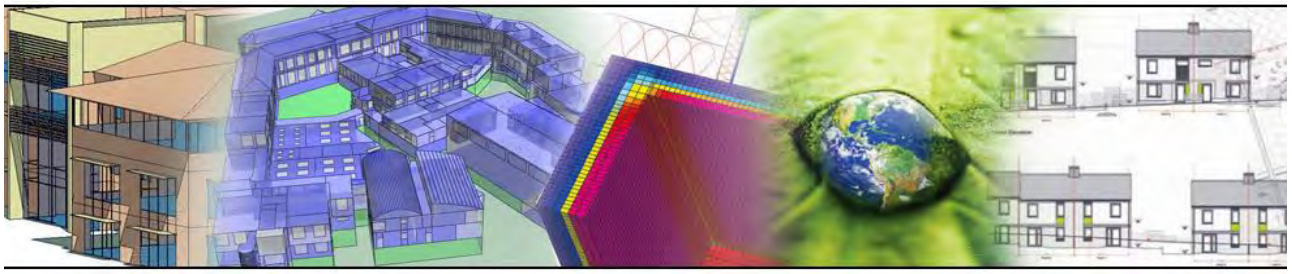

Energy and Sustainability Statement

Riverpark Gardens
Bromley
London

Prepared for: Phoenix Community Housing

Prepared by:	Checked by:
	
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Revision	Date	Notes
ESS1	20/11/2014	First Issue
ESS2	25/11/2014	Second Issue
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1. Executive Summary

This Energy and Sustainability Statement has been produced to fulfil the following conditions for the development at Riverpark Gardens;

Policy BTC8 - *'The council will require developments to make the fullest contribution to the mitigation of and adaption to climate change and to minimise emissions of carbon dioxide. In accordance with Policy 4A.1 of the London Plan, the following hierarchy will be used to assess applications.*

- *Using less energy, in particular by adopting sustainable design and construction measures.*
- *Supplying energy efficiently in particular by prioritising decentralised energy generation and*
- *Using renewable energy*

Developments will be required to achieve a reduction in carbon dioxide emissions of 20% from the incorporation of onsite renewable energy generation (which can include sources of decentralised renewable energy) unless it can be demonstrated that such a provision is not feasible'.

The development must also achieve a significant reduction in CO_2 using the energy hierarchy outlined within the London Plan 2011[1] as a methodology. The target of 40% is set against Building Regulations 2010 and therefore is not an accurate reflection of the target required under Building Regulations 2013; as such the target for this development has been adapted to correlate with the changes to part L1A. This project will therefore meet a 34% reduction against 2013 Building Regulations, the results of which can be in Table 1 (figures have been calculated to 1 decimal place), all data produced has been based on assumptions and will require re-assessment at detailed design stage.

Stage	Annual CO_2 emissions ($kg.CO_2/yr$)	CO_2 reduction (%)
Baseline	11,931	-
Be Lean	9,046	24%
Be Clean	9,046	24%
Be Green	6,678	44%
Target	7,837	34%

Table 1. CO_2 reduction summary

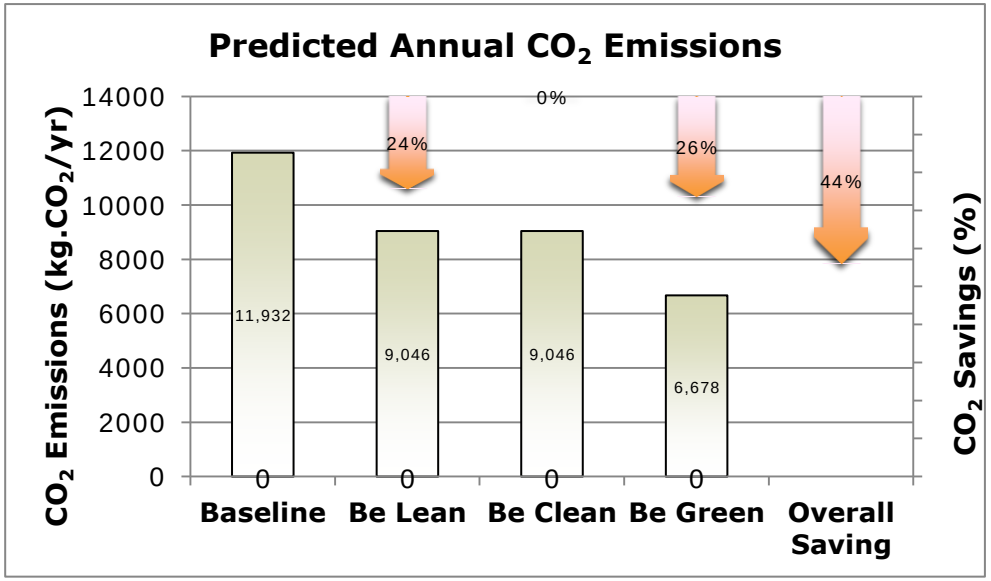

Figure 1. CO_2 savings through hierarchy

[1] London Plan, July 2011

2. Introduction

Stroma Technology has been commissioned by Phoenix Community Housing to prepare an Energy and Sustainability Statement in support of the planning application for the development at Riverpark Gardens, Bromley, London.

The proposed development is located within the London Borough of Bromley and will therefore need to meet the requirements of any Local Policies as well as the London Plan 2011. The Bromley Town Centre Action Plan, Chapter 4.6 outlines the expectations for 'Creating a Sustainable Town Centre'. Within this chapter '*Policy BTC8: Sustainable Design and Construction'* should be observed, as it states that a 20% reduction in CO_2 must be achieved through on-site renewables.

Policy 5.2 of the London Plan 2011 will also be followed, which adopts a fabric first approach using the Energy Hierarchy shown in Figure 1. The hierarchy comprises a tiered methodology which the follows the fabric first approach before consideration of district heat/CHP and renewable energy technologies.

