread running through both plan-making and decision-taking. For **decision-taking** this means approving development proposals that accord with the development plan without delay.

4.1.3 The NPPF outlines a set of core land-use planning principles that should underpin both plan-making and decision-taking, three of which are particularly relevant to this SDCS. Under paragraph 17, these principles are that planning should:

> - support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for

example, by the development of renewable energy);

- contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework; and
- encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value.

4.1.4 Design is addressed in section 7 of the NPPF, and paragraph 56 states:

> The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.

4.1.5 Meeting the challenge of climate change is addressed in section 10 of the NPPF, and paragraph 93 states: Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development.

4.1.6 Further to the above, paragraph 95 addresses local plan-making and state:

> To support the move to a low carbon future, local planning authorities should:
>
> - plan for new development in locations and ways which reduce greenhouse gas emissions;
> - actively support energy efficiency improvements to existing buildings; and
> - when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards.

4.1.7 Additionally, paragraph 96 discussed decision-taking and states that:

> In determining planning applications, local planning authorities should expect new development to:
>
> - comply with adopted Local Plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

> take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

4.1.8 Conserving and enhancing the natural environment is addressed in section 11 of the NPPF, and excerpts from paragraph 109 state that the planning system should contribute to and enhance the natural and local environment by:

> - minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; and
> - preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

4.1.9 Paragraph 118 notes that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by encouraging opportunities to incorporate biodiversity in and around developments.

4.1.10 Noise is addressed under paragraph 123 which notes that Planning policies and decisions should aim to:

> - avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development; and
> - mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.

4.1.11 Additionally, paragraph 125 states that:

> By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity.

4.1.12 Lastly, it is important to note that paragraph 187 of the NPPF addresses decision-taking by local planning authorities with respect to development applications. This paragraph states that:

> Local planning authorities should look for solutions rather than problems, and decision-takers at every level should seek to approve applications for sustainable development where possible. Local planning authorities should work proactively with applicants to secure developments that improve the

economic, social and environmental conditions of the area.

4.2 Regional Policy

London Plan 2011

Policy 5.2: Minimising Carbon Dioxide Emissions

4.2.1 Policy 5.2 addresses carbon dioxide emission reductions and energy assessment requirements. The policy states:

Planning decisions

A. Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy

D. As a minimum, energy assessments should include the following details:

a. Calculation of baseline energy demand and carbon dioxide emissions on a 'whole energy' basis, showing the contribution of emissions both from uses covered by building regulations and those that are not (see paragraph 5.22)

b. Proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services

c. Proposals to further reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP)

d. Proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.

E. The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.

Policy 5.3: Sustainable Design and Construction

4.2.2 Policy 5.3 is the main policy within the London Plan which addresses sustainable design and construction and states:

Strategic

A. The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments and to adapt to the effects of climate change over their lifetime.

Planning decisions

B. Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.

Policy 5.7: Renewable Energy

4.2.3 Policy 5.7 Renewable Energy is the main policy within the London Plan which addresses the use of renewable energy and states:

Strategic

A. The Mayor seeks to increase the proportion of energy generated from renewable sources, and expects that the projections for installed renewable energy capacity outlined in the Climate Change Mitigation and Energy Strategy and in supplementary planning guidance will be achieved in London.

Planning decisions

B. Within the framework of the energy hierarchy (see Policy 5.2), major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible.

4.2.4 Section 5.42 of the London Plan states that:

Individual development proposals will also help to achieve these targets by applying the energy hierarchy in Policy 5.2. There is a presumption that all major development proposals will seek to reduce carbon dioxide emissions by at least 20 per cent through the use of on-site renewable energy generation wherever feasible.

4.3 Local Policy

London Borough of Camden Core Strategy, November 2010

4.3.1 The London Borough of Camden's Core Strategy sets out the key elements of the Council's planning vision and strategy for the borough. It is the central part of Local Development Framework (LDF) and was adopted in November 2010. The LDF is a group of documents setting out the borough's planning strategy and policies.

4.3.2 The Core Strategy contributes to achieving the vision and objectives of Camden's Community Strategy and helps the Council's partners and other organisations deliver relevant parts of their programmes. It covers the physical aspects of location and land use but also addresses other factors that make places attractive, sustainable and successful, such as social and economic matters. It plays a key part in shaping the kind of place Camden will be in the future, balancing the needs of residents, businesses and future generations.

4.3.3 Within the Core Strategy there are specific policies relating to sustainability.

4.3.4 The Core Strategy sets out the Council's approach to managing Camden's growth so that it is sustainable, meets our needs for homes, jobs and services, and protects and enhances quality of life and the borough's many valued and high quality places. Section 3 focuses on delivering the key elements of Camden's strategy relating to:

- making Camden more sustainable and tackling climate change, in particular improving the environmental performance of buildings, providing decentralised energy and heating networks, and reducing and managing our water use;
- promoting a more attractive local environment through securing high quality places, conserving our heritage, providing parks and open spaces, and encouraging biodiversity;
- improving health and well-being;
- making Camden a safer place while retaining its vibrancy; and
- dealing with our waste and increasing recycling.

4.3.5 The implications of our actions on the environment are increasingly clear and action is needed at global, national and local levels. The Core Strategy has an important role in reducing Camden's environmental impact and achieving sustainable development – meeting our social, environmental and economic needs in ways that protect the environment and do not harm our ability to meet our needs in the future. A Sustainable Camden that adapts to a growing population is one of the elements in the vision in Camden's Community Strategy.

4.3.6 The Core Strategy Policy CS13 sets out the approach that developers should take when considering energy and carbon reductions for developments.

CS13 – Tackling climate change through promoting higher environmental standards

4.3.7 London Borough of Camden Core Strategy Policy CS13 states:

> **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 development to meet the highest feasible environmental standards that are financially viable during construction and occupation by:
>
> 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 decentralized energy networks;
> 3. generating renewable energy on-site; and
>
> 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,
>
> f) protecting existing local energy networks where possible (e.g. at Gower Street and Bloomsbury) and safeguarding potential network routes (e.g. Euston Road).
>
> **Water and surface water flooding**
>
> The Council will make Camden a water efficient borough and minimise the potential for surface water flooding by:
>
> g) protecting our existing drinking water and foul water infrastructure, including Barrow Hill Reservoir, Hampstead Heath Reservoir, Highgate Reservoir and Kidderpore Reservoir;
>
> h) making sure development incorporates efficient water and foul water infrastructure;
>
> i) requiring development to avoid harm to the water environment, water quality or drainage systems and prevents or mitigates local

surface water and down-stream flooding, especially in areas up-hill from, and in, areas known to be at risk from surface water flooding such as South and West Hampstead, Gospel Oak and King's Cross.

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.

4.3.8 The Core Strategy has informed the Council's Development Polices. Section 3 of this document set out a number of policies to promote sustainability and tackle climate change.

4.3.9 The objectives of Section 13 are enforced through policy DP22 Promoting sustainable design and construction and DP23 Water.

Policy DP22 - Promoting sustainable design and construction

4.3.1 Policy DP22 has been developed to provide details on the sustainability standards that will have to be met and states:

The Council will require development to incorporate sustainable design and construction measures. Schemes must:

a) demonstrate how sustainable development principles, including the relevant measures set out in paragraph 22.5, have been incorporated into the design and proposed implementation; and

b) incorporate green or brown roofs and green walls wherever suitable.

