

## Sustainability & Energy

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Comments received by e-mail on 05.12.16 with responses on the following page(s).

## Comments & Responses

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Further details on CHP and why it is appropriate for the proposed development

the use of CHP is in accordance with the London Plan energy hierarchy. The combination of the community centre facilitates the use of CHP with a base electrical load on the community centre and all year round heat demand from the residential dwellings. Smaller CHPs have become readily available in the market place which suit smaller residential developments such as this.

See enclosed Energy Statement additional information for more justification for CHP.

Further exploration on how more solar PVs should be utilised in order to meet the 20% carbon reduction from renewables target.

Currently the extent of PV achieves circa 12% reduction. This is largely limited by suitable roof area.

Reasonable provision has been made for PV, however as the design develops any spare space suitable for PV will be used for the installation of PV. This would reduce the carbon offset amount and is generally preferable as the cost of PV is less (£/kgCO<sub>2</sub>) and generates electricity locally.

Confirmation that for BREEAM we are targeting 'Scenario 2' credits for energy.


Confirmed, we are targeting Scenario 2.

Details on how overheating will be mitigated.

This is discussed in Section 4.3 of the energy report.

A feasibility assessment of greywater harvesting.

See enclosed sustainability statement from Icenl which now includes a greywater assessment.


Van Zyl & de Villiers Ltd Consulting Engineers 

**Highgate Newtown Community Centre  
and Fresh Youth Academy**

**For**

**Camden Council**

**Energy Strategy  
Additional Information**

 1785\_Highgate Newtown\_Energy Strategy\_Additional Information Rev00.docx 1



**Caveat**

"This document has been prepared for the titled project, or named part thereof, and should not be relied upon or used for any other project or part as the case may be, without an independent check being made on it. Van Zyl & de Villiers Consulting Engineers will not be liable for the consequences of using this document other than for the purpose for which it was commissioned, and any user and any other person using or relying on this document for such other purpose, agrees and will be such use or reliance be taken to confirm this agreement to indemnify Van Zyl & de Villiers Consulting Engineers for all loss or damage resulting there from.

VZDV uses Elmhurst Design SAP 2012 to assess the dwellings and IES VE 2015 using DSM methodology to assess the Community Centre. The IES VE Compliance software has been approved by the Department for Communities and Local Government (DCLG) for use as a Dynamic Simulation Model (DSM) software package. As part of its approval process, the IES software had to demonstrate that it satisfies all of the tests and other requirements defined within sections 2 and 3 of the document "CIBSE TM33:2006, CIBSE standard tests for the assessment of building services design software. The energy figures within this report are based on compliance software and are not intended as predicted energy in use figures; hence should not be used for any other purpose".

Revision	Date	Details	Author	Checked by
00	16/12/2016	Preliminary	HST	RW

**Contents**

- 1 Estimated annual and peak energy demands (kWh/year and kW) for the development: ..... 3
- 2 CHP details ..... 4
- 3 Annual heat profile ..... 5
- 4 Central Plant Community Heating..... 6
- 5 Overheating..... 7
- 6 Appendix A – Typical CHP data sheet..... 8
- 7 Appendix B - Drawing 1785-ME-099 ..... 9



**1 Estimated annual and peak energy demands (kWh/year and kW) for the development:**

Heating:

	Commercial		Residential	
	NCM heating energy (kWh)	NCM DHW energy (kWh)	NCM heating energy (kWh)	NCM DHW energy (kWh)
Jan 01-31	10,416	2,539	19,345	8,398
Feb 01-28	8,780	2,304	12,523	7,465
Mar 01-31	7,810	2,539	8,050	7,958
Apr 01-30	3,739	2,261	2,975	7,320
May 01-31	1,425	2,453	746	7,350
Jun 01-30	352	2,432	0	6,650
Jul 01-31	54	2,539	0	6,393
Aug 01-31	103	2,539	0	7,006
Sep 01-30	477	2,346	0	6,991
Oct 01-31	3,063	2,624	3,658	7,557
Nov 01-30	6,740	2,517	12,069	7,724
Dec 01-31	8,835	2,282	20,400	8,182
<b>Summed total</b>	<b>51,792</b>	<b>29,373</b>	<b>79,767</b>	<b>88,996</b>

Electricity:

	Commercial	Residential
	NCM Unreg Electric (kWh)	NCM Unreg Electric (kWh)
Jan 01-31	9,748	7,850
Feb 01-28	9,748	7,850
Mar 01-31	9,748	7,850
Apr 01-30	9,748	7,850
May 01-31	9,748	7,850
Jun 01-30	9,748	7,850
Jul 01-31	9,748	7,850
Aug 01-31	9,748	7,850
Sep 01-30	9,748	7,850
Oct 01-31	9,748	7,850
Nov 01-30	9,748	7,850
Dec 01-31	9,748	7,850
<b>Summed total</b>	<b>116,980</b>	<b>94,200</b>



**2 CHP details**

CHP Details	Value	Units
Fuel Used	360,718	kWh/yr
Thermal Size	38	kWth
Electrical Size	25	kWe
Thermal Efficiency	51%	Nett
Electrical Efficiency	33%	Nett
Heat Generated	150,453	kWh/yr
Electric Generated	109,980	kWh/yr
Operating Hours	4,399	hours
Thermal Store	1,500	litres

CHP Details	Commercial	Residential	Units
CHP generated electric	-80,211	0	kWh/yr
CHP generated heat	36,192	85,854	kWh/yr
CHP energy consumption	67,816		kWh/yr

Sustainable Technology	Total Cost	Annual Energy Savings	Annual Maintenance Costs	Simple Payback (years)
Gas fired CHP (EnerG 25kW unit)	£49,695	£6,563	£2,310	11.68

Notes:

- Costs are estimates only
- VAT excluded
- Pay back is a simple straight line calculation with zero interest and escalation.

Refer Appendix B for technical data sheet of the proposed CHP. This includes information on emissions etc.





### 3 Annual heat profile

	Commercial & Residential Combined		Commercial & Residential Combined	
	Space Heating Demand	Domestic Hot Water Demand	Contribution to Space Heating	Contribution to Domestic Hot Water
<b>Jan</b>	29,761	10,936	5,952	10,936
<b>Feb</b>	21,303	9,769	4,261	9,769
<b>Mar</b>	15,860	10,497	3,172	10,497
<b>Apr</b>	6,714	9,581	1,343	9,581
<b>May</b>	2,171	9,803	0	9,803
<b>Jun</b>	352	9,082	0	9,082
<b>Jul</b>	54	8,932	0	8,932
<b>Aug</b>	103	9,545	0	9,545
<b>Sep</b>	477	9,338	0	9,338
<b>Oct</b>	6,721	10,181	1,344	10,181
<b>Nov</b>	18,809	10,242	3,762	10,242
<b>Dec</b>	29,234	10,464	5,847	10,464
<b>Total</b>	<b>131,559</b>	<b>118,370</b>	<b>25,680</b>	<b>118,370</b>

Refer to Figure 5-2 below in the Energy Statement which demonstrates the CHP contribution to the heating and hot water load on a monthly basis.



### 4 Central Plant Community Heating

The CHP will be installed within the Community Centre basement plant room. This plant room will accommodate the main heating plant. Refer drawing 1785-ME-099 in Appendix B for further details.

The central community heating plant has the following advantages:

- Ease of access and maintenance
- Higher efficiencies
- Lower connected capacity
- Professional operation and maintenance
- More cost effective operation and maintenance
- Lower gas prices at commercial rates (negotiating power)
- Reliable heat source
- No gas in apartments – safety, access for maintenance
- Flue system more efficient than individual flues to each dwelling

It is envisaged that the CHP scheme will modulate electrically and thermally. As the CHP will be connected to the Community Centre it will offset a large proportion of the Community Centre electricity and will not be exporting any electricity. It is assumed that due to the small scale of the community heating system that it will be operated and managed by the Community Centre. The Community Centre may at some stage choose to sub contract this operation.

Section 5.1 in the Energy Statement refers to the existing site wide heat networks and that this facility will be designed as a self-contained system.

The design of the district heating (DH) pipework shall be in accordance with the Heat Networks Code of Practice CP1, and specifically the following to reduce heat loss and improve energy efficiency:

- The system shall be designed to operate at 70°C flow with 40°C return temperature from space heating circuits, and 25°C return from instantaneous domestic hot water heat exchangers.
- The use of bypasses shall be minimised. Fixed bypasses shall not be used and any bypasses shall be temperature controlled so that the bypass only operates when flow temperatures are below a minimum set point.
- The thickness of pipework insulation shall be carefully considered using the methodology in BS5422. The type and thickness of insulation shall be selected to minimise life cycle costs.
- All valves and fittings insulated.
- Pipe supports to use rigid low conductivity inserts to maintain the insulation quality at the support.
- The insulation to be continuous and close fitting at all joints.
- Pipe sizing to be based on realistic diversified demands.
- Care to be taken to avoid oversizing of distribution pipes.
- Variable speed pumps to be selected taking account of the variable flow condition to minimise the volume of bypass flow required to protect the pump.
- The control system at each connection point to use the variable volume principle and two-port control valves.
- Minimise the length of pipework.
- If steel carrier pipe is used for the buried sections, use will be made of pre-insulated pipe systems that comply with EN253. Flexible polymer pipes to comply with EN15632.
- The joint closure system to allow for an air test to be carried out to prove that the joint is sealed against ground water ingress.
- Pre-insulated isolating valves to be used where required to isolate sections of buried pipework.
- Where polymer pipe systems are used a water pressure test according to EN806-4 and manufacturer's recommendations to be conducted.



## 5 Overheating

Section 4.3 of the energy report lists how the hierarchy of overheating has been addressed. The SAP calculations for the dwellings indicate there is a slight risk of overheating. The table below is an extract from the SAP:

**Table P2: Levels of threshold temperature corresponding to likelihood of high internal temperature during hot weather**

<b>T<sub>threshold</sub></b>	<b>Likelihood of high internal temperature during hot weather</b>
< 20.5°C	Not significant
≥ 20.5°C and < 22.0°C	Slight
≥ 22.0°C and < 23.5°C	Medium
≥ 23.5°C	High

There is a slight risk of overheating (not slight overheating as stated) and this is at the lower end of the risk table and is still compliant with Part L.



## 6 Appendix A – Typical CHP data sheet

# Technical Datasheet

## E25R (Non Condensing)



Energy Balance and Load Data at Power Factor 1		Units	100%	75%	50%
Electrical Output	(+/-3%)	kW	25	19	12
Electrical Efficiency (Net)	(+/-5%)	%	32.7%	30.5%	27.9%
Heat Output	(+/-10%)	kW	46.0	39.2	27.3
Thermal Efficiency (Net)	(+/-8%)	%	58.9%	61.1%	63.6%
Fuel Input (Net/Gross)	(+/-5%)	kW	78.1/86.7	64.2/71.3	43.0/47.7
Total Efficiency (Net)	(+/-8%)	%	90.9%	90.7%	91.5%
Heat Output from Jacket Water	(+/-8%)	kW	22.2	18.9	12.6
Heat Output from Exhaust Gas @ Outlet Temp.	(+/-8%)	kW	23.3	19.9	14.4
Aftercooler Heat Output	(+/-8%)	kW	N/A	N/A	N/A
Radiated Heat Output From Enclosure.	(+/-8%)	kW	0.8	0.8	0.8
Combustion Air Flow (30 C, 100 kPa, 30% RH)	(+/-5%)	m <sup>3</sup> /h	99.8	82.1	54.9
Fuel Mass Flow (ρ = 0.75 kg/Nm <sup>3</sup> )	(+/-5%)	kg/h	5.9	4.8	3.2
Fuel Volume Flow (LHV = 10kWh/Nm <sup>3</sup> )	(+/-5%)	Nm <sup>3</sup> /h	7.8	6.4	4.3
Exhaust Mass Flow (Wet)	(+/-5%)	kg/h	105.4	86.6	58.0
Exhaust Volume Flow @ Outlet Temp.	(+/-5%)	m <sup>3</sup> /h	85.1	69.9	46.8

\*Natural gas Net and Gross fuel input figures are based on 36MJ/Nm<sup>3</sup> and 39.8MJ/Nm<sup>3</sup> respectively. The Gross figure is used when establishing UK fuel costs. Net figures are provided for ease of performance comparison with other technologies.