The Energy Strategy for the proposed development will be as follows:

1. Incorporate passive features such as low U-values, low air permeability and correct orientation.
2. Install energy efficient building services such as high efficiency gas condensing boilers.
3. Research the viability of decentralised energy and integrate where viable.
4. Use solar PV to reduce CO_2 emissions towards the target DER.

Figure 2. Energy Hierarchy

3. The Development Site

The development site is within the London Borough of Bromley situated at the entrance to Riverpark Gardens and accessed via Ravensmead Road and Ravensbourne Avenue, London. The current site is completely hard standing and contains a disused two-storey commercial and residential unit with associated parking and garages. The area surrounding the site is predominantly residential and consists of semi-detached properties, flats and maisonettes.

Figure 3. Street view of the development site[2]

Figure 4. Aerial view of the development site

The proposed development consists of 8 apartments over four storeys. The first two floors consist of one and two bedroom dwellings. The top two storeys are comprised entirely of two and three bedroom duplex flats.

[2] www.google.com

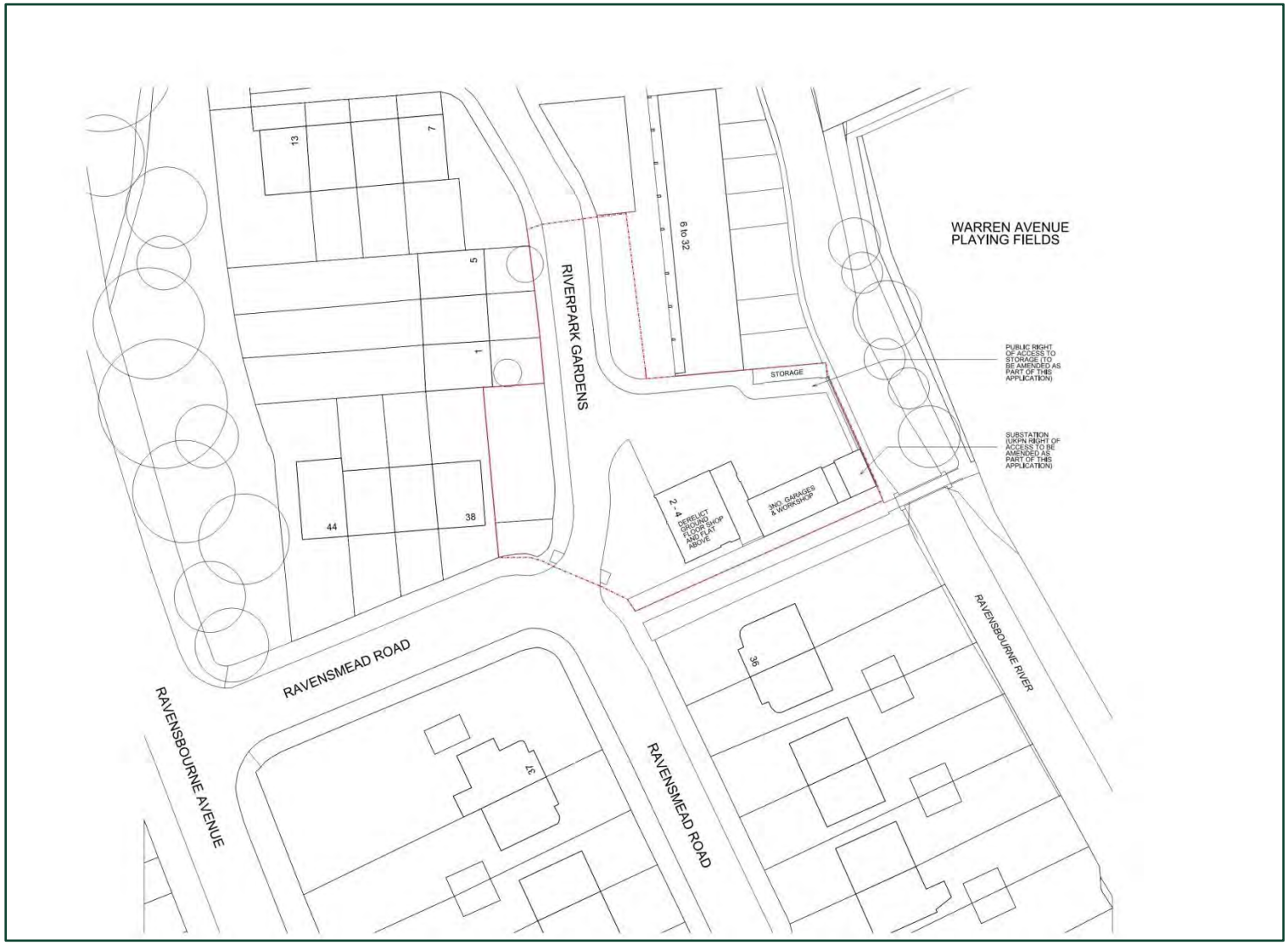

Figure 5. Site location

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4. Planning Policy

4.1. The London Plan

The Spatial Development Strategy for Greater London was revised on 22nd July 2011, and replaced the London Plan (consolidated with alterations since 2004) first published in February 2008.

Policy 5.2 Minimising Carbon Dioxide Emissions

This states that development proposals must follow the energy hierarchy to make the fullest contribution to minimising CO_2 emissions:

Be Lean: use less energy

Be Clean: supply energy efficiency

Be Green: use renewable energy

Developers are to ensure that major developments meet minimum targets for CO_2 emissions, which are outlined as improvements over the Target Emission Rate (TER) which is benchmarked in Building Regulations, Approved Document L1a: 2010. Table 1 shows the following targets have been introduced with a move towards residential development being Zero Carbon by 2016.