The Council will promote and measure sustainable design and construction by:

c) expecting new build housing to meet Code for Sustainable Homes Level 3 by 2010 and Code Level 4 by 2013 and encouraging Code Level 6 (zero carbon) by 2016.

The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:

f) summer shading and planting;

g) limiting run-off;

h) reducing water consumption;

i) reducing air pollution; and

j) not locating vulnerable uses in basements in flood-prone areas.

Policy DP23 - Water

4.3.2 Policy DP23 relates water, in general, targeting the reduction of water consumption and limiting the amount of waste water entering the combined storm water and sewer network. The policy states:

The Council will require developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding by:

a) incorporating water efficient features and equipment and capturing, retaining and re-using surface water and grey water on-site;

b) limiting the amount and rate of run-off and waste water entering the combined storm water and sewer network through the methods outlined in part a) and other sustainable urban drainage methods to reduce the risk of flooding;

c) reducing the pressure placed on the combined storm water and sewer network from foul water and surface water run-off and ensuring developments in the areas identified by the North London Strategic Flood Risk Assessment and shown on Map 2 as being at risk of surface water flooding are designed to cope with the potential flooding;

d) ensuring that developments are assessed for upstream and downstream groundwater flood risks in areas where historic underground streams are known to have been present; and

e) encouraging the provision of attractive and efficient water features.

Camden Planning Guidance Sustainability (CPG3)

4.3.3 The Core Strategy is supported by Supplementary Planning Documents (SPDs) which play an important role in planning decisions. SPDs provide detailed guidance on how planning strategy and policies will be implemented for specific topics, areas and sites.

4.3.4 CPG3 contains advice and guidance for developers on ways to achieve carbon reductions and more sustainable developments. It also highlights the Council's requirements and guidelines which support the relevant Local LDF policies, including DP22 as noted above.

4.3.5 Section 9 covers sustainability assessment tools, with BREEAM being of particular relevance to this development (see section 4.4.4 below). The key message of the document is that:

A development of 500sq m or more of non-residential floor space will need to be designed in line with BREEAM.

4.3.6 Developers are strongly encouraged to meet the following standards in accordance with Development Policy DP22 - Promoting sustainable design and construction:

Time period	Minimum rating	Minimum standard for categories (% of un-weighted credits)
2010-2012	Very Good	Energy 60% Water 60% Materials 40%
2013 +	Excellent	

4.4 Environmental Assessment Method: BREEAM 2011 New Construction

4.4.1 BREEAM is the world's leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and is used to describe a building's environmental performance.

4.4.2 BREEAM 2011 New Construction is a performance based assessment method and certification scheme for new buildings. The primary aim of BREEAM 2011 New Construction is to mitigate the life cycle impacts of new buildings on the environment in a robust and cost effective manner.

4.4.3 The BREEAM 2011 New Construction scheme can be used to assess the environmental life cycle impacts of new non-domestic buildings at the design and construction stages. 'New Construction' is defined as development that results in a new standalone structure, or new extension to an existing structure, which will come into operation/use for the first time upon completion of the works.

4.4.4 The proposed development at Midland Crescent consists of two building uses: commercial space on the lower ground -2 level and student accommodation units (and ancillary cycle storage, lobby, management and common room uses) on the other levels of the building. For the purposes of a BREEAM pre-assessment, the commercial space has been defined as an office building type as a generic standard, given that the future use is not known at this stage. The student accommodation use has been defined as a multi-residential (student halls of residence) building type. In order to demonstrate the ability to achieve certification at the desired rating, separate BREEAM pre-assessments have been prepared under the office and multi-residential building types, and are found as Appendices A and B to this report.

4.4.5 BREEAM credits are also awarded in 9 categories (plus an additional Innovation category) of sustainable design according to performance. These credits are then added together to produce a single overall score on a scale of Pass, Good, Very Good, Excellent and Outstanding, dependent on the total score received from achieving credits across the various categories. There are minimum standards that must be achieved in order to meet the higher rating levels under BREEAM. For more detail, please refer to the BREEAM 2011 New Construction Technical Manual (see the reference in section 2.0 of this report).

4.4.6 A scheme can be assessed at Design Stage (DS) - leading to an Interim BREEAM Certificate and/or at the Post Construction Stage (PCS) – leading to a Final BREEAM Certificate.

5.0 RE-USE OF LAND & BUILDINGS

5.1 Introduction

5.1.1 London has a large population and a comparatively small land area; therefore land is a precious, finite resource. The efficient use of land requires that developments optimise the carrying capacity of land, that previously developed land is re-used, and that green spaces within London are protected and opportunities for the provision of new open space are maximised.

5.2 Land

	Comments	Complies
Essential Standards *100% of development on previously developed land, unless very special circumstances can be demonstrated.*	The site is currently vacant, but previously contained a crescent-shaped retail and commercial building and was also previously used as a railway station. The entirety of the site does not technically meet the definition of previously developed land under BREEAM issue LE 01; however, given the site's location within the urban area and between two railway lines, it can be practically defined as previously developed land.	Yes
Development density should be maximised based on local context and (Policy 4B.7) design principles (Policy 4B.1), open space provision (Policy 3D.10) and public transport capacity (Policy 3C.10).	The site's location favours redevelopment and is identified by the London Borough of Camden as a potential development site. The design team has extensively analysed the design options for the development and the proposed building makes efficient use of a constrained site, whilst providing a high standard of built form. The proposed development sensitively introduces 116 student accommodation units and commercial space to the site, alongside the existing buildings on Finchley Road and the site density has been appropriately maximised. As a result of noise and vibration considerations, the site is not appropriate for the provision of outdoor amenity space.	Yes

	For further information regarding the design of the building and the site, please refer to the Design and Access Statement prepared by CZWG Architects. There is significant existing public transport capacity within walking distance from the site to serve the proposed density of development, including: numerous bus routes, Finchley Road underground station (Jubilee and Metropolitan lines) and Finchley Road & Frognal railway station (London Overground services). For further information regarding local public transport facilities, please refer to the Transport Assessment prepared by Tim Spencer & Co.	

5.3 Buildings

	Comments	**Complies**
Essential Standard *Existing buildings are reused where practicable, where the density of development and residential amenity are optimised and where the building conforms to or has the potential to meet the standards for energy, materials, biodiversity and water conservation set out in this SPG.*	The site is currently vacant.	N/A
Preferred Standard *Existing roof space reused where practicable to create new outdoor spaces and enhance biodiversity alongside the integration of renewable energy (section 2.3.2)*	As noted above, the site is currently vacant. The proposed roof space will include a green roof and the integration of renewable energy technology through solar thermal and photovoltaic (PV) panels.	N/A

6.0 MAXIMISE THE USE OF NATURAL SYSTEMS

6.1 Introduction

6.1.1 The overriding principle is that location, urban design, passive solar design and maximising the use of natural ventilation should be used to minimise resource use and maximise the comfort of users over the lifetime of the development. The main climatic influences on internal comfort include solar heat and air flow. Building facades are the interface between the external and internal climate. Buildings need to be designed to be able to adapt to the likely effects of climate change on London's climate over the next decades.