### Engine Details

Manufacturer	YANMAR
Model	4GP
Fuel Type	Natural Gas
Min. Methane Number	80
Cylinders	4
Aspiration	Natural
Speed	1530 rpm
Aftercooler	No

### Generator Details

Manufacturer	EMOD
Model	WKASYG 225/4 – 1800
Type	Aynchronous
Rating	37.5 kVA
Voltage	400 V
Phase	3 Ph
Frequency	50 Hz
Protection Class	IP 55
Rated Power Factor	0.8 PF
Xd Dir. Axis Synchronous	TBC
X'd Dir. Axis Transient	TBC
X''d Dir. Axis Sub-Transient	1.29
T'' Sub-Transient Time Const.	TBC
T'do O.C Field Time Const.	TBC
CHP Protection Device	A/Ph 60
Indicative Client Protection Device	A/Ph 60
Current Per Phase @ 0.8PF	A 56
Current Per Phase @ 0.95PF	A 52
Efficiency @ 0.8PF	% 92.7%
Efficiency @ 0.95PF	% 92.7%
Indicative Main Cable Size <sup>a</sup> †	mm <sup>2</sup> 16-35
Indicative Earth Cable Size <sup>b</sup> †	mm <sup>2</sup> 16-35

### Hot Water Details

Max. Water In/Out Temp.	°C 70/90
Max. Water Flow Rate*	l/s 0.54
Max. Glycol Content	% 60
Connection Size	mm 25.4 Female thread
Flange Type	N/A
Pressure Loss**	kPa TBC
Max. Test Pressure	Bar 4

\* Assuming Cp = 4.2 kJ/kg.K and ρ = 968.55 kg/m<sup>3</sup>

\*\* Pressure loss figures stated are at max. water flow rate. Internal unit only.

### Exhaust Details

Connection Size	mm 80
Flange Type	plug in sleeve
Outlet Temp.	°C 95
Allowable Backpressure	Pa N/A
Allowable Backpressure with Catalyst	Pa 500

### Ventilation Details

Connection Size	mm 150
Ventilation Rate***	m <sup>3</sup> /s 0.072
Max. Air Inlet Temp.	°C 30
Max. Air Outlet Temp.	°C 60
Enclosure Pressure Drop	Pa N/A
Max allowable back pressure	Pa 150

\*\*\* Vent rate is stated at max. air outlet temp, 100kPa

<sup>a</sup> 4-Core XLPE/SWA/PVC to BS5467, Max 50 meters.  
<sup>b</sup> 1-Core G491B to BS7211, Max 50 meters.  
<sup>†</sup> Sizes and lengths based on IET 17TH Edition BS7671, Installation method 31.

### Fuel Details

Connection Size	mm 32 female thread
Flange Type	N/A

### Emissions @5% O2

NOX	mg/Nm <sup>3</sup> N/A
CO	mg/Nm <sup>3</sup> N/A
NOX (With Catalyst)	mg/Nm <sup>3</sup> 20
CO (With Catalyst)	mg/Nm <sup>3</sup> 25

### Weight Details

Enclosure (Dry) ... STD/PREM.	950
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### Noise Data

Enclosure SPL @ 1m	dB(A) 51
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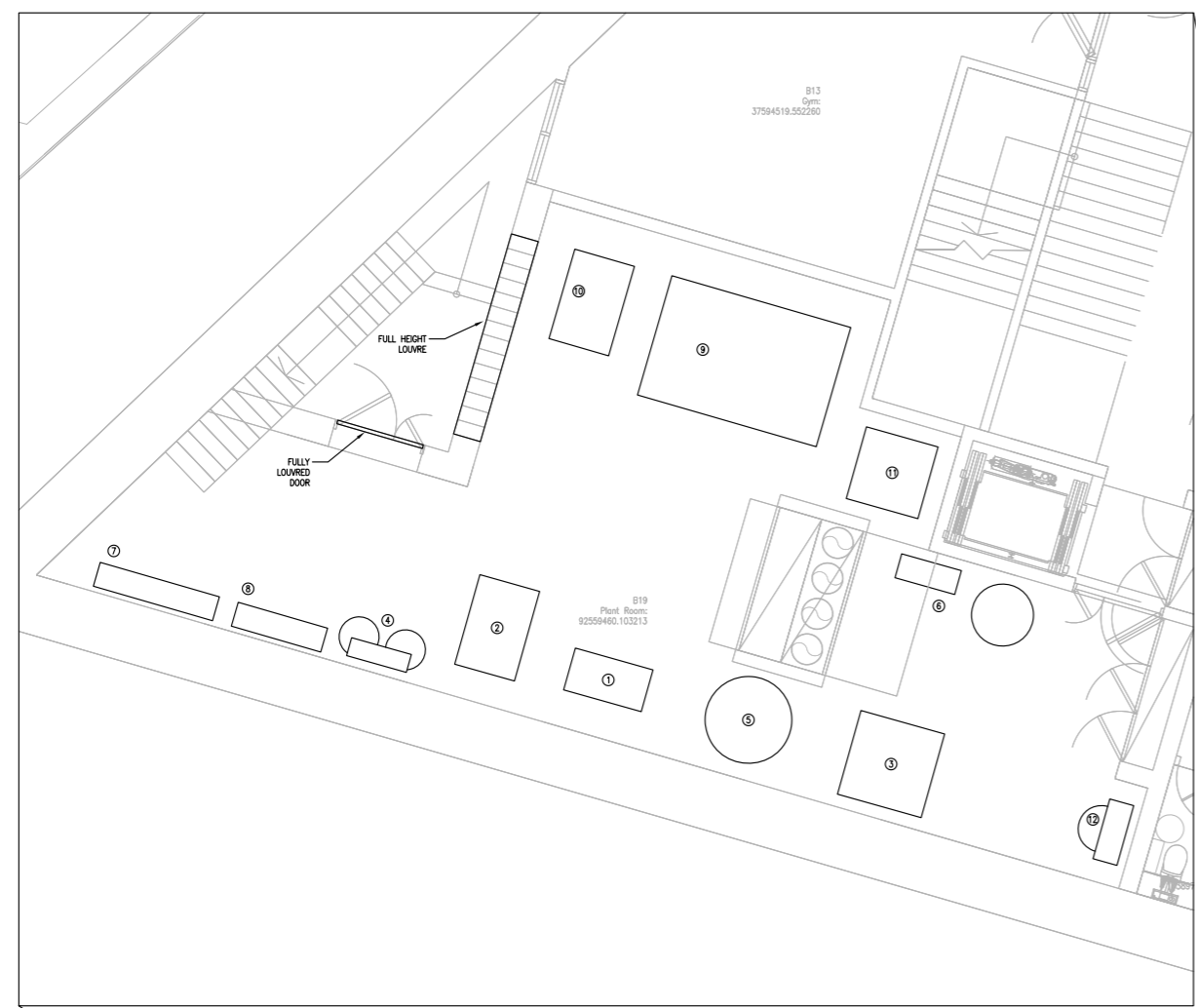
NB: Output figures are based on operation at ISO 3046 conditions with the exception of exhaust output, which is quoted to 95°C. figures are stated from manufacturer's declared performance figures subject to the manufacturer's tolerances and subject to change without notice. Values for de-rated units are estimates only. Energy balance data assumes perfect combustion. All information detailed is for guidance only and is subject to change without notice due to our commitment to continuous improvement - all values should be confirmed with ENER-G Combined Power Ltd on a project specific basis.

Datasheet Issue Date	21/06/2016	T: +44 161 745 7450	ENER-G House
Database Revision	N/A	F: +44 161 745 7457	Daniel Adamson Road, Salford
Sheet	1 of 1	www.ener-g.co.uk	Manchester, M50 1DT, UK



## 7 Appendix B - Drawing 1785-ME-099





PLANT ROOM  
SCALE :- 1:50

EQUIPMENT SCHEDULE :

- ① - CHP
- ② - BOILERS
- ③ - DH PUMPS
- ④ - DH PRESSURISATION & EXPANSION
- ⑤ - DH BUFFER
- ⑥ - COMMUNITY CENTRE HU & DHW VESSEL
- ⑦ - LV PANEL
- ⑧ - CONTROL PANEL
- ⑨ - MCW TANK
- ⑩ - MCW BOOSTER
- ⑪ - COMMUNITY CENTRE PUMPS
- ⑫ - COMMUNITY CENTRE PRESSURISATION & EXPANSION

NOTES :  
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH VAN ZYL & DE VILLIERS STANDARD AND DETAILED ELECTRICAL/MECHANICAL SPECIFICATION

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CLIENT:  
**LONDON BOROUGH OF CAMDEN**

PROJECT:  
**HIGHGATE NEWTOWN  
COMMUNITY CENTRE**

DESCRIPTION:  
**ENERGY CENTRE**

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DRAWN: HT	DESIGN: PV	SCALE: 1:100	PAPER: A1
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## Sustainability Statement

Highgate Newtown Community Centre and Fresh Youth Academy, 25 Bertram Street, London

Iceni Projects Limited on behalf of  
RCKa Architects and the London  
Borough of Camden

December 2016

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DECEMBER  
2016

ICENI PROJECTS LIMITED  
ON BEHALF OF RCKA  
ARCHITECTS AND THE  
LONDON BOROUGH OF  
CAMDEN

**Sustainability Statement**  
HIGHGATE NEWTOWN COMMUNITY CENTRE AND  
FRESH YOUTH ACADEMY, 25 BERTRAM STREET,  
LONDON

## CONTENTS

EXECUTIVE SUMMARY.....	4
1. INTRODUCTION.....	5
2. PLANNING CONTEXT.....	7
3. SITE CONTEXT APPRAISAL.....	17
4. SUSTAINABLE DEVELOPMENT STRATEGIC RESPONSE.....	24
5. SUMMARY.....	33

### APPENDICES

- A1. SITE PLAN
- A2. CFSH WAT1 CALCULATOR PRINT OUT
- A3. COMMUNITY CENTRE BREEAM PRE-ASSESSMENT
- A4. GENERAL NOTES

## EXECUTIVE SUMMARY

This Statement presents the sustainable development achievements for the redevelopment of the Highgate Newtown Community Centre and Fresh Youth Academy to provide 31 residential units. The associated proposed new community centre on site has been subjected to a separate BREEAM Pre-Assessment (Appendix A3).

Relevant policy has been considered prior to a review of the local socio-economic conditions, with a view to proposing a scheme that reflects local needs.

The scheme delivers effective balancing of the three pillars of sustainable development as follows:

### Environmental

The new residential flats will be constructed to minimise indoor and outdoor water use during operation; being reduced to 105 litres/person/day.

The existing Site is predominantly hardstanding with little or no biodiversity value. The proposals include green roofs and areas of biodiverse planting to help enhance biodiversity.

Greater than 80% of all demolition and construction waste produced will be diverted from landfill.

The entire proposed development will target a minimum 35% reduction in CO<sub>2</sub> emissions compared to Part L 2013, with the remainder being financially off-set to zero carbon.

### Economic

The development would help contribute to the growth of the local economy through likely direct employment of the new residents in Camden.

Construction of these new dwellings would directly result in the creation of 140 jobs in the construction industry and associated supply chain.

New residents would serve to enhance the vitality and viability of the numerous local amenities.

The Site represents a sustainable location in terms of access to employment, retail and leisure destinations, and the proposal would be an efficient use of land in an area with significant housing need.

### Social

Creation of a range of apartment types to help stimulate local housing supply and reduce demand, with the proposed 3-bed homes encouraging more families to the local area.

Provision of a range of comfortable living environments that reduce issues such as high utility bill costs and flooding.