Year	L1A:2010 Limits
2010-2013	25% (Code for Sustainable Homes Level 4)
2013-2016	**40%**
2016-	Zero Carbon

Table 2. London Plan 2011 limits

4.2. Local Policy

The Bromley Town Centre Area Action Plan (October 2010) is outlined in policy document BTC8. This Policy contains a framework for Sustainable Design and Construction in terms of Carbon Reduction. This Energy Strategy must address the following policy within the Area Action Plan[3]:

Policy BTC8: Sustainable Design and Construction

The council will require developments to make the fullest contribution to the mitigation of and adaption to climate change and to minimise emissions of carbon dioxide. In accordance with Policy 4A.1 of the London Plan, the following hierarchy will be used to assess applications.

Using less energy, in particular by adopting sustainable design and construction measures.

Supplying energy efficiently in particular by prioritising decentralised energy generation and

Using renewable energy

Developments will be required to achieve a reduction in carbon dioxide emissions of 20% from the incorporation of onsite renewable energy generation (which can include sources of decentralised renewable energy) unless it can be demonstrated that such a provision is not feasible.

[3] Bromley Town Centre Area Action Plan, October 2010

5. Regulations and Planning Conditions

5.1. Building Regualtions

Approved document L1A – Conservation of fuel and Power sets the standard for carbon emissions for new dwellings and was last revised in April 2014 (Part L: 2013). Dwellings will need to comply with the criteria set out in the document, as follows:

1. The predicted Dwelling CO_2 Emission Rate (DER) should not be greater than the Target CO_2 Emission Rate (TER).

2. The performance of the building fabric and fixed building services should be no worse than the design limits set out in Table 2 of the Approved Document.

3. The dwellings will have appropriate passive control measures to limit the effect of solar gains on indoor temperatures in summer.

4. That the performance of dwellings as-built comply with the DER values achieved, including site testing of a representative sample of dwellings demonstrating that the 'air permeability' rate achieved is as per that specified, or better.

5. The necessary provisions for energy efficient operation of dwellings are put in place, including operation and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that householders can understand.

Compliance with the Approved Document Part L1a should be demonstrated at detailed design stage, prior to construction.

5.2. Planning Conditions

This development is required to meet the targets of the London Plan 2011, which states a 40% reduction in Carbon Dioxide emissions must be achieved against 2010 Building Regulations. For the purpose of this assessment a 34% target has been set against Building Regulations 2013 to account for the 6% reduction in TER between the 2010 and 2013 Part L.

In addition, the Bromley Town Centre Area Action Plan also has a target to achieve a 20% reduction in CO_2 emissions through onsite renewables.

6. **Methodology**

The Standard Assessment Procedure (SAP) is the Government's approved methodology for assessing the predicted energy consumption and carbon dioxide emissions for new dwellings. Results are derived in respect of floor area and consider energy use ($kWh/m^2/yr$) and associated CO_2 emissions ($kg.CO_2/m^2/yr$) from the following:

- Space heating
- Domestic hot water
- Ventilation
- Lighting
- Ancillary pumps and fans
- Energy generating technology

SAP is compliant with the EU Energy Performance of Buildings Directive and is carried out using approved software. For the purpose of this report, data has been produced by an approved assessor using FSAP 2012 software.

BE LEAN

USE LESS ENERGY

7. Be Lean – Use Less Energy

This section outlines the proposals for specifying building fabric and services beyond the requirements of Building Regulations (the baseline).

7.1. Building Fabric

Fundamental to achieving energy efficiency in any new building is the specification of a thermally efficient building envelope. Passive design features such as **high levels of insulation**, effective use of **solar gain,** low **air permeability and enhanced thermal bridging** are all proven techniques to reduce energy consumption and associated CO_2 emissions.

Assumptions have been made on this development in order to meet the fabric efficiency targets of Building Regulations 2013. This has been attained by targeting U-values closer to the notional, as set out within *Table 4: Summary of concurrent notional dwelling specification, Approved Document L1A*. The TFEE has been achieved by incorporating enhanced construction details selected from the Concrete Block Association (CBA), based on Dense weight aggregate blocks with λ (thermal conductivity) not exceeding 1.33 W/mK.

Tables 3 shows the proposed building fabric specification applied to the SAP calculations with respect to the upper limits stipulated by Part L: 2010.

Building fabric (dwellings)			
Element	**L1A:2010 limiting[4] U-value ($W/m^2.K$)**	**Proposed U-value ($W/m^2.K$)**	**Improvement (%)**
Floors	0.25	0.11	56%
External walls	0.30	0.16	47%
Party wall between dwelling	0.20	0.00	100%
Roof	0.20	0.11	45%
Windows	2.00	1.40	30%
Doors	2.00	1.0	50%
y-value	0.15	0.055-0.1188	21-63%
Air permeability ($m^3/h.m^2$ @ 50 Pa)			
All dwellings	10.0	3.0	70%

Table 4. Building fabric performance

It can be seen that the values represent in some areas a significant bettering of the mandatory requirements set out within Building Regulations.

[4] Building Regulations, Approved Document L1a

7.2. Building Services

It has been proposed that space heating will be provided by individual Baxi Neta-tec 24GA condensing combi boilers (or a boiler of equivalent efficiency). Condensing boilers can increase efficiency by condensing water vapour produced from combustion in order to extract heat which would otherwise be lost. Assumptions have also been made to include a weather compensator and Flue Gas Heat Recovery (FGHR) system to further increase the efficiency of space and water heating.

The heating system will be equipped with two independent time and temperature controlled zones. The efficiency of a heating system is greatly increased by dividing the home into distinct heating zones covering different heating needs. In most cases there is no need to heat bedrooms during the day, when they are not in use, or to run the whole system at the same temperature. This allows residents to make a more targeted and efficient use of heat generation.

Mechanical ventilation with balanced heat recovery has also been incorporated to further reduce CO_2 emissions through 'Be Lean' measures, using a Nuaire MRXBOX95WH1 or other system with equivalent efficiency.

Low energy lighting will be specified throughout, i.e. having a luminous efficacy of greater than 45 lumens per circuit watt (residential). Typically this will be achieved with LEDs or compact fluorescent lights. Low voltage halogen spot lights will not be used as these are not low energy.