6.2 Location and Urban Design

	Comments	**Complies**
Essential Standard *All development to follow the principles of good design set out in London Plan policy 4B.1*	The proposed development is of high quality design and the principles of London Plan policy have been clearly addressed in this SDCS, and by demonstrating that the target of achieving a BREEAM rating 'Very Good can be met. Achieving these standards will ensure that the Mayor's Essential Standards are satisfied. For further information regarding the design of the proposed development, please refer to the Design and Access Statement, prepared by CZWG Architects.	Yes
Preferred Standard *Minimise need for and use of mechanical ventilation, heating and cooling systems*	Ventilation is addressed in the Energy Strategy prepared by Metropolis Green. This report notes that due to the location of the site and the impacts of noise and air pollution (as set out in the Local Air Quality Assessment prepared by Ramboll), windows will not be openable and passive ventilation cannot be provided to either the commercial space or the student accommodation units on site. Fresh air ventilation will be provided to the whole building via a mechanical ventilation system including heat recovery, which will contribute to mitigating the risk of summer overheating.	Not feasible

6.3 Adapting to Climate Change

	Comments	Complies
Essential Standards *Buildings provide for flexibility of uses during their projected operational lives*	The Design and Access Statement prepared by CZWG Architects notes that the proposed framed concrete construction at the lower level ensures that this space will be adaptable. The use of a column grid ensures that the structure is minimised, and provides a consistent and generic internal environment, which does not become an obstacle to possible future spatial divisions, access or services. This offers future flexibility by allowing the building's use and layout to be easily converted in the future.	Yes
Buildings adapted to and mitigate for the effects of the urban heat island and the expected increases in hot dry summers and wet mild winters.	The Energy Strategy prepared by Metropolis Green addresses overheating in the proposed development. The orientation of the building is constrained by the site location, existing neighbouring railway lines and street orientation. The proposed building has, however, been designed to maximise daylight and sunlight where possible and reduce the need for artificial lighting during the daytime hours. Simplified Building Energy Model (SBEM) calculations show that the solar gain limits in summer have not been exceeded (Criterion 3 of Building Regulations Part L for new build buildings other than dwellings) and are therefore considered to be at an acceptable level for the proposal. Low U-values will be achieved through effective wall, roof and floor insulation to ensure that current Building Regulation standards are exceeded. A high level of air tightness has been designed in the new buildings. For further information, please refer to the Energy Strategy prepared by Metropolis Green.	Yes

Design in facilities for bicycles and electric vehicles	The proposed development will provide 162 secure, covered cycle storage spaces for the student accommodation units in dedicated rooms at the lower ground -1 level of the development. The cycle storage will be designed to ensure compliance with BREEAM issue Tra 03 for the student accommodation units. The proposed development is car-free; therefore the provision of facilities for electric vehicles is not applicable.	Yes
Additional Comments		
With respect to the encouragement of non carbon based transport modes, the site is served by public transport links within proximity to the site. As discussed previously, multiple bus routes pass along Finchley Road with connections to central London, Golders Green, Finchley, Hendon and other destinations. The site is also located within walking distance to Finchley Road underground station and Finchley Road & Frognal railway station. The site's location and proximity to local amenities along Finchley Road enables future residents' trips to be made on foot, cycle or local public transport, rather than by private car (the proposed development is also car-free).		

7.0 CONSERVE ENERGY, WATER & OTHER RESOURCES

7.1 Introduction

7.1.1 London is promoting the development of resource efficient buildings, from inception to demolition. This includes the efficient use of energy, materials and water. These issues have been addressed in part by the Mayor's renewables policy and by BREEAM as detailed in the sections below.

7.2 Energy

	Comments	Complies
Essential Standard *Carry out energy demand assessment* *Maximise energy efficiency* *Major commercial and residential developments to demonstrate that consideration has been given to the following ranking method for heating and where necessary, cooling systems:* *passive design; solar water heating; then combined heat and power for heating and cooling (i.e. trigeneration), preferably fuelled by renewables; then community heating and cooling then heat pumps; and then gas condensing boilers.* *Wherever on site outdoor lighting is proposed as part of a development, it should be energy efficient, minimising light lost to sky.* *Carbon emissions from the total energy needs (heat, cooling and power) of the development should be reduced by at least 20% by the on-site generation of renewable energy.*	An Energy Strategy has been prepared by Metropolis Green. The report has been prepared in line with GLA guidance on energy assessments, London Plan policy, London Borough of Camden policy requirements, and follows the Mayor's energy hierarchy: Be Lean, Be Clean, and Be Green. The report describes these policies, the calculation methodology used, and the measures taken to achieve policy requirements. All energy and carbon figures have been calculated using approved SBEM software, which is used to demonstrate compliance with current Building Regulations and BREEAM 2011 New Construction requirements. Following London Plan policy 5.2 which requires a 25% reduction in regulated carbon emissions and the London Borough of Camden's Core Strategy policy CS13, this report demonstrates that the proposal can achieve a total reduction of 45,213 $kgCO_2/yr$, this level of CO_2 reduction (in regulated carbon emissions) equates to an overall 41.1% improvement in Building Emissions Rate (BER) over Target Emissions Rate (TER).	Yes

Preferred Standards *All developments to demonstrate that consideration has been given to the following ranking method for heating and where necessary for cooling, systems and should incorporate the highest feasible of the following options:* *-solar water heating; then* *-combined heat and power/trigeneration, preferably fuelled by renewables; then* *-community heating.* *New developments should always be connected to existing community heating networks preferably fuelled by renewables where feasible.* *Wherever outdoor lighting or other electrically powered street furniture is proposed on site, it should be solar powered and minimise light lost to the sky.* *Lighting, heating and cooling controls should enable services to operate efficiently under different loadings and allow for localised control.* *Major developments should be zero carbon emission developments (ZEDs).* *Major developments should make a contribution to London's hydrogen economy through the adoption of hydrogen and/or fuel cell technologies and infrastructure.*	London Plan policy 5.7 and the London Borough of Camden's Planning Guidance CPG3 requirements are for a 20% reduction in CO_2 emissions through the specification of on-site renewable technologies. This report demonstrates that the development at Midland Crescent has potential to achieve a 11.6% CO_2 reduction through specification of a combination of Photovoltaic (PV) and Solar Thermal panels, which does not reach the 20% target due to conflicting demands on the roof space, however, it should be noted that the Energy Strategy results in an overall 34.8% reduction in regulated carbon emissions. Additionally, in line with the London Borough of Camden's Development Policy DP22, results of energy strategy calculations demonstrate that as a result of the energy and services efficiency measures and renewable technologies proposed, the site has sufficient improvements to achieve the required credits for BREEAM issue Ene 01 and will contribute to the achievement of BREEAM Very Good. The achievements demonstrated in this report are the result of provision and improvement of fabric to high energy efficiency standards, high efficiency mechanical ventilation with heat recovery (MVHR) combined with the specification of communal high efficiency gas fired boilers and roof mounted PV and solar thermal panels. For further information, please refer to the original report. Further to the above, a lighting report analysing obtrusive light has been proposed by Ramboll. This report highlights measures which will minimise the amount of 'light lost	

	to sky' and will reduce the impact, on the railway, of external lighting from the development. The most important measures have been listed below: - there will be no upward light output, - a boundary fence will be erected - average light levels will be 12 lux For further information, please refer to the original report.	