Proposed integration of housing with new community facilities and central public space, to help reduce any perceived social exclusion of new residents and promoting the Site as a mixed-use community asset.

Enhancements to link with Croftdown Road, improving access for walking and cycling.

## 1. INTRODUCTION

- 1.1 Icen Projects Ltd was commissioned by RCKa Architects to produce a Sustainability Statement on behalf of the Applicant, the London Borough of Camden, for a proposed development at Highgate Newtown Community Centre, 25 Bertram Street, Highgate.

### Report Objective

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- 1.2 The purpose of this Statement is to demonstrate that the residential portion of this proposed development achieves the sustainable development requirements relevant to local, regional and national priorities. The separate proposed on-site community centre has been assessed for sustainability under the BREEAM New Construction 2014 standard; further details can be found in the BREEAM Pre-Assessment produced by Southfacing Services Ltd, which is appended (Appendix A3) as both this statement and the pre-assessment comprise a site-wide analysis of sustainability.
- 1.3 The report is structured to meet this as follows:
- Section 3 discusses the planning context and policies which are relevant to sustainable development;
  - Section 4 provides a review of the site context in relation to the three pillars of sustainable development, and the established need for the proposed scheme;
  - Section 5 discusses the development response to the policy drivers of sustainable development; and
  - Section 6 summarises the development's design response and the social and economic incentives for this proposed use.

### Site & Surroundings

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- 1.4 The Site currently comprises three separate buildings associated with the Highgate Newtown Community Centre. These are the main community centre building including the main hall and nursery, Fresh Youth Academy building including a gospel hall on Winscombe Street to the north-east, and a separate cottage in the north-west corner of the Site. The remainder of the Site consists of a central courtyard covered with hardstanding.

- 1.5 The Site is located off Bertram Street and Winscombe Street in a predominantly residential area of Highgate, with the nearest London Underground stations being Archway (1km to the north-east) and Tufnell Park (1km to the south-east). Highgate Cemetery is located approximately 220m to the north-west, and surrounding residential properties comprise 1-3 storey terrace and semi-detached units. The nearest retail and commercial land uses are concentrated along Junction Road (Archway) 900m to the east.

### The Proposed Development

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- 1.6 It is proposed to demolish the existing buildings and courtyard and change of the use of the Gospel Hall to provide new community facilities and 31 residential units.
- 1.7 The proposed new community facilities will increase the total existing gross internal area from 1,702 sq. m to 1,892 sq. m, and the new buildings are proposed to range from one to four storeys with residential units concentrated to the west of the Site and community facilities to the east.
- 1.8 As confirmed above, this statement only focuses on the sustainable design and construction elements of the residential parts of the scheme. However, a BREEAM pre-assessment is included in Appendix A3, which demonstrates how the new community centre will be able to achieve a BREEAM 'Excellent' rating.

## 2. PLANNING CONTEXT

2.1 Sustainable development is defined within the terms of resolution 24/187 of the United Nations General Assembly, which states:

*"Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs"*

2.2 The United Nations 2005 World Summit Outcome Document refers to the "interdependence and mutually reinforcing pillars" of sustainable development as economic development, social development and environmental protection.

2.3 Sustainable development approaches are incorporated within policy at all levels as set out below:

### International

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2.4 The Kyoto Protocol was agreed at the 1997 UN Convention on Climate Change. The UK's target is to cut emissions by 12.5% below 1990 levels by 2008-2012. The UK Government committed to a more challenging target to cut CO<sub>2</sub> emissions to 20% below 1990 levels by 2020 as part of the second commitment period (2013 – 2020). Emissions of six greenhouse gases covered by this Protocol were 22% lower than base year emissions over the 2008 – 2012 first commitment period for the UK.

2.5 A successor agreement to the Kyoto Protocol has been, and will be, subject to intense protracted negotiations between member countries of the UN.

### European

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2.6 The 2009 Review of the European Union (EU) Sustainable Development Strategy underlines that the EU has mainstreamed sustainable development into a broad range of its policies and includes:

- **Renewable Energy Directive (2009)** – the Directive on the promotion of the use of energy from renewable sources (2009/28/EC), the Renewable Energy Strategy (RES) Directive sets the objective of reaching 20% of the EU's energy consumption through renewable energy sources by 2020. The UK Renewable Energy Strategy in 2009 indicates that delivering 15% renewable energy by 2020 is feasible through domestic action.

7

- **Energy Performance Buildings Directive (adopted 2002 and recast 2010)** – recast and adopted on 19th May 2010, this fixes 2020 as the deadline for all new homes to be "nearly zero energy" (2010/31/EU). This target is incorporated within the UK Building Regulations Part L: Conservation of fuel and power. The measure to determine a reduction in energy demand, the National Calculation Method (NCM), includes the Simplified Building Energy Model (iSBEM), thermodynamic models and the Standard Assessment Procedure (SAP). These methods provide a rating through the reduction of carbon dioxide (CO<sub>2</sub>) emissions and are the current national standard.
- **Construction Products Regulation (2011)** – The directive (305/2011 March 2011) lays down harmonised conditions for the marketing of construction products and replaces the Construction Products Directive (89/106/EEC). The Regulation came into force on 1st July 2013. The regulations complement the technical specifications across EU states and are incorporated within UK Building Regulations. Within the regulations are technical specifications which include point 7: sustainable use of natural resources.
- **Water Framework Directive (2000)** – The Directive (2000/60/EC) firstly sets out authorities for water management (2003), then the economic and environmental characteristics of the areas (2004) and launched monitoring networks (2006). The implementation is through six-year recurring cycles, the first being 2009-2015. By 2010 the water pricing policies are introduced and provide incentives for sustainable water use through the "polluter pays" principle.
- **Revised Water Framework Directive (2008)** – The framework Directive (2008/98/EC) entered into force on 12<sup>th</sup> December 2008. The revised directive provides a range of measures by means of comitology procedure (e.g. end-of-waste criteria for specified waste streams). This directive is aimed at businesses and other organisations which take decisions on a day-to-day basis about whether something is or is not waste (e.g. where the substance or object has a value or a potential use or where the decision is about whether waste has been fully recovered or recycled and has therefore ceased to be waste).
- **Biodiversity Framework (2012)** – This new strategy lays down the framework for EU action over the next ten years in order to meet the 2020 biodiversity target. The target responds to habitat change, overexploitation of natural resources, the introduction and spread of alien species and climate change.
- **2020 Strategy for smart, sustainable and inclusive growth (2011)** – This strategy replaces the Lisbon strategy (2010) and is the growth strategy for the next decade to 2021. It sets three main priorities: smart growth – developing an economy based on knowledge and innovation; sustainable growth – promoting a more resource-efficient, greener and more competitive economy; and inclusive growth – fostering a high-employment economy delivering social and territorial cohesion.

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## National

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### Energy White Paper

2.7 The Energy White Paper: Our Energy Future – Creating a Low Carbon Economy is a change in direction for energy policy in response to the increasing challenges faced by the UK, including climate change, decreasing domestic supplies of fossil fuels and escalating energy prices. This sets four priorities:

- Cutting the UK's CO<sub>2</sub> emissions by some 60% by 2050, with real progress by 2020;
- Security of supply;
- A competitive market for the benefit of businesses, industries and households; and
- Affordable energy for the poor.

2.8 *Meeting the Challenge – A White Paper on Energy* published in 2007 sets out the Government's international and domestic energy strategy to respond to changing circumstances, address long-term energy challenges; and how to deliver on the four energy policy goals set out above.

### Climate Change Act 2008

2.9 On 26th November 2008, the UK Government published the Climate Change Act 2008; the world's first long-term legally binding framework to mitigate against climate change. Within this framework, the Act sets legally binding targets to increase greenhouse gas emission reductions through action in the UK and abroad from the 60% target set out in the Energy White Paper, to 80% by 2050.

2.10 As required under Section 34 of the Climate Change Act, the Fifth Annual Carbon Budget was accepted by the Government in June 2016. This sets out a budget for UK emissions for the period 2028 – 2032, targeting a 57% reduction below 1990 levels (base level).

### National Planning Policy Framework

2.11 The Department for Communities and Local Government determines national policies on different aspects of planning and the rules that govern the operation of the system. Accordingly the National Planning Policy Framework (NPPF), which came into force in March 2012, aims to strengthen local decision making:

2.12 Paragraph 14 of the NPPF confirms that the heart of this document is a "*presumption in favour of sustainable development*", being the golden thread that flows through decision-taking.

2.13 Paragraph 6 confirms that paragraphs 18 to 219 of the NPPF constitute the Government's view of what sustainable development means for the planning system. Three key pillars (or roles) of sustainable development are provided which must be performed by both local plan-making and decision-taking:

- **An Economic Role** – ensuring the provision of land and infrastructure needed to help build a *strong, responsive and competitive economy*.
- **A Social Role** – supplying the required amount of housing while at the same time ensuring and building *strong, vibrant and healthy communities*. Ensuring that the built environment is sited around accessible local services which help support a community's *health, social and cultural well-being*.
- **An Environmental Role** – ensuring development contributes to the protection and enhancement of the *natural, built and historic environment* through the improvement of biodiversity, minimising the use of natural resources and production of pollution / waste, and guaranteeing sufficient mitigation and adaptation to climate change.

2.14 The NPPF assesses and defines sustainable development (with regard to decision-making) through 13 themes, of which the following are considered relevant to this scheme:

1. **Building a strong, competitive economy**

2. **Ensuring the vitality of town centres**

3. **Promoting sustainable transport**

4. **Delivering a wide choice of high quality homes**

5. **Requiring good design**

6. **Promoting healthy communities**

7. **Meeting the challenge of climate change, flooding and coastal change**

8. **Conserving and enhancing the natural environment**

9. **Conserving and enhancing the historic environment**

### National Planning Practice Guidance

2.15 National Planning Practice Guidance (NPPG) accompanies the NPPF and sets out information for users of the planning system on how to apply the NPPF requirements. Relevant NPPF for sustainable development includes:

- **Climate Change** – advises how planning can identify suitable mitigation and adaptation measures in plan-making and the application process to address the potential for climate change.

- **Design** – design influences how people interact with places and can affect a range of economic, social and environmental objectives. The guidance states that planning policies and decisions should seek to ensure that the physical environment supports these objectives.
- **Natural Environment** – explains key issues in implementing policy to protect biodiversity, including local requirements.
- **Renewable and Low Carbon Energy** – the guidance is intended to assist local councils in developing policies for renewable energy in local plans, and identifies the planning considerations for a range of renewable sources.

2.16 On the 25th March 2015, a ministerial announcement withdrew the Code for Sustainable Homes as a standard within Local Planning Authority development plans as part of the Deregulation Bill 2015 (following Royal Assent), stating:

*“Local Planning Authorities ... should not set any additional local technical standards or requirements relating to the construction, internal layout or performance of new dwellings... the Government’s policy is that planning permission should not be granted requiring, or subject to conditions requiring, compliance with any technical housing standards other than for those areas where authorities have existing policies on access, internal space and water efficiency”*

#### Regional

2.17 Within London, key sustainable development principles for economic, environmental and social development are set out below.

#### The London Plan (March 2015)

2.18 The London Plan is the overall strategic plan for London and includes policies for sustainable development as follows:

- **Policy 5.3: Sustainable Design & Construction** – seeks to encourage the incorporation of design standards contained within the London Plan Sustainable Design & Construction Supplementary Planning Guidance (SPG) including all minimum standards, and introduces major sustainability priorities to be demonstrated within all development in London.
- **Policy 5.11: Green Roofs and Development Site Environs** – promotes the incorporation of planting on roofs and walls to help minimise the impact of flooding, overheating (through active cooling), and enhancement of biodiversity.
- **Policy 5.15: Water Use and Supplies** – encourages all development to minimise the use of mains water through the incorporation of water saving measures and equipment, and all residential proposals to meet a water consumption target of ≤105 litres/person/day.