Stage	Annual CO_2 emissions ($kg.CO_2/yr$)	CO_2 reduction (%)
Baseline	11,931	-
Be Lean	9,046	24%
Be Clean		
Be Green		
Target	7,837	34%

Table 5. Whole site CO_2 emissions after 'Be Lean' measures

BE CLEAN

SUPPLY ENERGY EFFICIENTLY

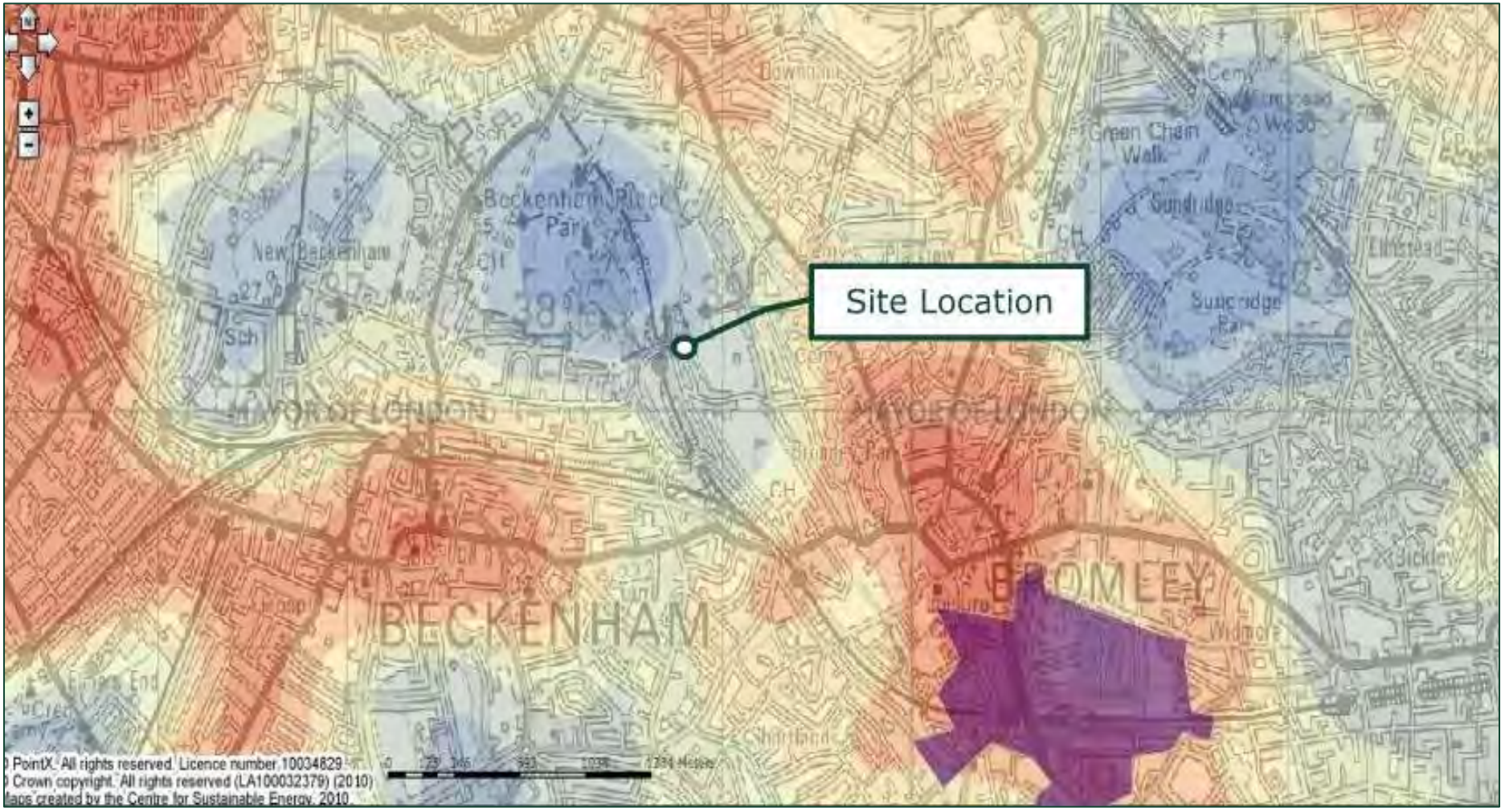

Figure 6. London heat map for site region

8.1. District Heating

Analysis of the UK CHP Development Map and London Heat Map was made to determine whether existing or proposed district heating networks are present in the vicinity of the development site. There are no existing district heat networks (yellow), proposed networks (red), and the development site is not situated within a District Heating Opportunity Area (purple). As such it is recommended that the feasibility for a future connection is considered.

8.2. Combined Heat And Power

The development size and nature renders Combined Heat and Power systems unsuitable due to the lack of a sufficient base heating load. The well insulated fabric naturally lowers the demand for heat. Analysis of the Department of Energy & Climate Change CHP Site Assessment Tool supports this assertion, indicating that a CHP engine which has been sized to meet such a small demand would have poor efficiency and high maintenance costs.

Given that the development is solely residential this also means that the relatively low demand will very likely be limited to short periods in the morning and evening. This would create further operational inefficiencies, as the CHP engine would need to run uninterrupted for long periods. This is required to generate enough electricity to provide CO_2 reductions and financial economies which justify the capital and maintenance costs, and make it a practical and economically viable installation. CHP is much better suited to larger developments where the efficiencies and CO_2 savings can be greater. Therefore it is not considered viable to achieve further CO_2 reductions through a decentralised energy strategy on this development.

Stage	Annual CO_2 emissions ($kg.CO_2/yr$)	CO_2 reduction (%)
Baseline	11,931	-
Be Lean	9,046	24%
Be Clean	9,046	24%
Be Green	-	-
Target	7,837	34%

Table 6. Whole site CO_2 emissions after 'Be Clean' measures

BE GREEN

USE RENEWABLE ENERGY

9. Be Green – Renewable Technology

The CO_2 emissions after 'Be Lean' and 'Be Clean' measures have been assessed against the baseline CO_2 emissions. Reductions have been recorded after each stage in the energy hierarchy; this will help demonstrate the impact that renewable energy generation has on whole site CO_2 emissions.