7.3 Materials

	Comments	Complies
Essential Standards *50% timber and timber products from Forest Stewardship Council (FSC) source and balance from a known temperate source.* *Insulation materials containing substances known to contribute to stratospheric ozone depletion or with the potential to contribute to global warming must not be used.* *Minimise use of new aggregates.*	The design team can commit to at least 50% FSC approved timber and 100% legally sourced timber for the proposed development. Another Essential Standard will be met through the specification of insulation materials with a Global Warming Potential (GWP) of less than 5 and a low embodied impact relative to their thermal properties, determined by the Green Guide. This specification will satisfy the insulation requirements under BREEAM issue Mat 04. The design team has set a target of using a minimum of 25% recycled aggregates in line with BREEAM issue Wst 02, thus complying with the Mayor's Essential Standard.	Yes

Preferred Standards *No construction material nor specification with high embodied impact to be used (as defined by the summary ratings within the Green Guide to Specification) unless a compelling whole life energy or technical case for its use exists*	The Materials category in BREEAM promotes the sustainable procurement and use of materials, taking into account the environmental impacts of materials and the responsible sourcing of basic building and finishing elements, by using the BRE Green Guide to Specification, which is also one of the Mayor's Preferred Standards. The design team can commit to achieving the highest feasible level of credits under BREEAM issue Mat 01 and 2 credits have currently been allocated.	Yes
Additional Comments		
It is anticipated that there will be a requirement that the principal contractor will have a policy for sustainable environmental sourcing of construction materials. This will be confirmed during the design stage BREEAM assessment and the design team has currently committed to the responsible sourcing of materials in line with the criteria of BREEAM issue Mat 03. The source of the materials has not yet been specified; however local materials will be procured where it is viable to do so.		

7.4 Water

	Comments	Complies
Essential Standards *100% metering of all newly built property*	Water metering of the proposed development will be specified in accordance with the requirements of BREEAM issue Wat 02 and in line with the Mayor's Essential Standard.	Yes
Mayor's Preferred Standards *Use of greywater for all non-potable uses.* *These standards are based on the principles of:* • *Incorporating water saving devices* • *Making use of alternative water sources* • *Designing low water use landscaping and gardens*	The feasibility of including greywater recycling (GWR) in the development has been investigated and found not to be possible in this building. Due to the nature of the site, and therefore the size and shape of the proposed building, there are 2 proposed plant rooms, which are designed to be located (lower ground -2 and 5th floor) at the eastern end part of the building where there is a larger footprint. This would mean the secondary waste pipes connecting all showers and basins at ground floor and above would need to be routed across the length of the building at level -1. The drop in the pipeline to enable satisfactory flow by gravity will mean the pipe dropping below the line of the ceilings thus making it impractical to achieve grey water recycling. The student accommodation is to be provided with mechanical supply and extract air systems; the installation of ducts within the corridors will further aggravate the situation of the drop of the waste pipes from the soffit as the supply and extract ducts need to cross over each other. Water management has, however, been considered carefully and the solution for the site includes an extensive green roof of approximately 750 m^2 and a separate foul and surface water drainage system up to the outfalls to the combined sewer, to manage surface water run-off to less than 50% of the existing flow rates (including a factor for climate change). Internal water	Not feasible

	consumption will be reduced by low flow fixtures and fittings in compliance with BREEAM requirements and Part G of the Building Regulations. For further information, please see the additional comments in this table below. The inclusion of the green roof, which also delivers other significant benefits in terms of biodiversity, reducing the urban heat island effect, better roof insulation and contributes to improving air quality, means that rainwater harvesting for internal non-potable water is not feasible due to the high levels of treatment required for the water (it is discoloured as it filtrates through the green roof and is a dark brown colour). This is an expensive solution that would require significant on-going management and maintenance and is not appropriate for this type of development.	
Additional Comments		
As water consumption is potentially one of the highest impact areas of any building over its lifetime, the design team are targeting internal water consumption as a key area for improvement and this objective will satisfy the strict requirements of BREEAM issue Wat 01. Water consumption across the development will be reduced through the use of efficient water fixtures and fittings, including taps, showers and dual flush toilets. The specification of low flow sanitary bathroom fittings/fixtures and white goods will help to achieve substantial savings in water consumption throughout the life cycle of the proposed development. This water strategy ensures that a targeted 25% improvement in water consumption against a notional baseline performance can be achieved.		

8.0 NOISE, POLLUTION, FLOODING AND MICROCLIMATIC EFFECTS

8.1 Introduction

8.1.1 New development needs to take into account the adverse effects it may have on noise, pollution, flooding and micro-climatic effects. All new developments should minimise contributions to flooding and include appropriate mitigation for potential worst case situations.

8.2 Noise

	Comments	Complies
Essential Standards Demonstrate that adverse impacts of noise have been minimised, using measures at source or between source and receptor (including choice and location of plant or method, layout, screening and sound absorption) in preference to sound insulation at the receptor, wherever practicable	A Noise and Vibration Assessment for the site and proposed development has been prepared by AECOM. The report concludes that appropriate noise and vibration levels can be achieved with mitigation measures, as recommended. For further information regarding noise and vibration please refer to the original report. It is anticipated that the noise attenuation requirements under BREEAM issue Pol 05 can be achieved.	Yes

8.3 Air Pollution

	Comments	Complies
Essential Standards *All new gas boilers should produce low levels of NO_X* *Take measures to reduce and mitigate exposure to air pollution*	The proposed heating plant for the scheme (high efficiency communal gas boilers) will be specified with low NO_x emissions. Emissions are anticipated to be ≤ 40 mg/kWh, which will achieve full credits under BREEAM issue Pol 02. A Local Air Quality Assessment for the proposed development has been prepared by Ramboll. The report notes that appropriate mitigation measures have been incorporated into the design of the development to ensure that exposure and emissions are reduced and the proposed	Yes

	development would therefore be in accordance with planning policy and guidance relating to air quality impacts. For further information regarding air quality, please refer to the original report.	
Preferred Standards *Low emission developments that are designed to minimize the air quality impact of plant, vehicles and other sources over the lifetime of the development*	As noted above, the Local Air Quality Assessment prepared by Ramboll demonstrates that the air quality impact of plant and other sours of pollution have been carefully considered by the design team and appropriate mitigation measures have been incorporated into the design. The proposed scheme will be a low emission development to the extent feasible. The proximity of public transport and local amenities will be an incentive for future residents of the student accommodation to walk, cycle and use public transport rather than use the private car; therefore reducing pollutants associated with vehicle use.	Yes