#### Sustainable Design and Construction SPG (April 2014)

2.19 This document provides guidance on the implementation of London Plan policy 5.3 as well as a range of policies relating to environmental sustainability. Best practice and priorities listed in this SPG are listed below:

- **Local Food Growing** – encourages provision of space for communal food growing
- **Water Efficiency** – encourages all residential schemes to meet water consumption rates of 105 litres or less per person per day, and for all developments to incorporate rainwater harvesting. Requires all individual residential flats to be separately water metered.
- **Materials and Waste** – prioritises the consideration of materials that have a low embodied energy (including materials with high recycled content, or materials that can be easily recycled), and for three of the main building elements to achieve a rating A+ to D in the BRE’s *Green Guide*. Plus, At least 50% of all timber used should be sourced from either FSC or PEFC certified sources.
- **Biodiversity** – There is no net loss in biodiversity following development.
- **Pollution** – encourages compliance with the guidance set out in the London Plan Minimising Dust and Emissions from Construction and Demolition SPG, and for all external lighting to be designed to minimise light pollution.

2.20 Other issues covered in this SPG include minimising carbon dioxide emissions (discussed for this specific development in a separate Energy Strategy, which supports the planning application), avoiding internal overheating, efficient use of natural resources including water, minimising pollution, minimising the generation of waste and maximising recycling rates, and impacts from natural hazards including flooding.

#### Housing SPG (March 2016)

2.21 Part two of the GLA Housing SPG covers the issue of quality and elaborates on how to apply specific London Plan sustainability policies to residential schemes.

#### Local

2.22 In determining the local context, the London Borough of Camden (LBC) policy & guidance is provided through the following documents:

- Camden Core Strategy 2010 – 2025, Parts 1 & 2;
- Camden Development Policies 2010 – 2025;

- Camden Planning Guidance – Design (July 2015); and
- Camden Planning Guidance – Sustainability (July 2015).

2.23 Both the guidance documents above have been adopted to support the Local Development Framework (LDF) and are therefore material considerations for determination of any proposals within the Borough.

2.24 On 24 June 2016 the Council submitted the Camden Local Plan to the Secretary of State for Communities and Local Government for independent examination. When implemented, it will replace the current Core Strategy & Development Policies documents. Although not formally adopted at present, the draft policies relevant to sustainable development have been considered below and in subsequent sections.

#### Core Strategy 2010 – 2025 (Parts 1 & 2)

2.25 The Core Strategy sets out the key elements of the Council's vision for Camden and is the central document of the LDF. Policies of relevance to this statement are as follows:

- **Policy CS1: Distribution of Growth** – promotes the most efficient use of land and a mix of uses in highly accessible sites.
- **Policy CS5: Managing the Impact of Growth and Development** – demands that consideration is given to providing sustainable buildings and spaces of high quality, and development that seeks to promote strong and successful communities.
- **Policy CS6: Providing Quality Homes** – requires proposals to include a diverse range of housing to demonstrate inclusivity of financial backgrounds, disability and different population / age groups.
- **Policy CS13: Tackling Climate Change through Promoting Higher Environmental Standards** – requires all development to take measures to minimise the effects of, and adapt to, climate change through the highest feasible environmental standards.
- **Policy CS14: Promoting High Quality Places and Conserving our Heritage** – requires all development to meet the highest standards of design including accessibility, whilst respecting local context and character.
- **Policy CS17: Making Camden a Safer Place** – requires developments to demonstrate design principles which contribute to community safety and security.
- **Policy CS18: Dealing with our Waste and Encouraging Recycling** – requires developments to include facilities for the storage and collection of waste and recycling.

#### Development Policies 2010 – 2025

2.26 The development policies document sets out more detailed planning criteria for assessing proposals. Policies of relevance are as follows:

- **Policy DP22: Promoting Sustainable Design and Construction** – expects schemes to demonstrate how sustainable development principles have been integrated in the design, and incorporate green roofs and walls wherever possible. Also requires all development to reduce water consumption and air pollution. Paragraph 22.7 contains a table that lists Borough priorities for demonstrating sustainable development, such as impact on microclimate, responsible sourcing of materials, enhancement of biodiversity, and on-going management.
- **Policy DP23: Water** – requires all development to incorporate water efficient features and where possible, greywater and rainwater recycling on-site.

#### Camden Planning Guidance (CPG) 1: Design (July 2015)

2.27 Although primarily associated with architectural guidance for proposals within the Borough, this SPD does highlight the Council's priorities with regards to designing safer environments, waste management during operation, building services equipment, and landscaping.

#### CPG 3: Sustainability (July 2015)

2.28 This SPD provides guidance on how to achieve the required carbon reductions of the borough and deliver more sustainable developments, and supports Policies CS13, DP22 & DP23 outlined above.

2.29 The SPD is set out to cover all topics that constitute the national, regional and local vision of sustainable development within proposals such as energy & water, materials, green infrastructure and flooding. Relevant expectations noted in the SPD with regard to the various sustainability topics are as follows:

- **Energy Efficiency** – all new developments are to be designed to minimise carbon dioxide emissions. The most cost-effective ways to minimise energy demand are through good design and high levels of insulation and air tightness.
- **Water Efficiency** – all major developments should include greywater recycling and any landscaped areas requiring regular maintenance should include water butts. The Council expects all developments to be designed to be water efficient by minimising water use and maximising the re-use of water. New residential development is required to demonstrate that it is capable of achieving a maximum internal water use of 105 litres per person per day, with an additional 5 litres per person per day for external water use.



- **Materials** – All major developments should source 15-20% of the total value of materials used from recycled and reused sources, and 100% of building materials should achieve a BRE Green Guide to Specification rating of A+ to B. Additionally, 100% of all timber and timber products should be sourced from schemes supported by the Central Point of Expertise for Timber Procurement.
- **Sustainability Assessment Tools** – in place of the now withdrawn Code for Sustainable Homes (CfSH) assessment, Camden Council states that all new residential development must have a sustainability statement “*demonstrating how the development mitigates against the causes of climate change and adapts to climate change*”.
- **Green Infrastructure** – an expectation for all development to incorporate brown roofs, green roofs and green walls unless it is demonstrated it is not possible.
- **Flooding** – developments must not increase the risk of flooding, and are required to put in place mitigation measures where there is known to be a risk of flooding.
- **Adaptation to Climate Change** – all development is expected to consider the impact of climate change and be designed to cope with the anticipated conditions.
- **Local Food Growing** – discusses the sustainability benefits of local food growing and expects development proposals to consider the opportunities for food growing.

**Draft Local Plan (Submission Version, 2016)**

2.30 On the 24<sup>th</sup> of June 2016, LBC submitted the new Local Plan to the Secretary of State for independent examination and public hearings of this are expected to take place in October 2016. This draft document provides an indication of the key policy objectives for the area over the coming decades, and gives the following with regard to sustainable development:

- **Draft Policy CP1: Health and Wellbeing** – requires all development to positively contribute to creating high quality, active, safe and accessible places.
- **Draft Policy C5: Safety and Security** – requires developments to demonstrate they have incorporated design principles which lead to community safety and security
- **Draft Policy A1: Managing the Impact of Development** – proposals are encouraged to consider their negative effects on issues such as artificial lighting levels, noise, odour, fumes & dust, microclimate, and impact upon water infrastructure.
- **Draft Policy D1: Design** – requires that development is sustainable in design and construction, is durable for the long term, and improves health of occupants.

- **Draft Policy CC2: Adapting to Climate Change** – requires all proposals to propose measures that aid in adaptation to climate change, such as incorporation of green infrastructure, and proposing suitable Sustainable urban Drainage Systems (SuDS) to minimise any increase in flooding from the site. It also encourages the use of the Home Quality Mark and Passivhaus for residential new build.
- **Draft Policy CC3: Water and Flooding** – requires development to incorporate water efficiency measures, avoid harm to the water environment and improve water quality.

2.31 Further information regarding planning policy issues is provided in the Planning Statement produced by Icen Projects Ltd, which forms part of the submission package for this application.

### 3. SITE CONTEXT APPRAISAL

3.1 In line with the “three pillars” of sustainable development, outlined above, the site context has been considered with regard to its economic, social and environmental context with a view to co-ordinating design of the scheme to reflect local need.

#### Socio-Economic Context

##### Indices of Multiple Deprivation (IMD)

3.2 The English Indices of Deprivation use 38 separate indicators, organised across seven distinct domains of deprivation. The Indices of Multiple Deprivation data are then constructed by combining the seven transformed domain scores, using the following weights; income (22.5%); employment (22.5%); health and disability (13.5%); education, skills and training (13.5%); barriers to housing and services (9.3%); crime (9.3%); and living environment (9.3%).

3.3 The IMD can be used to rank every Lower Layer Super Output Area in England according to their relative level of deprivation. The data is not a measure of affluence; therefore the area ranked as the least deprived is not necessarily the most affluent.

3.4 The IMD data comprises a numeric value in a scale of 1 to 32,844 (1=most deprived) and are represented in a coloured scale of deciles (1=most deprived – dark red; 10=least deprived – light yellow) in Figure 4.1 below.

3.5 Government data (illustrated in Figure 4.1) indicates that the Site (marked as a blue point) lies within an area ranking 5,950, where 1 is the most deprived. The area is therefore considered to have a relatively high level of deprivation overall and is amongst the 20% most deprived neighbourhoods in the country.

Figure 4.1 Department for Communities and Local Government IMD Data

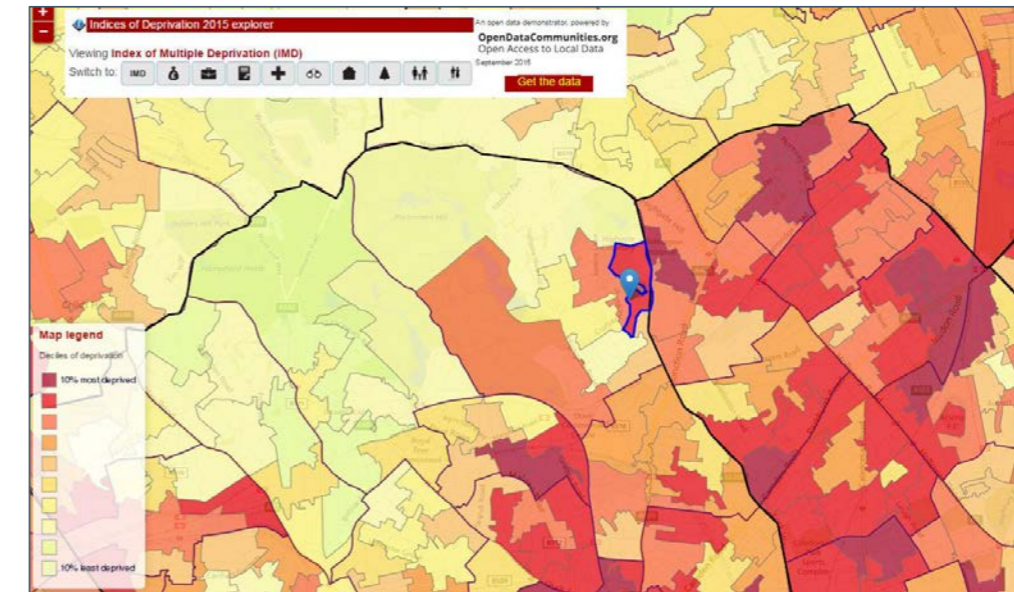


Table 3.1 IMD Domain Scores (out of 32,844 and where 1 is most deprived)

Domain	
Rank of Income Score	2,940
Rank of Employment Score	3,386
Rank of Health Deprivation and Disability Score	7,610
Rank of Education Skills and Training Score	16,662
Rank of Barriers to Housing and Services Score	14,770
Rank of Crime Score	12,528
Rank of Living Environment Score	11,046
<b>Rank of IMD Score</b>	<b>5,950</b>

3.6 As shown in the table above, the area exhibits particularly low scores for ‘Income’ and ‘Employment’. This therefore demonstrates an area suffering from a lack of local high quality employment options, leading to income inequality and health deprivation of residents.