9.1. Solar Photovoltaics

Solar Photovoltaic (PV) panels comprise a number of inter-connected cells that utilise semi-conductor technology to convert solar energy into electricity. High voltage, direct current is converted to alternating current and phased into the mains supply via an inverter. PV panels are most effective where mounted on exposed, south-facing areas, at an inclination close to 30° from the horizontal.

The technology is well proven and requires little maintenance; most panels are designed to be self-cleaning when mounted at appropriate angles and the design life of a panel typically exceeds the likely pay-back period by a considerable margin. PV has the significant advantage of reducing energy use and costs on site for residents whilst also reducing demand from the national grid and even contributing to grid energy. This can save significant carbon dioxide emissions by reducing the relatively inefficient and fossil-fuel heavy heat generation in the national infrastructure.

9.2. Technology Analysis – Solar Photovoltaics

The potential for CO_2 savings from solar PV has been assessed using the Governments approved SAP: 2012 (Standard Assessment Procedure) methodology. This SAP methodology considers UK solar irradiance data, collector pitch, orientation and over-shading to determine the expected annual energy yield. In order to represent a semi-optimal installation, it is taken that solar PV could be installed horizontally on the flat roof areas of all third floor apartments. On this basis, calculations show that a total installed PV capacity of 6.0 kWp (kilo-Watt peak) would be expected to generate 4563 kWh per annum. Applying the current CO_2 emissions factor for grid-displaced electricity (0.519 $kg.CO_2/kWh$), this generation corresponds to a CO_2 abatement of 2368 $kg.CO_2$ per annum; to meet the target of 34% reduction from baseline site emissions.

Using current known PV panel efficiencies, 6.0 kWp of PV corresponds to approximately 40 m^2 (it is recommended that a PV specialist be consulted to assess panel location and localised shading). Therefore, it is considered feasible that solar PV could be used to meet the 34% CO_2 saving requirement.

Stage	Annual CO_2 emissions ($kg.CO_2/yr$)	CO_2 reduction (%)
Baseline	11,931	-
Be Lean	9,046	24%
Be Clean	9,046	24%
Be Green	6,678	44%
Target	7,837	34%

Table 8. Whole site CO_2 emissions after 'Be Green' measures

Code for Sustainable Homes

10. Code for Sustainable Homes

10.1. Energy

The London Plan and local policy require each development to meet the targets for Code for Sustainable Homes Level 4, which against the 2013 Building Regulations is a target of 19%. The Code Technical Guide has been updated to align with the new Building Regulations and now requires this 19% reduction beyond Part L1A targets (which are approximately 6% more stringent than previously).

This statement has measured both 'Be Lean' and 'Be Green' carbon emission reductions against the baseline figures for the development, as modelled in SAP 2012. This is based on the proposal for a 6.0 kWp PV system and far exceeds the targets of Code for Sustainable Homes Level 4.

10.2. Water Reduction

Indoor water consumption is a mandatory issue where it is advised that, 4 credits are targeted in issue WAT1 which requires the maximum **water consumption to not exceed 90 litres per person per day**. This exceeds the mandatory requirement of Code level 4 for a maximum of 105 litres. This can be achieved without expensive and complicated rainwater harvesting systems through the specification of low flow/volume fittings.

- A typical compliant specification would be:
- Dual flush toilets (4/2.6 litres)
- Flow limiters to bathroom taps (4 litres/min)
- Flow limiters to kitchen taps (4 litres/min)
- Shower flow limiter or eco shower (6 litres/min)
- Eco bath (150 litres to overflow)

10.3. Materials

Materials will be responsibly sourced by the appointed contractor and materials with a low embodied impact will be used. To ensure this is achieved, 10 credits have been targeted in issue MAT1 of the Code for Sustainable Homes assessment. Materials with a low embodied impact as measured on the **BRE Green Guide to Specification** are to be selected for use in the building design and construction.

Four credits have been targeted in issue MAT2 and one credit in MAT3 of the Code for Sustainable Homes Pre Assessment. The appointed Contractor will be required to source materials for key building elements from suppliers capable of demonstrating certification to high tier levels in the **Chain of custody certification process**.

10.4. Surface water run-off

Initial investigations indicate that the site is in Flood Zone 2: Medium Probability, however a full hydrological assessment will be required to meet with the requirements of the Code for Sustainable Homes. This section states that **any increase in surface water run-off to be attenuated** at source.

10.5. Waste

Four credits have been targeted in category WAS1 of the Code for Sustainable Homes Assessment. This issue confirms that **recyclable waste storage facilities** will be provided in accessible locations internally. The internal bin storage areas will have inclusive access routes from the nearest door and should be accessible externally.

A **Site Waste Management Plan** is a requirement for Code for Sustainable Homes Assessments to secure the projected 3 credits and one should be produced during the detailed design stage of the project. A Plan should therefore be developed by the appointed Contractor which will include:

1. **Target benchmarks for resource efficiency** set in accordance with best practice.

2. Procedures and commitments to **minimise non-hazardous construction waste at design stage**. Specify waste minimisation actions relating to at least 3 waste groups and support them by appropriate monitoring of waste.

3. Procedures for **minimising hazardous waste**.

4. **Monitoring, measuring and reporting** of hazardous and non-hazardous site waste production according to the defined waste groups (according to the waste streams generated by the scope of the works)

5. Diversion of waste from landfill should adhere strictly to the principles of the waste hierarchy of reduce; reuse; recycle; recover and evidence demonstrating each tier has been exhausted before a subsequent tier is employed according to the defined waste groups (in line with waste streams generated by the scope of the works). In additional a minimum of **85% of non-hazardous site construction waste by volume or weight must be diverted from landfill**.