8.4 Water Consumption, Water Pollution and Flooding

	Comments	**Complies**
Essential Standards *Use of Sustainable Drainage Systems (SUDS) measures, wherever practical* *Achieve 50% attenuation of the undeveloped site's surface water run-off at peak times*	An initial review has determined that the site is located in an area designated by the Environment Agency as Flood Zone 1, with little or no risk of fluvial or tidal flooding. At the time of the BREEAM assessment, a full Flood Risk Assessment for the site will be required in order to demonstrate compliance with BREEAM issue Pol 03. An outline drainage strategy for the proposed development has been prepared by Ramboll. The strategy notes that the proposal includes a separate foul and surface water drainage system up to the outfalls to the combined sewer. A flow control device restricts the surface water flow downstream of the network. Surface water is attenuated within the proposed green roof with the potential of further	Yes

	attenuation storage across the paved areas proposed within the site. Initial calculations have determined that at least 50% attenuation of the undeveloped site's surface water run-off at peak times can be achieved, including an allowance for climate change. The surface water runoff attenuation strategy will continue to be developed as the detailed design of the development progresses.	
Preferred Standards *Achieve 100% attenuation of the undeveloped site's surface water run-off at peak times*	As noted above, the precise amount of surface water runoff attenuation will be determined at the detailed design stage of the drainage strategy for the site, and the design team is committed to incorporating SUDS as appropriate.	If possible

8.5 Microclimate

	Comments	**Complies**
Essential Standards *Mitigate any negative impact on the microclimate of existing surrounding public realm and buildings to meet the Lawson criteria for wind comfort and safety*	The proposed building is 4 and 5 storeys in height and located on a site adjacent to two railway lines and with limited street frontage. As such, the local climate is not considered to be affected. Furthermore, the scheme is not near a large expanse of water and occurrences such as wind tunnelling are not considered to be an issue for this site Therefore the development meets the Essential Standard by avoiding the creation of adverse local climatic conditions. A full wind comfort/safety assessment has not been deemed necessary by the design team.	Yes

9.0 ENSURE DEVELOPMENTS ARE COMFORTABLE AND SECURE

9.1 Introduction

9.1.1 Sustainable communities will only be sustainable if they have been designed with people, as well as the environment, in mind. Developments must be comfortable and safe to use for all sections of society and all cultures and religions. This includes internal and external comfort with regards to health, accessibility, secure design and safe transport links.

9.2 Indoor Comfort

	Comments	Complies
Essential Standards *Inert or low emission finishes, construction materials, carpets and furnishings should be used wherever practical.* *All plant and machinery should be accessible for easy maintenance*	The comfort of building occupants is an important aspect of the proposed scheme. As such, the comfort of all rooms will be carefully considered and quality fittings will be specified. At the detailed design stage, inert or low emission finishes, construction materials, carpets and furnishings can be specified, as appropriate. As noted in section 8.3 of this report above, the design team has taken steps to reduce the potential risk of airborne pollutants released from the proposed development. Adverse health impacts can result from Volatile Organic Compounds, carbon monoxide and fine particles. In order to address these potential issues, the design team is aware that specified materials should not contain or emit toxic chemicals (e.g. natural materials and low solvent finishing products and furnishings). These products are rated highly in the Green Guide and are rewarded by the BREEAM Materials category. Excellent ventilation is vital during construction to aid the removal of chemicals. Designing for and managing internal air quality will benefit the health of building occupants.	Yes

	The plant for the proposed development will be located in a dedicated room at the lower ground floor level and in a dedicated area on the roof level. These areas will be easily accessible for maintenance, therefore meeting the Mayor's Essential Standard.	
Preferred Standards *Design buildings for indoor comfort of users*	The measures listed above ensure compliance with the Mayor's Preferred Standard to design buildings for the indoor comfort of users.	Yes

9.3 Designing Inclusive Environments

	Comments	**Complies**
Essential Standards *All developments should meet the principles of inclusive design, adopting the principles of SPG Accessible London: Achieving an Inclusive Environment.*	The development is accessible for people walking, cycling and travelling by public transport. The Design and Access Statement prepared by CZWG Architects outlines the inclusive design measures incorporated into the proposed development. The report notes that, as a minimum, the scheme will comply with Building Regulations Approved Document Part M in order to maximise access for users with mobility, hearing and visual impairments as well as those with learning difficulties. Lifetime Home Standards are not required to be met for the student accommodation, but the design team has chosen to design to adopt the key criteria that are relevant to the proposed development. The needs of wheelchair users have been considered throughout the design of the proposed development and in excess of the required 10% of the units within the scheme have been designed for wheelchair users. For further information regarding inclusive design, please refer to the Design and Access Statement.	Yes

Preferred Standards *Developments should be fully e-enabled*	The development will be e-enabled by the provision of IT systems in accordance with the Mayor's Preferred Standard.	Yes

9.4 Secure Design

	Comments	**Complies**
Essential Standards *Developments should incorporate principles of "secured by design" (SBD).*	The proposed development has been designed with site security as an important consideration. The design team has undertaken initial consultation with the local Architectural Liaison Officer (ALO) and the relevant comments and recommendations have been addressed. It is anticipated that the scheme will meet all Secured by Design criteria and achieve credits under BREEAM issue Hea 06.	Yes

10.0 CONSERVE & ENHANCE THE NATURAL ENVIRONMENT & BIODIVERSITY

10.1 Introduction

10.1.1 Open and green spaces can contribute to the image and vitality of urban areas. As London becomes more compact and intensive in its built form, the value of these open spaces will increase. Open spaces will need to fulfil a multitude of functions, from educational to social and cultural to sport and recreation, as well as visual respite from the hard urban areas. In addition, open and green spaces support a diverse wildlife in London.

10.2 Open Space

	Comments	**Complies**
Essential Standards *No net loss of publicly accessible open space*	The site is primarily composed of scrub vegetation with areas of rough grassland and hardstanding. The site is not currently accessible to the public; therefore the proposed development will not result in the loss of any public open space.	Yes
Preferred Standards *Create appropriate new open, green publicly accessible spaces where these can address identified areas of deficiency of public open space*	Given the constraints of the location, size and shape of the site, it is not feasible or appropriate to provide publicly accessible open space. The Design and Access Statement prepared by CZWG Architects notes that there are a great many public open green spaces of various sizes offering a wide range of facilities and planting in and around the area of the site. For a detailed review of public open space, please refer to the original report. Additionally, as noted in section 5.2 of this report, as a result of noise and vibration considerations, the site is not appropriate for the provision of outdoor amenity space.	Not feasible

10.3 Natural Environment and Biodiversity

	Comments	Complies
Essential Standards *No net loss of biodiversity and access to nature on the development site.* *Reduction in areas of deficiency of access to nature.*	An Ecological Impact Assessment has been prepared by Capita Symonds. The report concludes that the site is dominated by existing dense scrub vegetation and hardstanding and as such offers a low ecological value due to its location and habitats present on site. It has been assessed that the proposed works are unlikely to result in a significant ecological impact to the wider environment. While the site has been deemed to have low ecological value, the Ecological Impact Assessment notes that there are, however, several tree corridors in neighbouring roads, including a small parcel of woodland to the north of the site, this is a designated Site of Interest for Nature Conservation (SINC).	Yes
Preferred Standards *Net gain of biodiversity and access to nature on the development site*	The Ecological Impact Assessment prepared by Capita Symonds provides a series of recommendations to enhance the ecological value of the site including: a green roof, artificial habitats and native landscaping. Please refer to the original report for further details regarding the recommendations. The report further notes that the removal of the scrub vegetation and construction of the proposed structure will remove all the vegetation currently on site, but with the provision of a well designed native landscape planting and the provision of nesting boxes and possibly a green roof, would sufficiently reduce the overall net loss of habitats within the local environment. It is anticipated that the ecologist's recommendations will be implemented in the proposed development and credits have currently been allocated under BREEAM issues LE 03, 04 and 05.	Yes

11.0 PROMOTING SUSTAINABLE WASTE BEHAVIOUR

11.1 Introduction

11.1.1 London produces about 17 million tonnes of solid waste every year. Of this, the councils collect 4.4 million tonnes of municipal waste which includes waste from households, and some commercial and industrial sources. The balance is made up of 6.4 million tonnes of commercial and industrial waste and 6.1 million tonnes of construction and demolition waste.