3.7 When investigating inequality on a borough-wide scale, Camden has one of the highest rent to earnings ratios in London (85%; source: Private Rental Market Statistics 2014/2015; ASHE 2014, ONS) with only Kensington & Chelsea and Westminster being higher. This demonstrates an area struggling to meet housing demand, and this housing inequality being most acutely felt by Caribbean and Chinese ethnic minorities; the only population groups whose housing inequality (i.e. availability and affordability of housing, and quality of available housing stock) increased between 2001 and 2011 (source: Runny Mede Trust).

#### Public Transport / Accessibility

3.8 In the context of these proposals an increase in travel to and from the proposed residential apartments by car has negative implications for all three pillars of sustainable development, as it increases local air pollution and greenhouse gas emissions, thereby contributing to climate change and societal health problems (and associated costs of this). It increases congestion and strain on road infrastructure, thereby reducing productivity of local road users including the residents, as more time is spent on the road which in turn could divert funding from other, potentially more pressing economic needs. The shift towards encouraging more sustainable forms of travel and prioritising developments that encourage this both through design and siting is imperative to the national planning agenda and is enshrined by the NPPF.

3.9 The Site is considered to have moderate accessibility to public transport options, and has a PTAL rating of 3 due to the following:

- Archway and Tufnell Park Underground Stations are located at approximately equal walking distance from the Site (approx. 1km, or 11-12 minutes' walk), with both stations having regular Northern Line services direct to a multitude of leisure, retail, public transport-hub and employment destinations in central London. Examples include the Euston and King's Cross / St Pancras national / international railway stations (8-9 minutes travel time during peak hours), and major employment / retail centres of Old Street (14 minutes' travel time), Bank (18 minutes' travel time), and Tottenham Court Road (11 minutes' travel time).
- Two north and south-bound bus stops are located on Dartmouth Park Hill approximately 300m or four minutes' walking from the Site – the number 4 bus route services these stops and has regular services (every 7-10 minutes during peak hours) to Tufnell Park Underground Station, Highbury & Islington, Farringdon, St Pauls and Waterloo.
- A bus stop on Chester Road (230m or approximately three minutes' walk from the Site) is serviced by the C11 which runs to Archway Tube Station, and also services Gospel Oak, Swiss Cottage and Primrose Hill.

3.10 A Transport Statement has been produced for the Site by JMP Consultants Ltd, and this confirmed that cycle and pedestrian infrastructure in the vicinity of the Site is considered to be of a good standard, with a cycle and pedestrian route running along the western border of the Site which connects Chester Road to the southern end of Croftdown Road, and connects to Bertram Street at the north-western perimeter of the Site.

#### Community Facilities

3.11 Access to a wide range of nearby services & amenities is also an essential consideration when siting residential development as it helps reduce the requirement for car-based travel and aids in alleviating social exclusion, as it has been found that 48% of the poorest households (in terms of real income level) have no car, thereby relying on public transport or walking / cycling (source: Department for Transport 2015). Therefore, if residential development is poorly sited, this can lead to exclusion of less well off potential house buyers, and is inconsistent with the principles of socially inclusive, sustainable development.

3.12 The Site is located close to clusters of services / amenities in Archway and along Highgate Road, with the following relevant amenities and services identified (all within approximately 11 minutes' walk):

- Food store – Tesco Express, Swain's Lane (700m; approx. eight minutes' walk).
- Publicly accessible cash machine – TSB bank, Highgate Hill (900m; approx. 11 minutes' walk);
- Outdoor open public space – Dartmouth Park, Bickerton Road (350m; approx. five minutes' walk). Hampstead Health is approximately 800m or 10 minutes' walk to the west of the Site;
- Sports centre / fitness facilities – Archway Leisure Centre, MacDonald Road (800m; approx. nine minutes' walk);
- Post box – Chester Road (230m; approx. three minutes' walk);
- Medical centre / GP – Brookfield Park Surgery, Chester Road (150m; approx. two minutes' walk);
- Pharmacy – Simmonds Chemists, Swain's Lane (750m; approx. nine minutes' walk);
- Dentist – Smilecare Dental Surgery, Junction Road (950m; approx. 11 minutes' walk);
- Library – Highgate Library, Chester Road (180m; approx. two minutes' walk);
- Child care facility – York Rise Nursery School, St Mary Brookfield Hall (700m; approx. eight minutes' walk);
- Primary school – Brookfield Primary School (270m; approx. three minutes' walk); and

- Secondary schools –William Ellis School (boys state school) and La Sainte Union Catholic School (girls state school) (900m; approx. 11 minutes' walk).

3.13 It should also be acknowledged that the proposals include for a replacement modern building for community uses, including a new sports hall, cafe and a recording studio.

#### Capacity and Quality of Amenities & Services

3.14 The ability of existing amenities and services to cater for the predicted increased demand brought about by the residential proposals has implications for sustainable development, as it will inevitably determine whether new & existing residents choose to use local or further afield amenities / services. In addition to the environmental impacts this will have through increased use of transportation, it affects the financial viability of local amenities / services and the subsequent sense of place that residents gain from living in the area.

#### Local Schools

3.15 The William Ellis School and La Sainte Union Catholic Secondary School are located opposite each other on Highgate Road and are separate boys and girls schools, respectively. Both were awarded Ofsted 'Good' in the most recent inspections, and 78% of La Sainte Union students achieved 5 or more A\* - C GCSEs, compared to the national average of 53.8%.

3.16 Both these secondary schools have lower pupil:teacher ratios than the national average (12.3 and 14.4 for the William Ellis School and La Sainte Union, respectively). Additionally, Camden has the 4<sup>th</sup> best ratio of total secondary school places offered to applications received in London, with other Boroughs such as Hackney and Lewisham receiving more applications than places available. Camden also has the 5<sup>th</sup> highest percentage of first preference offers made to applicants, demonstrating a quality secondary school stock in the locality of the proposed development that can sufficiently meet the predicted increased demand.

3.17 The Brookfield Primary School caters for all children aged 3 to 11 years, and was awarded Ofsted 'Good' in the latest inspection with 93% of pupils achieving Level 4 or above in reading, writing and maths (compared to the national and Camden averages of 80% and 86%, respectively). Although this particular school exhibits a higher than average pupil:teacher ratio, there are three other primary schools within half a mile of the Site which all exhibit low than average pupil:teacher ratios, indicating sufficient capacity to cater for the likely increased demand (source: Department for Education, 2016).

#### Economic Context

3.18 Although the general economic climate of the local area has been covered above, it is also important to assess other indicators of the economy in the context of the proposed residential apartments, and therefore if the development can be considered to complement and enhance the economic sustainability of the area.

3.19 The Borough of Camden is one of the most successful employment areas in the country, with approximately 24,000 businesses contributing £20 billion into the economy and generating 275,000 jobs (source: Camden Town Unlimited). Industries such as business administration and finance & insurance observed significant growth in Camden over recent years (17% & 7.7% growth between 2009 and 2012, respectively), and this will align with the likely occupations of new residents as salaries of first time house buyers in London usually need to be >£40,000 and office-based industries (such as the above) attract salaries of that range. Additionally, 46% of residents in the locality work in Camden itself (with 90% of total local residents working in greater London as a whole). Therefore it is likely that at least half the new residents would work in Camden, contributing to the thriving local economy and aiding in economic stability for the long term.

#### Environmental Context

##### Flood Risk

3.20 A Ground Investigation and Basement Impact Assessment has been completed for the Site by Geotechnical & Environmental Associates Limited, and this confirms that according to the Environment Agency Flood Map, the Site is not in an area designated at risk of flooding from rivers or sea. It also confirms that Bertram Street is not shown as a street at risk of surface water flooding.

3.21 In addition to this, A Flood Risk Assessment has been produced for the Site by Conisbee, and this confirms that the probability of flooding from any source is low.

##### Land & Water

3.22 A Basement Impact Assessment was produced for the Site by Geotechnical & Environmental Associates Limited, and included a site analysis of ground conditions and potential contamination. Ground testing revealed an elevated concentration of lead and total polycyclic aromatic hydrocarbons (PAH), and a single sample contained 0.003% asbestos. However, it is considered that since the majority of made ground on site is to be excavated as part of the basement works, remedial measures are not considered to be required. An asbestos specialist will be consulted with during detailed design.

3.23 The nearest surface water feature is a pond located 269m southwest of the Site, and no groundwater was encountered during an archive borehole (14.94m in depth) by BGS, therefore confirming that water is not at risk of contamination by the proposed works.

#### Biodiversity

- 3.24 An Extended Phase 1 Habitat Survey and Bat Survey has been completed for the Site by Syntegra Consulting. This found that all observed habitats on site are of low ecological value and consisted of hard standing, scattered scrub and a small defunct hedgerow. Additionally, a BREEAM Land Use and Ecology report has also been provided by Syntegra which confirms that the Site is of low ecological value. The bat and nesting bird survey found that the buildings were of low to no suitability for bats and no evidence was found of bats using the Site. No evidence was found of birds using the Site for nesting.

## 4. SUSTAINABLE DEVELOPMENT STRATEGIC RESPONSE

- 4.1 This section presents an overview of the proposed sustainable design and construction features for the residential parts of the scheme, which address the policy requirements of the NPPF, London Plan and Camden suite of policy documents. The assessment of technical reports enables an inclusive approach and identifies the key strategic themes discussed in the sub-sections below, which are structured around the Camden 'CPG3: Sustainability' document.

#### Energy

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- 4.2 Energy has been separately addressed within the accompanying Energy Strategy produced by Van Zyl & de Villiers Limited, and fuller detail can be found in this document.
- 4.3 The approach taken was developed in line with the London Plan Energy Hierarchy described in Policy 5.2 of "Be Lean", "Be Clean", and "Be Green" stages to reduce development-wide energy consumption. Low carbon technology, energy-efficient equipment and passive design will be incorporated into the scheme and BREEAM "Excellent" will be targeted for the Community Centre parts of the development (see Appendix A3).
- 4.4 Both the proposed residential dwellings and community centre were modelled using Elmhurst Design SAP 2012 and IES VE 2015 to determine the energy demand and the most effective opportunities for reducing carbon emissions. In terms of low carbon technologies (the 2<sup>nd</sup> stage of the Energy Hierarchy), connection to an existing or proposed district heating network was investigated but no nearby schemes were found. Therefore, a combined heat and power unit is proposed to provide low carbon heating / hot water for the entire Site from a central energy centre. Back-up boilers will be employed to provide additional heat when necessary. At the 3<sup>rd</sup> stage of the Energy Hierarchy ("Be Green"), roof mounted photovoltaics have been considered the most favourable technology for the development, and will be applied to each of the flat roofs.
- 4.5 The overall predicted reduction in regulated CO<sub>2</sub> emissions from the Baseline development model is approximately 35% for the entire development (including both the new build residential and new community centre), with the remainder up to 100% (i.e. zero carbon) being off-set through Camden's carbon offsetting mechanism and confirmed price per tonne of carbon emitted over a 30 year operational period. This is therefore in line with the requirements of London Plan Policy 5.2 and the BREEAM "Excellent" standard for the community centre.

### Water Efficiency

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4.6 The average person in England uses 150 litres of water a day and it is expected that by 2020 the demand for water could increase by 800 million litres per day (source: Environment Agency). Additionally, the Environment Agency and the London Plan highlights that Camden lies within an area of 'Water Stress'.