10.6. Pollution

Only **insulation with a low global warming potential** will be specified. This limits the use of greenhouse gasses in the manufacture and installation of synthetic insulations.

Gas boilers will be specified which are in the **lowest class of NOx emissions** (less than 40mg/kWh). Although gas is a fossil fuel, gas boilers produce lower NOx (mono-nitrogen oxide) emissions than heating systems powered by electricity (e.g. air source heat pumps) or biomass. NOx reacts with other environmental agents to create toxic compounds which can damage health and have adverse impacts on the biosphere.

10.7. Health and wellbeing

Credits have been targeted in the Pre Assessment to demonstrate that the following issues will be addressed subject to more in depth assessment at the detailed design stage. Two credits have been targeted in issue Hea1 to ensure that a good **average daylight factor** is achieved in as many rooms as possible and that a high proportion of the working plane in key rooms will receive direct light from the sky. The large areas of glazing will help to achieve this by

providing good levels of natural light and helping to reduce the energy demand for artificial light, however care must be taken to avoid overheating.

A **high level of sound insulation** is to be specified with a target of a 5 decibel improvement over Building Regulations requirements to be set. This will be verified through use of appropriate Robust Details or via approved sound testing.

Each dwelling has been provided with appropriate individual **external amenity space** in significant exceedance of the minimum size requirements of Code for Sustainable Homes issue HEA3

Each dwelling has been designed to comply with all relevant criteria of **Lifetime Homes**. This embeds adaptability which can reduce the necessity for residents to relocate in order to meet changing needs due to age, disability etc. This complies with the pre-application condition that Lifetime Homes must be incorporated throughout the development.

10.8. Management

Residents will be provided with a **Home User Guide** which will inform them of the energy efficiency features of their home and how to use the systems as well as how to incorporate energy efficiency and sustainability into their daily life. This will be through advice on public transport links, community facilities, recycling and sustainable DIY.

The Code for Sustainable Homes Pre Assessment targets two credits in issue MAN2. This issue requires the appointed Contractor to **register the site with the Considerate Constructors Scheme** and significantly exceed compliance with the criteria. This will ensure that the site addresses its impact on the surrounding area during the construction stage.

Further credits have been targeted in MAN3 which will require the appointed Contractor to monitor construction site impacts as follows:

1. **Monitor and record data on energy consumption** (kWh) from the use of construction plant, equipment (mobile and fixed) and site accommodation necessary for completion of all construction processes.

2. **Monitor and record data on water consumption** (m^3) from the use of construction plant, equipment (mobile and fixed) and site accommodation necessary for completion of all construction processes.

3. **Implement best practice pollution prevention policies** and procedures on site for air and water pollution.

For two credits in MAN4 an Architectural Liaison Officer (or CPDO) will be consulted and the target will be to ensure the development achieves full **Secured by Design compliance** or, as a minimum, adheres to the requirements of Section 2 (physical security).

10.9. Ecology

An **ecologist will be appointed** to assess the sites against the Code criteria and advise on the viability of credits for the site. At this stage the mix of credits has to be assumed but this is based on the nature of the development and previous experience of typical credit allocations.

A low ecological value is assumed at this stage and it is deemed likely that credits could be attained for: **following all key recommendations and 30% of additional recommendations** of the Ecologist, **protecting any ecological features** (if present) and enhancing the site through appropriate **planting to provide a neutral or positive change in ecological value**.It will be important to consult the Ecologist at the earliest stage following planning approval to determine viable credits and assess the impact on other areas of the Code assessment.

The site is a redevelopment of an existing site i.e. **brownfield** and as such is in line with the Local Authority priority for re-use of land.

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11. Conclusion

This Energy and Sustainability Strategy has outlined how this development will meet the requirements by following the energy hierarchy from the London Plan 2011. This structure suggests to initially address the fabric first approach by upgrading thermal elements and building services. Decentralised energy has been researched as part of the 'Be Clean' section and finally renewable technology has been implemented to achieve a 44% reduction in CO_2 emissions.

11.1. Be Lean – use less energy

A building fabric and services specification is proposed which incorporates high efficiency heating, lighting and controls and a thermally efficient building fabric: low u-values; low air permeability and limiting thermal bridging. Using the fabric first approach a 24% reduction in CO_2 has been achieved.

11.2. Be Clean – supply energy efficiently

There is no current district heating network in the locality of this site, however the development is in a proposed district heating area. Combined Heat and Power is deemed unsuitable for a development of this type due to it requiring the provision for large plant area and a community heating infrastructure.

11.3. Be Green – use renewable energy

The renewable analysis has highlighted that the most appropriate technology for this development is Solar PV with a 6.0 kWp system. The PV output will need to be verified at detailed design stage to ensure compliance.

12. Summary

This statement has set out how the development will incorporate an energy efficient design which exceeds Part L 2013 regulations and, with the application of PV arrays to the roof, can achieve the required 34% reduction carbon dioxide emissions as required for London Plan 2011, Bromley Town Centre Area Action Plan 2010 and Level 4 of the Code for Sustainable Homes 2010.