11.2 Waste

	Comments	Complies
Essential Standards *Minimise, reuse and recycle demolition waste* *Specify use of reused or recycled construction materials* *Recycling facilities should be as easy to access as waste facilities*	The Waste category of BREEAM has stringent assessment criteria for both construction and operational waste. An Outline Site Waste Management Plan (Outline SWMP) has been prepared by Ramboll. The plan provides high level guidance on the approach to waste management for the proposed development and key regulatory requirements. For further information regarding the waste strategy, please refer to the original report. In line with BREEAM issue Wst 01, targets will be set to reduce the amount of non-hazardous construction waste generated by the building's design and construction (≤ 7.5 $m^3/100m^2$ and ≤ 6.5 tonnes/$100m^2$) and two credits are currently allocated, thus meeting best practice levels. Additionally, targets to divert a significant amount of non-hazardous construction waste generated by the project from landfill will be set and there is potential to achieve an additional Wst 01 credit. The site is largely vacant and demolition waste will be limited; however demolition waste will be reused and recycled to the extent feasible during construction works.	Yes

	A credit under BREEAM issue Wst 02 has currently been allocated for specifying at least 25% of aggregates as recycled. The proposed development will incorporate internal waste and recycling bins for the student accommodation units in line with the requirements of BREEAM issue Wst 03. Also in line with the requirements of BREEAM issue Wst 03, communal bin storage areas have been provided in dedicated and accessible rooms at the ground floor level to accommodate the anticipated waste streams from both the student accommodation and commercial uses. The required space has been determined based on the London Borough of Camden's guidance on the waste storage requirements for commercial and residential properties.	
Preferred Standards *Use prefabricated and standardised modulation components to minimise waste. If this is not feasible use low waste fabrication techniques.* *Provide facilities to recycle 70% of commercial and industrial waste by 2020.* *Incorporation of or access to new waste recovery facilities (anaerobic digestion, pyrolysis/gasification) especially to provide a renewable source of energy eg methane or hydrogen*	Where possible, low waste fabrication techniques will be used for the proposed development. Renewable energy from a waste recovery facility such as pyrolysis is not a suitable technology for this development due to space constraints, and associated air quality issues; therefore this Preferred Standard will not be met.	No

12.0 SUSTAINABLE CONSTRUCTION

12.1 Introduction

12.1.1 Many aspects of the construction process can have a significant adverse impact on the quality of the site and its surroundings. Sustainable construction makes economic sense as it involves the prudent use of existing and new resources and the efficient management of the construction process. This section discusses the measures necessary to achieve the objectives of the sustainability principles set out in London Plan policy.

12.2 Construction Stage

	Comments	Complies
Essential Standards *Reduce waste during construction and demolition phases and sort waste stream on site where practical* *Reduce the risk of statutory nuisance to neighbouring properties as much as possible through site management* *All developers should consider and comply with the Mayor and ALG's London Best Practice Guide on the control of dust and emissions from demolition and construction* *All developers should sign up to the relevant Considerate Constructors Scheme (CCS) or in the City of London to the Considerate Contractor scheme.*	The scheme will be registered with the CCS which is a national initiative, set up by the construction industry to improve the image of construction. All of the Mayor's Essential and Preferred Standards will be met though the development's registration with CCS. The principal contractor will therefore ensure that neighbouring homes and businesses are able to continue their day-to-day activities without significant disruption. They will liaise with neighbouring businesses and the local residents to ensure that noisy works are carried out at appropriate times agreed by all parties. A contact telephone number will be established so that residents can raise any concerns. Construction waste has been discussed in the previous section regarding Materials and a full SWMP will be prepared. It is likely that the principal contractor will provide an environmental materials policy, used for sourcing of construction materials and will have to operate an Environmental Management System.	Yes

Preferred Standards *All contractors should be required by tender requirements to sign up to the Mayor and ALG's London Best Practice Guide on the control of dust and emissions from demolition and construction* *All contractors should be required by tender requirements to sign up to the relevant Considerate Constructors Scheme or in the City of London to the Considerate Contractor scheme*	The CCS is concerned with any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three main categories: the environment, the workforce and the general public. All sites registered with the scheme are monitored by an experienced industry professional to assess their performance against the eight points of the Code of Considerate Practice. The commitment to register under the CCS and achieve a score beyond best practice (34 to 39 points) is rewarded by BREEAM issue Man 02. Dust management for the development site will be implemented according to BRE guidance, meeting best practice standards. Measures include damping down the site along with dust sheets and covering waste receptacles. Provision will be made to ensure that areas occupied by contractors are kept in a clean and tidy condition. The design team have also made the commitment to monitor, report, and set targets to reduce energy and water consumption from site activities and adopt best practice policies in respect of water pollution on site (ground and surface). These commitments are rewarded under BREEAM issue Man 03.	Yes

13.0 CONCLUSION

13.1 This Sustainable Design and Construction Statement demonstrates that the proposed redevelopment of the Midland Crescent site has targeted very high standards of design and building quality. The proposed development maximises a site with a recognised opportunity for sustainable redevelopment and will provide high quality student accommodation and commercial space.

13.2 The sustainable design and construction strategy focuses on the implementation of sustainable systems for energy, water, waste management, recycling, and the use and choice of materials. Much attention has been given to reducing the environmental impact throughout the whole lifetime of the building, and not just during occupation.

13.3 Following the energy hierarchy has enabled carbon reductions to be calculated for the proposed development at the Midland Crescent site. The total overall carbon reduction is predicted to be approximately 34.8% through high fabric efficiency and the inclusion of renewable energy technology.

13.4 Water consumption will be substantially reduced through the incorporation of water efficient fixtures and fittings throughout the proposed residential units and school. Environmentally friendly and responsibly sourced materials will be specified where possible.

13.5 The scheme will incorporate best practice design principles with regards to noise and air pollution and the recommendations of appointed professionals will be adopted.

13.6 A proposed green roof will assist with surface water runoff management and drainage from the site. The site lies in an area at low risk from flooding and it is considered that there will be no increase in flood risk to person or property as a result of the proposed development.

13.7 Recycling facilities will be provided for all uses on the site and the reuse and disposal of demolition and construction waste will be guided by a Site Waste Management Plan. In addition, the site will be registered with the Considerate Constructors Scheme which will ensure that the site's impacts on the environment, the workforce and the general public are minimised.