4.7 In order to address the above, the following design features will be committed to within the residential proposals.

### Minimising Water Use

4.8 In line with Policy DP23 of the Camden Development Policies document and The London Plan Sustainable Design & Construction SPG, a combination of the following measures will be included (subject to detailed design) to reduce the amount of water consumption for the residential parts of the development:

- Basin taps will have flow restrictors fitted to reduce the flow to  $\leq 3.5$  litres/minute (at 3 bar pressure)
- All WCs will be dual flush – 5L full flush, 2L half flush
- Kitchen taps with a maximum flow rate of  $\leq 5$  litres/minute
- Showers shall have a flow rate  $\leq 9$  litres/minute (at 3 bar pressure)
- If installed, baths will have a capacity to overflow of  $\leq 190$  litres
- Where white goods are to be provided for residential units by the developer, those with lower water consumption will be selected as standard

4.9 In line with the Code for Sustainable Homes minimum standards of the Camden Development Policies document (Code for Sustainable Homes Level 3) and the supporting text of Draft Policy CC3 of the emerging Local Plan, the above water fittings will be specified to ensure that total water consumption will be reduced to approximately 104.4 litres/person/day (with an additional 5 litres/person/day allowance for external uses, as per Part G of Building Regulations – external water use has been minimised as confirmed below). A copy of the Code for Sustainable Homes Wat01 calculator has been provided in Appendix A2 to confirm this.

### Water Monitoring

4.10 A water meter will be specified on the mains supply to each residential flat on site to allow residents to accurately monitor water use, as this has been shown to reduce water consumption by an average of 10-15% as residents have the ability to pay for the exact amount of water they use (source: OFWAT, 2011).

### Maximising the Re-Use of Water

4.11 To reduce unregulated water consumption, all proposed ground floor private gardens for the residential units will have water butts installed to collect rainwater, and no external irrigation taps will be specified for the residential outdoor spaces. The roof garden for the new community centre will also have a water butt installed.

4.12 The specification of rainwater recycling has been considered by the design team and rejected at this stage, primarily on the basis of limited roof space due to the installation of the green roofs and solar panels. The specification of low flow fittings for all residential units and installation of water butts to private gardens and the community roof garden will significantly reduce operational water use.

4.13 The feasibility of including grey water recycling into the residential elements of the scheme has been discussed by the design team, and rejected at this stage primarily due to lack of space required both for the underground storage tanks and internal high level storage tanks for each residential unit. The specification of low flow-rate fittings throughout will reduce water consumption by approximately >30% compared to average UK water consumption rates, and the installation of water butts will further reduce this as outside taps for watering plants and washing cars constitute approximately 7% of UK domestic water demand (source: Waterwise, 2012).

4.14 Therefore, taking into consideration the scale of the development, its predicted low level of water use, the limited potential to use greywater for toilet flushing and the challenges posed for locating the greywater storage tanks within the Site, this technology is considered to be an unviable proposal for achieving meaningful water savings.

### Sustainable Use of Materials

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4.15 Although a BREEAM assessment is only required for the proposed non-domestic community centre, the requirements this standard encourages with regard to waste and materials will be prioritised on a site-wide basis to encompass the residential proposals. In line with the CPG5 Sustainability 'five key measures' for minimising the use of resources, the following has been considered within the design.

#### Managing Existing Resources

- 4.16 During the demolition phase, the principal demolition contractor will be required to produce a pre-demolition audit detailing the quantities of demolition waste predicted and any opportunities for re-use of these materials on site, plus opportunities for recycling of this at licenced local facilities. In line with the BREEAM assessment requirements specific to the proposed community centre (please refer to BREEAM Pre-Assessment produced by Southfacing Ltd, for further details), at least 90% by tonnage of the entire Site non-hazardous demolition waste will be diverted from landfill and either re-used on site (for example, crushed and used as sub-base material for new hardstanding areas) or recycled by an approved waste management contractor off-site.

#### Construction Waste

- 4.17 A Site Waste Management Plan (SWMP) shall be produced for all on-site activities to optimise materials resource efficiency in line with the Waste Hierarchy (Reduce, Reuse, Recycle). The SWMP will detail the design measures towards optimum use of materials, set specific targets for construction and demolition waste generation and appropriate mechanisms for segregating waste on-site.
- 4.18 As per the requirements of the BREEAM assessment for the proposed community uses, the entire development (including the proposed residential uses) will target  $\geq 80\%$  by tonnage of construction waste to be diverted from landfill.

#### Sustainable Materials

- 4.19 Materials for the development will be selected in consideration of the Green Guide to Specification. The Green Guide represents a review of an extensive list of building materials according to their lifecycle environmental impact, including embodied energy / carbon. Environmental performance is rated on a scale of A+ to E, where A+ represents the best performance. For the proposed scheme, it is intended that at least 75% of the main elements of the new residential buildings will achieve an A rating or higher, therefore being in compliance with the guidance given in the London Plan Sustainable Design & Construction SPG, and the Camden Sustainability CPG 3.
- 4.20 Timber will be selected and purchased in consideration of sustainability certification. It is intended that all proposed structural timber elements and temporary timber used for the new residential buildings (e.g. scaffolding) will be from certified sources under the FSC and/or PEFC.
- 4.21 In addition to the above, at least 20% by total value of all primary materials (e.g. external walls, roof, floor slabs, windows) required for the construction phase will be sourced from recycled and reused sources, and efforts will be prioritised to source materials from manufacturers that operate Environmental Management Systems (e.g. ISO14001).

27

#### Operational Waste

- 4.22 In line with Camden's current arrangements for recycling and general waste collection, all residential unit kitchens will be provided with spaces for the separate storage of general and mixed recycling. This will further incentivise recycling by providing a dedicated non-obtrusive space, meaning residents are not required to spend their own time and/or money making their own preparations. Additionally, the refuse stores have been positioned and designed to allow all potential residents to use them, and helping to minimise walking time from all residential units.

#### Green Infrastructure & Biodiversity

- 4.23 An Arboricultural Impact Assessment (AIA) was completed for the Site by Greenman Environmental Management, and this confirmed that only one tree would be removed as a result of the proposed development and all surrounding trees would be adequately protected in accordance with the AIA. The single tree to be removed is considered in the AIA to be Category C and already heavily reduced, therefore its removal would not adversely impact the biodiversity of the Site. Additionally, removal of existing boundary walls close to three of the surrounding identified trees will be undertaken by hand under the supervision of an Arboricultural Clerk of Works.
- 4.24 As discussed in the Site Context Appraisal section, a Phase 1 Ecological Appraisal has been completed for the Site and this found no evidence of features of ecological value to be retained.
- 4.25 Due to the Site's constrained area and urban residential locality, the ability to influence biodiversity at ground level is limited. Therefore in order to enhance the biodiversity of the Site, it is proposed to incorporate green roofs on all available roof space of the residential blocks. This will be integrated with the proposed photovoltaics (see Energy Strategy, Van Zyl & de Villiers Limited) as various research conducted on the integration of green roofs and PV confirms that the cooling effect provided by transpiration of vegetation improves the efficiency of PV by up to 10% (source: Hui & Chan, 2011). There are other multiple benefits of green / brown roofs such as their ability to reduce storm water runoff intensity (Conisbee's Sustainable Drainage report for the proposals confirms that a green roof can retain 70-80% of runoff and intercept the first 5mm or more of rainfall), and the beneficial effect it has on microclimate and the passive cooling effect this would have on the residential flats.
- 4.26 In addition to this, biodiverse planting will be prioritised for all proposed private amenity areas and bird and bat boxes will be proposed for the external façade / eaves of the residential blocks in line with the recommendations provided by the ecologist's report (Syntegra Consulting).

#### Flooding

- 4.27 A Flood Risk Assessment and Sustainable Drainage Strategy has been produced for the proposals by Conisbee. This provides a drainage strategy for the entire Site that will provide attenuation up to an including the 1 in 100 year plus a 30% allowance for climate change storm event.

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- 4.28 The attenuation proposed will consist of green / blue roofs (approximately 58.40m<sup>3</sup> of rainwater attenuation volume) and subsurface storage via modular underground storage tanks (approximately 110.4m<sup>3</sup> of attenuation volume), with the rate of discharge being reduced from the current rate of 38.9 l/s to 5 l/s.

#### **Adapting to Climate Change**

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##### **Minimising Overheating**

- 4.29 Details of thermal mass, orientation and natural ventilation for the proposed residential buildings are provided in the accompanying Energy Statement (Van Zyl & de Villiers Limited) as part of the overall overheating mitigation strategy, in line with the GLA cooling hierarchy.
- 4.30 As indicated above, the inclusion of green roofs and areas of planting will aid in microclimatic passive cooling for the proposed buildings and the immediate area surrounding the Site.

##### **Adapting to Heavier Rainfall**

- 4.31 As discussed above, the development has been designed to minimise flooding and to not increase the amount of surface water run-off and therefore, chance of flooding for neighbouring properties even when accounting for a predicted 30% increase in rainfall as a result of climate change.

##### **Adapting to Drier Summers**

- 4.32 As discussed above, the Site is in an area of water stress and therefore the residential units will be designed to minimise water use during operation. Fittings will be selected to ensure that internal residential water use does not exceed 105 litres/person/day, and all ground floor private amenity areas for the residential flats will have water butts installed that collect rainwater from the roofs.
- 4.33 To further reduce unregulated water consumption, a proportion of the private residential gardens (to be confirmed during detailed design) will have water butts installed to collect rainwater from the rooftops.

#### **Pollution Prevention**

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##### **Land Pollution**

- 4.34 As confirmed within the Site Context Appraisal section, the Basement Impact Assessment submitted in support of the scheme found that although the made ground beneath the Site contains significant contamination from lead and PAH's, the proposed excavation works will remove this contaminant risk. Additionally, it is proposed to conduct a more thorough asbestos contamination assessment during detailed design stage, as only minimal amounts of this were found during initial Site testing.

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##### **Air Pollution**

- 4.35 An Air Quality Assessment has been completed for the Site by Isopleth Limited, and this concluded that since the proposed development will be car free, the air quality impact will be negligible from this source. The point source emissions from the proposed gas fired CHP and low NO<sub>x</sub> domestic boilers are unlikely to be worse than for the existing Site, therefore the predicted site-wide air quality impacts are within acceptable limits.
- 4.36 Best practice methods for minimising the formation of dust and emissions from construction activities shall be implemented to reduce adverse impact on this primarily residential area. These methods shall be in line with the London Plan's *Control of Dust and Emissions During Construction and Demolition* SPG, as appropriate to the specific Site and proposed activities. Control measures will likely include:
- Solid screens / barriers or other physical boundaries around dust / emission generating activities;
  - Good site maintenance and regular inspections for liquid spillages;
  - Washing of delivery vehicles wheels; and
  - Sealed storage for cement, sand and fine aggregates.
- 4.37 Further details on the above can be found in the Construction Management Plan submitted in support of the planning application.
- 4.38 In addition to the above measures, it is intended that the construction phase of works on site (including both the proposed community centre and residential areas) will be assessed under the Considerate Constructors Scheme (CCS) (further details can be found in the BREEAM Pre-Assessment produced by Southfacing Limited). This scheme encourages and rewards best practice methods / management on site with regard to a number of issues, including air pollution. For example, spot checks on site under the CCS can include the appropriate erection of barriers around dust generating activities.
- 4.39 During operation, the proposals will help stimulate the use of sustainable forms of transport that would help improve air quality across London; 58 secure long-stay cycle spaces are proposed on the ground floor and basements of the residential blocks (equal to 1.8 spaces per residential unit) and the proposed development will be entirely car-free (with the exemption of disabled parking spaces). Additionally, a total of 22 short stay cycle spaces are proposed on-site and will likely be used by users of the new community facilities, as well as people visiting friends and family in the residential units. As discussed in the Site Context Appraisal section, the Site is in an excellent location with regard to access to regular and reliable public transport options.

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- 4.40 Additionally, approximately 400sqm of green roof are proposed to be installed on all available roof space. Multiple scientific papers confirm that green roofs are able to efficiently remove air pollutants from the air during the growing season, with approximately 85 kg of air pollutants per hectare of green roof per year being absorbed and effectively mitigated (source: Yang et al. 2008). The pollutants most effectively removed from the air by green roofs include NO<sub>2</sub>, particulate matter and SO<sub>2</sub>, all of which are identified as being particularly abundant within London.