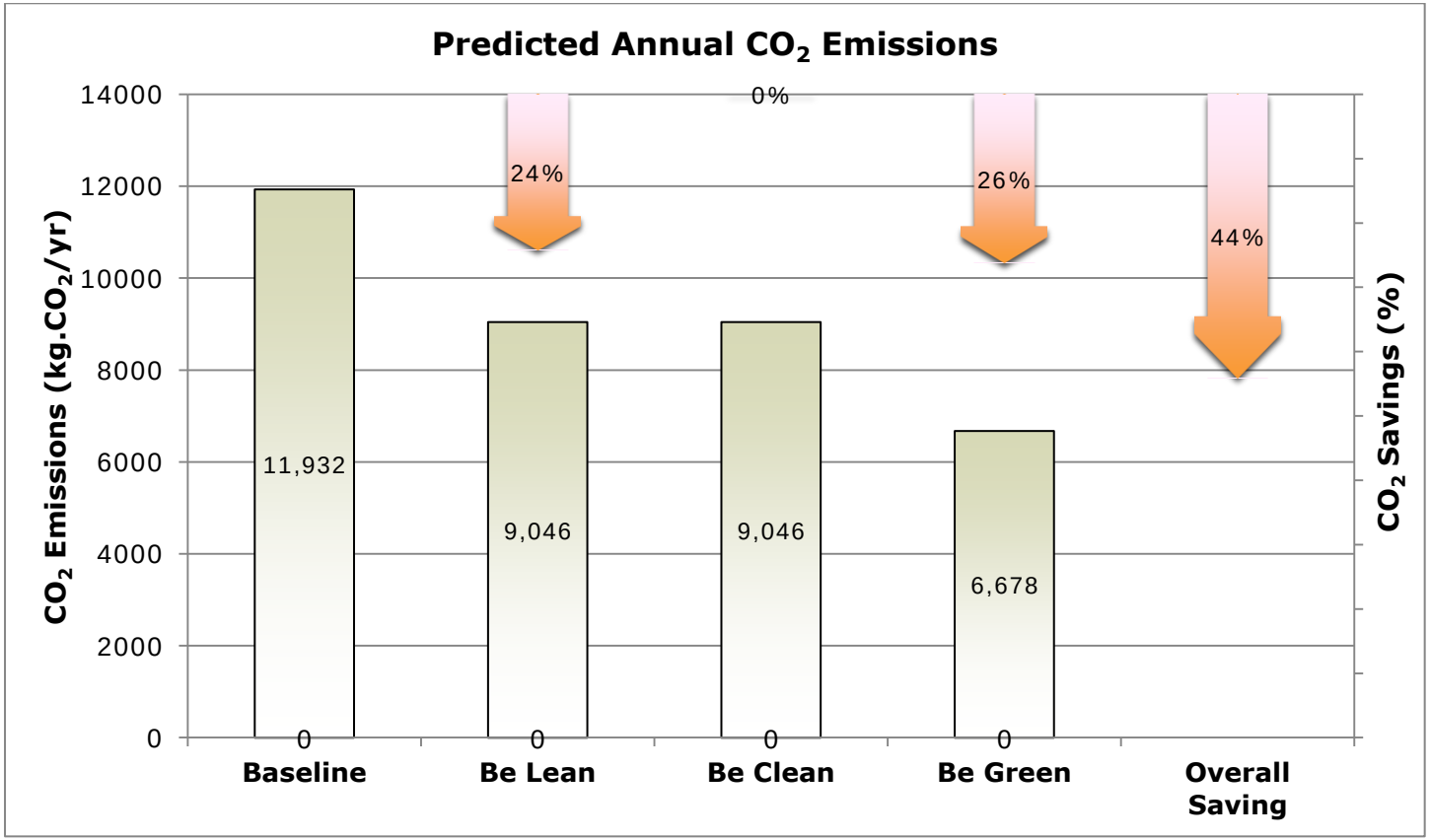

Table 7**: Whole site reduction in CO2 emissions**

Appendices

CODE SUMMARY

Project ref:	07-14-40410	PRE-ASSESSMENT	Units	Ecologist Assessing Eco 1-4?	Yes
Reg no:	0	Development at Riverpark Gardens	0	Robust Detail for Part E?	SELECT
TARGET	68	Level 4			
SCORE	76.50	Level 4			
	Type A				