13.8 The BREEAM 2011 New Construction pre-assessments for the student accommodation and commercial uses demonstrate that the proposed development can achieve a rating of Very Good with scores of 61.32% (student accommodation) and 58.60% (commercial). It

should be noted that these pre-assessments have been undertaken early in the design process and is therefore subject to change. It is also important to note that the threshold for BREEAM Very Good could be achieved by attaining other credits within BREEAM, and not achieving some of those allocated in the pre-assessments.

13.9 In conclusion, this report demonstrates that the proposed redevelopment has successfully met the majority of the Mayor's Essential and Preferred Standards referred to in the Sustainable Design and Construction SPG. Where a standard has not been met a justification has been provided. The design team has carefully considered the site's potential environmental impacts and this report details how those impacts will be managed and mitigated.

14.0 REFERENCES

14.1 Daylight, Sunlight & Overshadowing Report, prepared by Drivers Jonas Deloitte

14.2 Design and Access Statement, prepared by CZWG Architects

14.3 Design Note: Supporting Drainage Design Information, prepared by Ramboll

14.4 Ecological Impact Assessment Update, prepared by Capita Symonds

14.5 Energy Strategy, prepared by Metropolis Green

14.6 Local Air Quality Assessment, prepared by Ramboll

14.7 Noise and Vibration Assessment, prepared by AECOM

14.8 Obtrusive Light Lighting Report, prepared by Ramboll

14.9 Outline Site Waste Management Plan, prepared by Ramboll

14.10 Phase I Geoenvironmental Report, prepared by Capita Symonds

14.11 Transport Assessment, prepared by Tim Spencer & Co.

APPENDIX A - BREEAM 2011 NEW CONSTRUCTION PRE-ASSESSMENT (STUDENT ACCOMMODATION)

BREEAM 2011 New Construction Assessment Report: Rating & Key Performance Indicators

This assessment and indicative BREEAM rating is not a formal certified BREEAM assessment or rating and must not be communicated as such. The score presented is indicative of a buildings potential performance and is based on a simplified pre-formal BREEAM assessment and unverified commitments given at an early stage in the design process.

Overall Indicative Building Performance

Building name	5171 - Midland Crescent (Student Accommodation)
Indicative building score (%)	61.32%
Indicative BREEAM rating	Pre-Assessment result indicates potential for BREEAM Very Good rating
Indicative minimum standards level achieved	Pre-Assessment result indicates the minimum standards for Excellent level

Summary of Indicative Building Performance by Environmental Section and Assessment Issue

Management	Indicative no. credits available	Indicative no. credits Achieved	Indicative contribution to score	Minimum standards level achieved
Man01 Sustainable Procurement	8.0	7.0	3.82%	Pre-Assessment result indicates the minimum standards for Outstanding level
Man02 Responsible Construction Practices	2.0	2.0	1.09%	Pre-Assessment result indicates the minimum standards for Outstanding level
Man03 Construction Site Impacts	5.0	4.0	2.18%	N/A
Man04 Stakeholder Participation	4.0	2.0	1.09%	Pre-Assessment result indicates the minimum standards for Outstanding level
Man05 Life cycle cost and service life planning	3.0	0.0	0.00%	N/A
Total indicative environmental section performance	**22.0**	**15.0**	**8.18%**	
Health & Wellbeing				
Hea01 Visual Comfort	3.0	1.0	0.94%	Pre-Assessment result indicates the minimum standards for Outstanding level
Hea02 Indoor Air Quality	4.0	0.0	0.00%	N/A
Hea03 Thermal Comfort	2.0	0.0	0.00%	N/A
Hea04 Water Quality	1.0	1.0	0.94%	Pre-Assessment result indicates the minimum standards for Outstanding level
Hea05 Acoustic Performance	4.0	0.0	0.00%	N/A
Hea06 Safety and Security	2.0	2.0	1.88%	N/A
Total indicative environmental section performance	**16.0**	**4.0**	**3.75%**	
Energy				
Ene01 Reduction of CO2 Emissions	15.0	8.0	5.63%	Pre-Assessment result indicates the minimum standards for Excellent level
Ene02 Energy Monitoring	1.0	1.0	0.70%	Pre-Assessment result indicates the minimum standards for Outstanding level
Ene03 External Lighting	1.0	1.0	0.70%	N/A
Ene04 Low and Zero Carbon Technology	5.0	2.0	1.41%	Pre-Assessment result indicates the minimum standards for Outstanding level
Ene05 Energy Efficient Cold Storage	N/A	N/A	N/A	N/A
Ene06 Energy Efficient Transportation Systems	2.0	2.0	1.41%	N/A
Ene07 Energy Efficient Laboratory Systems	N/A	N/A	N/A	N/A
Ene08 Energy Efficient Equipment	2.0	2.0	1.41%	N/A
Ene09 Drying Space	1.0	1.0	0.70%	N/A
Total indicative environmental section performance	**27.0**	**17.00**	**11.96%**	
Transport				
Tra01 Public Transport Accessibility	3.0	3.0	2.67%	N/A
Tra02 Proximity to Amenities	2.0	2.0	1.78%	N/A
Tra03 Cyclist facilities	1.0	1.0	0.89%	N/A
Tra04 Maximum Car Parking Capacity	2.0	2.0	1.78%	N/A
Tra05 Travel Plan	1.0	1.0	0.89%	N/A
Total indicative environmental section performance	**9.0**	**9.0**	**8.00%**	
Water				
Wat01 Water Consumption	5.0	2.0	1.33%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wat02 Water Monitoring	1.0	1.0	0.67%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wat03 Water Leak Detection and Prevention	2.0	2.0	1.33%	N/A
Wat04 Water Efficient Equipment	1.0	1.0	0.67%	N/A
Total indicative environmental section performance	**9.0**	**6.0**	**4.00%**	
Materials				
Mat01 Life Cycle Impacts	6.0	2.0	1.92%	N/A
Mat02 Hard Landscaping and Boundary Protection	1.0	1.0	0.96%	N/A
Mat03 Responsible Sourcing	3.0	1.0	0.96%	Pre-Assessment result indicates the minimum standards for Outstanding level
Mat04 Insulation	2.0	2.0	1.92%	N/A
Mat05 Designing for Robustness	1.0	1.0	0.96%	N/A
Total indicative environmental section performance	**13.0**	**7.00**	**6.73%**	
Waste				
Wst01 Construction Waste Management	4.0	2.0	2.50%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wst02 Recycled Aggregates	1.0	1.0	1.25%	N/A
Wst03 Operational Waste	1.0	1.0	1.25%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wst04 Speculative Floor and Ceiling Finishes	N/A	N/A	N/A	N/A
Total indicative environmental section performance	**6.0**	**4.00**	**5.00%**	
Land Use and Ecology				
LE01 Site Selection	2.0	0.0	0.00%	N/A
LE02 Ecological Value of Site and Protection of Ecological Features	1.0	0.0	0.00%	N/A
LE03 Mitigating Ecological Impact	2.0	2.0	2.00%	Pre-Assessment result indicates the minimum standards for Outstanding level
LE04 Enhancing Site Ecology	3.0	2.0	2.00%	N/A
LE05 Long Term Impact on Biodiversity	2.0	2.0	2.00%	N/A
Total indicative environmental section performance	**10.0**	**6.00**	**6.00%**	
Pollution				
Pol01 Impact of Refrigerants	3.0	3.0	2.31%	N/A
Pol02 NOx Emissions	3.0	3.0	2.31%	N/A
Pol03 Surface Water Run off	5.0	2.0	1.54%	N/A
Pol04 Reduction of Night Time Light Pollution	1.0	1.0	0.77%	N/A
Pol05 Noise Attenuation	1.0	1.0	0.77%	N/A
Total indicative environmental section performance	**13.0**	**10.00**	**7.69%**	
Innovation				
Inn01 Innovation	10.0	0.0	0.00%	N/A
Total indicative environmental section performance	**10.0**	**0.00**	**0.00%**	