#### Noise Pollution

- 4.41 No air conditioning units are currently proposed for the residential units, therefore reducing the potentially noise-emitting external plant associated with this technology.
- 4.42 An Acoustic Report has been produced by Ion Acoustics Limited, in support of the planning application. This assessed both the noise ingress and egress from the residential units and the new community centre, and confirms that some limited external plant is proposed for the new community centre. This confirms that with regard to the residential units, the only risk of noise ingress comes from the hall and recording studio below and adjacent to Block B2. This will be achieved through structurally separating the flats from these spaces and providing a fully floating recording studio, and a separated roof for the hall.
- 4.43 All other uses on-site are expected to have a minimal impact on the new residential units. Noise pollution from the residential units to surrounding neighbourhoods is expected to be minimal due to the lack of noise-generating external plant.

#### Light Pollution

- 4.44 In order to minimise light pollution and therefore reduce adverse effects on surrounding residential amenity and protected species such as bats, external lighting shall be designed in compliance with the Institution of Lighting Professionals (ILP) *Guidance notes for the reduction of obtrusive light* (2011), with measures such as installing luminaires that minimise upward spread of light.

#### Water Pollution

- 4.45 As per the Sustainable Drainage Strategy produced by Conisbee for the proposals, the 400sqm of green roofs proposed will act as a natural filtration system, removing pollutants and likely improving the water quality following runoff. Table 6.4 of Conisbee's report confirms that the green roofs have the potential to remove a high proportion of total suspended solids and a medium proportion of heavy metals.
- 4.46 In terms of construction works, the Site is approximately 700m from the nearest water course (the subterranean River Fleet) and therefore the risk posed to pollution of surface water is low.

#### Social Integration of the Scheme

- 4.47 The proposed new community areas of the scheme will improve the quality and amount of space currently available to the Highgate Newtown Community Centre (HNCC), therefore improving its ability to carry on serving the local community of Dartmouth Park and Highgate Newtown and potentially increasing the amount of people who volunteer and take part in its programmes. This has obvious social benefits for both the new and existing residents of the area, allowing people to attend sports and culture-based events and meet new neighbours. The Fresh Youth Academy will also have improved integrated flexible space to deliver its services for young people in the community.
- 4.48 It is also proposed to provide approximately 111sqm of space on the community centre roof garden for local food growing, which will likely be managed by the Highgate Newtown Community Centre and local residents will be encouraged to get involved. Food growing has numerous environmental, social and economic benefits as it provides a local, sustainable food source and provides an opportunity for residents / users to interact.
- 4.49 The residential element serves to meet the observed significant local housing inequalities discussed in the Site Context Appraisal section by helping to alleviate the supply-side shortage of housing in the borough. Additionally, a mix of residential units ranging from one to four bedroom apartments will attract a range of residents from various income backgrounds, producing a more stable place that prevents the social isolation of concentrated groups such as that which is seen in the 1980s London housing estates.
- 4.50 Additionally, the ability of the proposal to improve employment opportunities has a direct influence on social integration on both a local and national scale. The HBF report 'The Labour Needs of Extra Housing Output: Can the Housebuilding Industry Cope' states that for each home built 1.5 full time construction jobs are created, with twice that number of jobs created in the supply chain. Additionally, Ernst & Young LLP's Economic Impact Assessment for the Berkeley Group (2012) confirms that for every additional job created in the construction industry, a further 1.53 jobs are created in the wider economy. On this basis, the housing proposed as part of this scheme has the potential to create 140 jobs in the construction industry and associated supply chain, with an additional 71 jobs created in the wider economy.

## 5. SUMMARY

5.1 This Sustainability Statement provides an overview as to how the proposed residential parts of the scheme contribute to sustainable development in the context of the strategic, design and construction considerations.

5.2 It is proposed to redevelop the existing buildings and courtyard and change of use of the Gospel Hall to provide new community facilities and 31 residential units.

5.3 Sustainability is a broad concept and covers a range of environmental, social and economic themes. A review of the London Borough of Camden's planning policy has identified a number of requirements relating to sustainable development. Of these, policy CS13 (*Tackling Climate Change through Promoting Higher Environmental Standards*) of the Core Strategy, Policy DP22 (*Promoting Sustainable Design and Construction*) of the Development Policies document and the Camden CPG 3: Sustainability, are considered of greatest pertinence. Various London Plan policies and the Sustainable Design & Construction SPG are also considered relevant, along with specific draft policies of the new Camden Local Plan.

5.4 A review of local social and economic conditions identified an excellent location for the proposed residential use, with multiple public transport options within 12 minutes' walk of the Site that service the majority of major employment, retail and leisure destinations across London.

5.5 The development contributes to sustainable development in Camden through the following:

- Provides a greater choice of residential accommodation in an area served by a wide array of local amenities and services, all of which will benefit from the new residents and were shown to be able to cater for any increase in demand.
- As per the Energy Strategy produced by Van Zyl & de Villiers Limited, the entire proposed development (including the proposed new residential units) will reduce CO<sub>2</sub> emissions by ≥ 35% relative to the Building Regulations Part L 2013 standards, with the remainder up to 100% of total regulated emissions being off-set through Camden's carbon off-setting fund.
- Encourages sustainable transport options for new residents by providing a car-free development, with 58 secure long stay cycle spaces to be provided for the residential units, or 1.8 spaces per flat.
- The biodiversity of the Site is likely to increase following development through the proposed green roofs and areas of biodiverse planting.

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- Water use during operation will be minimised by low flow-rate fittings and provision of water butts for private residential gardens. This will meet the London SPG target for 105 litres/person/day or less.
- Measures to reduce waste and use sustainable materials will be prioritised; ≥80% of construction and demolition waste will be diverted from landfill and at least 20% of the total value of primary construction materials will be sourced from recycled and reused sources.
- The integration of proposed residential flats with new community facilities will aid in social integration of the new residents and significantly enhance the sense of place for the Site and surrounding neighbourhood.
- Measures will be adopted for the associated new community centre on-site so that it will achieve a BREEAM 'Excellent' rating, as per Appendix A3.

5.6 Overall, the proposals for the scheme are in line with the principles of sustainable development as well as the policy requirements of the planning authority, and will provide a development that seeks to promote these principles in operation.

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34

**A1. SITE PLAN**



## A2. CFSH WAT1 CALCULATOR PRINT OUT

<b>breglobal</b>		Job no:	16-5011		BRE Global not be used for permitted projects taken in inaccurate the use of PRINTING be as "La						
		Date:	21/07/2016								
		Assessor name:									
		Registration no:	N/A								
		Development name:	Highgate Newtown Community Centre (Re								
WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS - (BASIC CALCULATOR)											
House Type:	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6					
Description:	Typical Unit										
Installation Type	Unit of measure	Capacity/flow rate	Litres/person/day	Capacity/flow rate	Litres/person/day	Capacity/flow rate	Litres/person/day	Capacity/flow rate	Litres/person/day	Capacity/flow rate	Litres/person/day
Is a dual or single flush WC specified?		Dual	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:
WC	Full flush volume	5	7.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Part flush volume	2	5.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taps (excluding kitchen and external taps)	Flow rate (litres / minute)	3.5	7.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Are both a Bath & Shower Present?	Bath & Shower	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:
Bath	Capacity to overflow	190	20.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Flow rate (litres / minute)	9	39.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kitchen sink taps	Flow rate (litres / minute)	5	12.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Has a washing machine been specified?	No	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:
Washing Machine	Litres / kg	17.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Has a dishwasher been specified?	No	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:
Dishwasher	Litres / place setting	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Has a waste disposal unit been specified?	No	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:	Select option:
Water Softener	Litres / person / day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Calculated Use	114.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Normalisation factor		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Total Consumption		104.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Code for Sustainable Homes	Mandatory level	Level 3/4	-	-	-	-	-	-	-	-	-
	External use	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Building Regulations 17.K	Total Consumption	109.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.K Compliance?	Yes	-	-	-	-	-	-	-	-	-

## A3. COMMUNITY CENTRE BREEAM PRE-ASSESSMENT



**HNCC**

**BREEAM Pre-Assessment Summary Report**

Pre-assessment

Uncontrolled revision

27 Apr 2016

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HNCC  
BREEAM Pre-Assessment Summary Report (Uncontrolled Copy)  
27/04/16 14:49

**1.0 Introduction**

This report is intended as a summary of the BREEAM pre-assessment review for the following project:

<b>Project Name</b>	HNCC
<b>BREEAM Version</b>	BREEAM 2014 NC
<b>Assessment Stage</b>	Pre-Assessment Stage
<b>Lead Assessor</b>	Lucy Harris
<b>Target Rating</b>	Excellent (70%)
<b>Downloaded By</b>	Lucy Harris
<b>Download Date</b>	27/04/16
<b>Download Time</b>	14:49:48 (BST)

Please note that this is an uncontrolled copy and is for information only and a more detailed, formal pre-assessment report may be issued by your appointed assessor. If you have any queries on the content of this report or the award of any of the credits please contact your licensed assessor as noted above.

## 2.0 Scoring scenarios

It should be noted that the pre-assessment scores have been based on the following scoring scenarios;

- Current - The number currently achieved.
- Scenario 1 - Current, plus credits required for a minimum BREEAM Excellent rating.
- Scenario 2 - Route to achieve a BREEAM Excellent rating with reasonable buffer.

On this basis, the following scores are considered achievable under each scenario;

Scenario	Score	BREEAM Rating
Current	57.07	Very Good
Scenario 1	71.49	Excellent
Scenario 2	75.32	Excellent



### 2.1 Minimum Standards

In addition performance against the minimum standards (required for the specified target rating) under each scenario is summarised below;

Issue	Current	Scenario 1	Scenario 2
Man 03 - Responsible construction practices	✓	✓	✓
Man 04 - Commissioning and handover	✓	✓	✓
Man 05 - Aftercare	✓	✓	✓
Ene 01 - Reduction of energy use and carbon emissions	✗	✓	✓
Ene 02 - Energy Monitoring	✓	✓	✓
Wat 01 - Water Consumption	✓	✓	✓
Wat 02 - Water Monitoring	✓	✓	✓
Mat 03 - Responsible Sourcing of Materials	✓	✓	✓
Wst 01 - Construction Waste Management	✓	✓	✓
Wst 03 - Operational Waste	✓	✓	✓
LE 03 - Minimising impact on existing site ecology	✓	✓	✓

If the required minimum standards are not met then the target rating will not be achieved regardless of overall score.