Category	Max credits	Target Credits	Target points	DESIGN STAGE ASSESSMENT Evidence Required:		POST CONTRUCTION STAGE ASSESSMENT Evidence Required:		Comments
ENERGY & CO2 EMISSIONS (1.17 points per credit)			23.13	Please see 'Evidence Guidance' section for more details of specific evidence requirements				
ENE 1 - Dwelling Emission Rate	10	4.6	5.40	Design stage SAP calculations	Outstanding	As built SAP calculations	Outstanding	
						A copy of the EPC for each plot	Outstanding	
ENE 2 - Fabric Energy Efficiency	9	3.1	3.64	Design stage SAP calculations	Outstanding	As built SAP calculations	Outstanding	
ENE 3 - Energy display devices	2	2	2.35	Letter ENE3 DS or Signed Statement List in DSED* (*Design Stage Evidence Document)	Outstanding	Site Inspection	Outstanding	
						Details of the chosen Energy Display Device	Outstanding	
ENE 4 - Drying space	1	1	1.17	Letter ENE4 DS or Signed Statement List in DSED	Outstanding	Site Inspection	Outstanding	
						Confirmation of BS 3621:2007 lock (if communal)	Outstanding	
ENE 5 - Energy Labelled White Goods	2	2	2.35	Letter ENE5 DS or Signed Statement List in DSED	Outstanding	Details of all white goods.	Outstanding	
ENE 6 - External lighting	2	2	2.35	Letter ENE6 DS or Signed Statement List in DSED	Outstanding	Site Inspection	Outstanding	
						Details of light fitting products	Outstanding	
ENE 7 - Low/Zero Carbon technology	2	2	2.35	Design stage SAP calculations	N/A	As built SAP calculations	Outstanding	
				Letter ENE7 DS or Signed Statement List in DSED	N/A	MCS certificate confirmation	Outstanding	
ENE 8 - Cycle storage	2	2	2.35	Letter ENE8 DS or Signed Statement List in DSED	Outstanding	Site Inspection	Outstanding	
						Details of any locks, anchor points and stands	Outstanding	
ENE 9 - Home office	1	1	1.17	Letter ENE9 DS or Signed Statement List in DSED	Outstanding	Site Inspection	Outstanding	
				Compliant daylight factor calculation	Outstanding	Confirmation of broadband (or 2 phone points)	Outstanding	
WATER (1.5 points per credit)			7.50					
WAT 1 - Indoor water use	5	4	6.00	Letter WAT1 DS or Signed Statement List in DSED	Outstanding	Letter WAT1 PCS	Outstanding	
				Sanitary Ware Spec and/or Draft Water Calculator	Outstanding	Sanitary spec fitting locations, flow rates/capacities	Outstanding	
WAT 2 - External water use	1	1	1.50	Letter WAT2 DS or Signed Statement List in DSED	Outstanding	Water butt spec AND Site Inspection	Outstanding	
MATERIALS (0.3 points per credit)			4.50					
MAT 1 - Environmental impact of materials	15	10	3.00	Full plans	Outstanding	Letter MAT1 PCS	Outstanding	
				Full Materials Specification	Outstanding			
MAT 2 - Responsible sourcing - basic building elements	6	4	1.20	Checklist MAT2&3	Outstanding	Any certificates not provided at Design Stage	Outstanding	
				Letter MAT2 DS or Signed Statement List in DSED	Outstanding			
				Supplier list &/or responsible sourcing certificates	Outstanding			
MAT 3 - Responsible sourcing - finishing elements	3	1	0.30	Checklist MAT2&3	Outstanding	Any certificates not provided at Design Stage	Outstanding	
				Letter MAT3 DS or Signed Statement List in DSED	Outstanding			
				Supplier list &/or responsible sourcing certificates	Outstanding			
SURFACE WATER RUN-OFF (0.55 points per credit)			0.00					
SUR 1 - Management of surface water	2	0	0.00	Surface Water Report inc Flood Risk Assessment	Outstanding	Letter SUR1 PCS	Outstanding	
SUR 2 - Flood Risk	2	0	0.00	FRA in accordance with PPS25	Outstanding	Letter SUR2 PCS	Outstanding	
WASTE (0.80 points per credit)			6.40					
WAS 1 - Storage of waste and recycling facilities	4	4	3.20	Letter WAS1 DS	Outstanding	Site Inspection	Outstanding	
				Completed Checklist IDP	Outstanding			
				Completed Table Cat 5.1	Outstanding			
				Local authority waste collection details	Outstanding			
WAS 2 - Site waste management	3	3	2.40	Letter WAS2/DSED **OR** Site Waste Management Plan	Outstanding	SWMP **OR** Letter WAS2 PCS	Outstanding	
WAS 3 - Composting	1	1	0.80	Letter WAS3 DS or Signed Statement List in DSED	N/A	Site Inspection	Outstanding	
				Details of the local authority kitchen waste collection scheme for flats if available	N/A	Copy of a composting information leaflet	Outstanding	
POLLUTION (0.70 points per credit)			2.80					
POL 1 - Global warming potential	1	1	0.70	Letter POL1/DSED **OR** Completed Checklist Pol 1	Outstanding	Completed Checklist Pol 1 **AND** Letter POL1 PCS	Outstanding	
POL 2 - NOx emissions	3	3	2.10	Letter POL2/DSED **OR** Full heating specification	Outstanding	Site Inspection	Outstanding	
						Full details of the primary and secondary heating	Outstanding	
HEALTH & WELLBEING (1.17 points per credit)			12.83					
HEA 1 - Daylighting	3	3	3.50	Letter HEA1 DS or Signed Statement List in DSED	Outstanding	Letter HEA1 PCS	Outstanding	
				Completed daylight factor and no-sky line calcs	Outstanding			
HEA 2 - Sound insulation	4	3	3.50		Outstanding		Outstanding	
HEA 3 - Private space	1	1	1.17	Letter HEA3 DS or Signed Statement List in DSED	Outstanding	Site Inspection	Outstanding	
HEA 4 - Lifetime Homes	4	4	4.67	Completed Checklist Hea 4	Outstanding	Letter HEA4	Outstanding	
MANAGEMENT (1.11 points per credit)			10.00					
MAN 1 - Home user guide	3	3	3.33	Letter MAN1 DS or Signed Statement List in DSED	Outstanding	Letter MAN1 PCS	Outstanding	
						A sample copy of the Home User Guide	Outstanding	
MAN 2 - Considerate Constructors	2	2	2.22	Letter MAN2 DS	Outstanding	A copy of the Considerate Constructors Certificate	Outstanding	
						A copy of the CC Monitor's Final report	Outstanding	
MAN 3 - Construction site impacts	2	2	2.22	Complete sections a, c, d & e of Checklist Man 3	Outstanding	Consumption records for electricity and water use	Outstanding	
				Letter MAN3 DS or Signed Statement List in DSED	Outstanding	AND Site procedures for air and water pollution	Outstanding	
MAN 4 - Security	2	2	2.22	Details of appointed Architectural Liaison Officer	Outstanding	Secured by Design Certificate **OR** Section 2 verified	Outstanding	
ECOLOGY (1.33 points per credit)			9.33					
ECO 1 - Ecological value of site	1	1	1.33	Copy of Ecology Report	N/A	Where an Ecologist identified areas of value outside the construction zone but within the site: Provide details confirming how they were protected	Outstanding	
				Plan showing Construction Zone & protection details	N/A			
ECO 2 - Ecological enhancement	1	1	1.33	Copy of the Ecology Report	Outstanding	Statement from the Ecologist confirming that measures have been implemented	Outstanding	
				Planting schedule/Ecology proposals	Outstanding			
ECO 3 - Protection of ecological features	1	1	1.33	Copy of Ecology Report	Outstanding	If features have been removed provide a statement from the Ecologist or local authority specialist confirming removal was appropriate	Outstanding	
				Any approvals for removal of features	Outstanding			
ECO 4 - Change in ecological value of site	4	3	4.00	Copy of the Ecology Report	Outstanding	Letter ECO4 PCS	Outstanding	
				Planting schedule/Ecology plan	Outstanding			
ECO 5 - Building footprint	2	1	1.33	Scaled plans depicting all buildings	N/A	Site Inspection	Outstanding	
Total Score		78.7	76.50	% Design Stage Complete	0%	% Post Construction Stage Complete	0%	

Overall Site Code Level = 4 (Level 4)