APPENDIX B - BREEAM 2011 NEW CONSTRUCTION PRE-ASSESSMENT (COMMERCIAL)

BREEAM 2011 New Construction Assessment Report: Rating & Key Performance Indicators

This assessment and indicative BREEAM rating is not a formal certified BREEAM assessment or rating and must not be communicated as such. The score presented is indicative of a buildings potential performance and is based on a simplified pre-formal BREEAM assessment and unverified commitments given at an early stage in the design process.

Overall Indicative Building Performance

Building name	5171 - Midland Crescent (Commercial)
Indicative building score (%)	58.60%
Indicative BREEAM rating	Pre-Assessment result indicates potential for BREEAM Very Good rating
Indicative minimum standards level achieved	Pre-Assessment result indicates the minimum standards for Excellent level

Summary of Indicative Building Performance by Environmental Section and Assessment Issue

Management	Indicative no. credits available	Indicative no. credits Achieved	Indicative contribution to score	Minimum standards level achieved
Man01 Sustainable Procurement	8.0	7.0	3.82%	Pre-Assessment result indicates the minimum standards for Outstanding level
Man02 Responsible Construction Practices	2.0	2.0	1.09%	Pre-Assessment result indicates the minimum standards for Outstanding level
Man03 Construction Site Impacts	5.0	4.0	2.18%	N/A
Man04 Stakeholder Participation	4.0	2.0	1.09%	Pre-Assessment result indicates the minimum standards for Outstanding level
Man05 Life cycle cost and service life planning	3.0	0.0	0.00%	N/A
Total indicative environmental section performance	**22.0**	**15.0**	**8.18%**	
Health & Wellbeing				
Hea01 Visual Comfort	3.0	1.0	1.07%	Pre-Assessment result indicates the minimum standards for Outstanding level
Hea02 Indoor Air Quality	4.0	0.0	0.00%	N/A
Hea03 Thermal Comfort	2.0	0.0	0.00%	N/A
Hea04 Water Quality	1.0	0.5	0.54%	Pre-Assessment result indicates the minimum standards for Outstanding level
Hea05 Acoustic Performance	2.0	1.0	1.07%	N/A
Hea06 Safety and Security	2.0	2.0	2.14%	N/A
Total indicative environmental section performance	**14.0**	**4.5**	**4.82%**	
Energy				
Ene01 Reduction of CO2 Emissions	15.0	8.0	5.24%	Pre-Assessment result indicates the minimum standards for Excellent level
Ene02 Energy Monitoring	2.0	1.5	0.98%	Pre-Assessment result indicates the minimum standards for Outstanding level
Ene03 External Lighting	1.0	1.0	0.66%	N/A
Ene04 Low and Zero Carbon Technology	5.0	2.0	1.31%	Pre-Assessment result indicates the minimum standards for Outstanding level
Ene05 Energy Efficient Cold Storage	2.0	1.0	0.66%	N/A
Ene06 Energy Efficient Transportation Systems	2.0	2.0	1.31%	N/A
Ene07 Energy Efficient Laboratory Systems	N/A	N/A	N/A	N/A
Ene08 Energy Efficient Equipment	2.0	1.0	0.66%	N/A
Ene09 Drying Space	N/A	N/A	N/A	N/A
Total indicative environmental section performance	**29.0**	**16.50**	**10.81%**	
Transport				
Tra01 Public Transport Accessibility	3.0	3.0	2.67%	N/A
Tra02 Proximity to Amenities	1.0	1.0	0.89%	N/A
Tra03 Cyclist facilities	2.0	0.0	0.00%	N/A
Tra04 Maximum Car Parking Capacity	2.0	2.0	1.78%	N/A
Tra05 Travel Plan	1.0	1.0	0.89%	N/A
Total indicative environmental section performance	**9.0**	**7.0**	**6.22%**	
Water				
Wat01 Water Consumption	5.0	2.0	1.50%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wat02 Water Monitoring	1.0	1.0	0.75%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wat03 Water Leak Detection and Prevention	2.0	1.5	1.13%	N/A
Wat04 Water Efficient Equipment	N/A	N/A	N/A	N/A
Total indicative environmental section performance	**8.0**	**4.5**	**3.38%**	
Materials				
Mat01 Life Cycle Impacts	5.0	2.0	2.08%	N/A
Mat02 Hard Landscaping and Boundary Protection	1.0	1.0	1.04%	N/A
Mat03 Responsible Sourcing	3.0	1.0	1.04%	Pre-Assessment result indicates the minimum standards for Outstanding level
Mat04 Insulation	2.0	2.0	2.08%	N/A
Mat05 Designing for Robustness	1.0	1.0	1.04%	N/A
Total indicative environmental section performance	**12.0**	**7.00**	**7.29%**	
Waste				
Wst01 Construction Waste Management	4.0	2.0	2.14%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wst02 Recycled Aggregates	1.0	1.0	1.07%	N/A
Wst03 Operational Waste	1.0	1.0	1.07%	Pre-Assessment result indicates the minimum standards for Outstanding level
Wst04 Speculative Floor and Ceiling Finishes	1.0	1.0	1.07%	N/A
Total indicative environmental section performance	**7.0**	**5.00**	**5.36%**	
Land Use and Ecology				
LE01 Site Selection	2.0	0.0	0.00%	N/A
LE02 Ecological Value of Site and Protection of Ecological Features	1.0	0.0	0.00%	N/A
LE03 Mitigating Ecological Impact	2.0	2.0	2.00%	Pre-Assessment result indicates the minimum standards for Outstanding level
LE04 Enhancing Site Ecology	3.0	2.0	2.00%	N/A
LE05 Long Term Impact on Biodiversity	2.0	2.0	2.00%	N/A
Total indicative environmental section performance	**10.0**	**6.00**	**6.00%**	
Pollution				
Pol01 Impact of Refrigerants	3.0	1.5	1.15%	N/A
Pol02 NOx Emissions	3.0	3.0	2.31%	N/A
Pol03 Surface Water Run off	5.0	2.0	1.54%	N/A
Pol04 Reduction of Night Time Light Pollution	1.0	1.0	0.77%	N/A
Pol05 Noise Attenuation	1.0	1.0	0.77%	N/A
Total indicative environmental section performance	**13.0**	**8.50**	**6.54%**	
Innovation				
Inn01 Innovation	10.0	0.0	0.00%	N/A
Total indicative environmental section performance	**10.0**	**0.00**	**0.00%**	