## 3.0 - Credits and Comments Table

	Available	Current	Scenario 1	Scenario 2	Comments	
<b>Management</b>						
<b>Man 01</b>	Project brief and design	4	0	1	2	<p><b>Potential:</b> Credit 2: Stakeholder consultation (third party) prior to Technical Design, and carried out by an independent party. Credit 4: Sustainability Champion credits above achieved and monitoring at key DTMs from Concept Design through to Technical Design.</p> <p><b>Not Targeted:</b> Credit 1: Stakeholder consultation (project delivery) with all team members prior to Concept Design stage. The contractor is not yet on board so this credit cannot be targeted. Credit 3: Sustainability Champion appointed during project preparation and brief stage. Defined BREEAM performance target set between client and team no later than Concept Design stage.</p>
<b>Man 02</b>	Life cycle cost and service life planning	4	1	1	1	<p><b>Targeted:</b> One credit for reporting the capital cost for the building in pounds per square metre (£k/ m<sup>2</sup>).</p> <p><b>Not Targeted:</b> Further credits for Whole Life Costing.</p>
<b>Man 03</b>	Responsible construction practices	6	5	6	6	<p><b>Targeted:</b> One credit for the contractor having an ISO14001 certificate. Two credits for exceeding best practices under the CCS scheme. Two credits for monitoring water and energy consumption on site, and monitoring transport of construction materials.</p> <p><b>Potential:</b> Sustainability Champion during construction, handover and close out stages.</p>
<b>Man 04</b>	Commissioning and handover	4	2	3	4	<p><b>Targeted</b> Credit 1: commissioning schedule and responsibilities. Credit 2: complex systems have a dedicated commissioning manager appointed during design stage. Credit 4: A Building User Guide will be provided.</p> <p><b>Potential:</b> Credit 3: Commissioning of building fabric (thermographic survey). This could be added to the contractor requirements.</p>
<b>Man 05</b>	Aftercare	3	3	3	3	<p><b>Targeted</b> Credit 1: Aftercare support from the design team, including initial support in the first month, and longer term care to the occupants for the first 12 months. The Innovation credit is also being targeted. Credit 2: Seasonal commissioning over a minimum of 12 months. This will be passed to the contractor. Credit 3: A commitment to carry out a Post Occupancy Evaluation one year after occupancy (review, feedback from users, sustainability performance, and appropriate dissemination e.g. on a website).</p>
<b>Management Totals:</b>		<b>21</b>	<b>11</b>	<b>14</b>	<b>16</b>	
<b>Management score totals:</b>		<b>12</b>	<b>6.29</b>	<b>8</b>	<b>9.143</b>	
<b>Health &amp; Wellbeing</b>						

Hea 01	Visual Comfort	4	2	2	2	<p><b>Targeted</b></p> <p>Credit 1: Glare control on all windows including where workstations will be provided. Credit 4: Internal and external lighting levels in accordance with relevant CIBSE Lighting guides, external lighting in accordance with BS5489 and relevant internal zoning is provided.</p> <p><b>Not Targeted</b></p> <p>Credit 2: Daylighting in occupied spaces. Credit 3: View Out from all workstations/desks.</p>
Hea 02	Indoor Air Quality	5	0	0	0	<p><b>Not Targeted:</b></p> <p>Credit 1: Indoor Air Quality Plan Credit 2: Recirculation of internal pollutants reduced. Intakes and exhausts are likely to be less than 10m apart. Credit 3 and 4: VOCs of products and actual testing on site. Credit 5: Potential for natural ventilation. This is not possible in all areas.</p>
Hea 04	Thermal comfort	3	1	2	2	<p><b>Targeted</b></p> <p>Credit 1: thermal modelling will be carried out in accordance with CIBSE AM11.</p> <p><b>Potential:</b></p> <p>Credit 3: thermal modelling above informs appropriate thermal zoning and control. Any underfloor heating will need careful review and will need to be appropriately specified. It may be that the underfloor heating does not conform to the CIBSE requirements.</p> <p><b>Not Targeted:</b></p> <p>Credit 2: thermal modelling will be used to demonstrate the same comfort under a projected climate change environment (for mech ventilation: 2030s, emission scenario Medium (A1B)).</p>
Hea 05	Acoustic Performance	3	0	2	3	<p><b>Potential:</b></p> <p>Credit 1-3: Where a suitably qualified acoustician is appointed to define a bespoke set of performance requirements for all function areas in the building using the three acoustic principles defined below, setting out the performance requirements for each and the testing regime required:</p> <p>a. Sound insulation b. Indoor ambient noise level c. Reverberation times. (or 2 credits where BS8233 is achieved with testing, and BB93 standards for any teaching spaces). Requires further engagement with an acoustician, one have been commissioned and will review in due course.</p>
Hea 06	Safety and Security	2	1	2	2	<p><b>Targeted:</b></p> <p>Credit 2: An ALO must be consulted prior to Concept Design and their recommendations incorporated.</p> <p><b>Potential:</b></p> <p>Credit 1: Safe and segregated site access for bicycles, pedestrians, cars and deliveries. This credit might be possible with all access off the street.</p>
<b>Health &amp; Wellbeing Totals:</b>		<b>17</b>	<b>4</b>	<b>8</b>	<b>9</b>	
<b>Health &amp; Wellbeing score totals:</b>		<b>15</b>	<b>3.53</b>	<b>7.059</b>	<b>7.941</b>	
<b>Energy</b>						

<b>Ene 01</b>	Reduction of energy use and carbon emissions	12	3	5	6	<p><b>Targeted:</b> From preliminary modelling it would appear that 3 credits should be achievable as a minimum with the use of CHP and potentially PV.</p> <p><b>Potential (and requirement for BREEAM Excellent):</b> The technical team will review and advise further to allow 5 credits and the mandatory threshold of BREEAM Excellent to be reached. Further credits may be available depending on systems installed and outcomes of the potential Energy and Renewables Feasibility Study at Ene04.</p>
<b>Ene 02</b>	Energy Monitoring	2	2	2	2	<p><b>Targeted:</b> Credit 1: All energy consuming systems accounting for greater than 90% of the total annual energy consumption (space heating (different boiler in this case), hot water heating (different boiler to space heating), humidification, cooling, fans (major, and only small fans present for this building), lighting and small power) will be metered with a pulsed output and labelled. Credit 2: Areas of high energy load or tenancy areas such as separate concessions (sub-tenanted areas) and gym will be sub-metered.</p>
<b>Ene 03</b>	External Lighting	1	1	1	1	<p><b>Targeted:</b> Credit 1: The average luminous efficacy of all external light fittings is not less than 60 lumens per circuit watt. Daylight sensors and PIRs are fitted appropriately.</p>
<b>Ene 04</b>	Low carbon design	3	0	3	3	<p><b>Potential</b> Credit 1: The first credit under Hea04 Thermal Comfort has been achieved, and a passive design analysis has been carried out at Concept Design Stage to reduce the total heating, cooling, mechanical ventilation and lighting demands. Credit 2: Included in above is the provision of free cooling strategies. Night time cooling will be specified. Credit 3: a LZC feasibility has been carried out at Concept Design Stage by an energy specialist and a technology has been specified. It is unclear currently whether a renewable technology will be required for planning.</p>
<b>Ene 08</b>	Energy Efficient Equipment	2	0	0	0	<p><b>Not Targeted</b> Sourcing small power items such as monitors, computers and kitchen appliances in accordance with Government Buying Standards or CIBSE Guide TM50. Given the kitchen will be separately fitted out (by a concession) this credit will be difficult to achieve.</p>
<b>Energy Totals:</b>		<b>20</b>	<b>6</b>	<b>11</b>	<b>12</b>	
<b>Energy score totals:</b>		<b>15</b>	<b>4.5</b>	<b>8.25</b>	<b>9</b>	
<b>Transport</b>						
<b>Tra 01</b>	Public Transport Accessibility	5	4	4	4	<p><b>Targeted</b> Checking the Web Ptais website, the site has an AI of 12.42 therefore 4 credits achievable.</p>
<b>Tra 02</b>	Proximity to amenities	1	0	1	1	<p><b>Potential:</b> There might be suitable amenities (such as post box, cash machine, grocery store and others) within 500m, though this is a suburban location.</p>

<b>Tra 03</b>	Cyclist facilities	2	2	2	2	<b>Targeted:</b> One credit where there is one cycle space for every 10 staff/visitors and they are covered and secure. Given there is a maximum of 60 building users including staff then 6 covered, secure cycle spaces are needed (these could be 3 Sheffield hoops). One further credit where there are suitable showers, lockers and/or changing facilities. There are likely to be at least 4 Doc M shower/WC rooms (one on each floors) which exceeds the requirement for 1 shower for every 10 cycle spaces. A further changing area will also be provided.
<b>Tra 04</b>	Maximum Car Parking Capacity	2	2	2	2	<b>Targeted</b> Two credits since there are appear to be no provision for parking.
<b>Tra 05</b>	Travel Plan	1	1	1	1	<b>Targeted</b> Provision of a travel plan at the feasibility and design stages which feeds into the amenities provided for the development. This is being prepared by J.P Highways Consultants.
<b>Transport Totals:</b>		<b>11</b>	<b>9</b>	<b>10</b>	<b>10</b>	
<b>Transport score totals:</b>		<b>9</b>	<b>7.36</b>	<b>8.182</b>	<b>8.182</b>	
<b>Water</b>						
<b>Wat 01</b>	Water Consumption	5	3	3	3	<b>Targeted:</b> Three credits may be possible where the following is specified: WCs with effective flush volume of 3.75l/flush (6/4 dual flush). No urinals. Showers: 6 litres/min. Bathroom taps with a flow rate of 4.5l/min or less. Kitchen taps with a flow rate of 7.5 l/min or less. Pre-rinse nozzle 8 litres/min or less. Commercial dishwashers with 5 l/rack.
<b>Wat 02</b>	Water Monitoring	1	1	1	1	<b>Targeted</b> One credit where a water meter with a pulsed output is attached to the mains water supply for each building, and pulsed output sub-meters are provided for each water consuming plant or area that consumes 10% or more of the total water demand. These must be connected to a BMS if available.
<b>Wat 03</b>	Leak Detection	2	2	2	2	<b>Targeted</b> Credit 1: Leak detection system provided. Can be included in contractor requirements. Credit 2: Sanitary supply shut off/PIR sensors on all WC areas.
<b>Water Totals:</b>		<b>8</b>	<b>6</b>	<b>6</b>	<b>6</b>	
<b>Water score totals:</b>		<b>7</b>	<b>5.25</b>	<b>5.25</b>	<b>5.25</b>	
<b>Materials</b>						
<b>Mat 01</b>	Life Cycle Impacts	6	6	6	6	<b>Targeted</b> Preliminary review by architect suggests all six credits could be achievable: Concrete frame and roof. External wall, brick cladding. Internal block, timber and metal stud and glazed partition walls. Aluminium windows. Floor tiles, timber, lino and tile flooring.

<b>Mat 02</b>	Hard Landscaping and Boundary Protection	1	1	1	1	<b>Targeted:</b> One credit where 80% of all hard landscaping and boundary protection will be A or A+ rated in the Green Guide. This will be further reviewed when materials specified but in the event that it is asphalt, then a recycled sub-base is required. Can be included in contractor requirements.
<b>Mat 03</b>	Responsible Sourcing of Materials	4	3	3	3	<b>Targeted:</b> One credit where all timber is FSC/PEFC certified and all non-timber items including insulation are BES6001/ISO14001/FSC certified. Last credit where all materials have been sourced in line with the principle contractor's Sustainable Procurement Plan. Can be included in contractor requirements.
<b>Mat 04</b>	Insulation	1	1	1	1	<b>Targeted:</b> One credit where the insulation index for all building fabric and services insulation is the same or greater than 2.5. This includes the requirement for all insulation to be A or A+ rated. Can be included in contractor requirements.
<b>Mat 05</b>	Designing for durability and resilience	1	1	1	1	<b>Targeted:</b> One credit where vulnerable parts of the building are protected from damage and material degradation.
<b>Mat 06</b>	Material efficiency	1	0	0	0	<b>Not Targeted:</b> One credit where material use has been optimised in building design, procurement, construction, maintenance and end of life. This is a review that happens regularly throughout the construction process and will add significant cost to the project.
<b>Materials Totals:</b>		<b>14</b>	<b>12</b>	<b>12</b>	<b>12</b>	
<b>Materials score totals:</b>		<b>13.5</b>	<b>11.57</b>	<b>11.571</b>	<b>11.571</b>	
<b>Waste</b>						
<b>Wst 01</b>	Construction Waste Management	4	2	2	3	<b>Targeted:</b> One credit where less than 13.3m <sup>3</sup> or 11.1 tonnes per 100 sqm floor area of waste is generated during construction. One further credit where 70% non demo and 80% demo waste is diverted from landfill. <b>Potential:</b> One further credit where less than 7.5 m <sup>3</sup> or 6.5 tonnes per 100 sqm floor area of waste is generated during construction.
<b>Wst 02</b>	Recycled Aggregates	1	0	1	1	<b>Potential:</b> One credit for provision of 25% recycled or secondary aggregate to contribute to total high-grade aggregate.
<b>Wst 03</b>	Operational Waste	1	1	1	1	<b>Targeted:</b> One credit where at least 2sqm of external recyclable waste storage space is provided per 1000sqm floor area and a further 2sqm where there is a kitchen. Given there is less than 2000sqm floor area and a kitchen, 6sqm recyclable waste storage in the bin store will need to be provided.
<b>Wst 05</b>	Adaptation to climate change	1	0	0	0	<b>Not Targeted:</b> One credit where a climate change adaptation strategy appraisal is carried out by end of Concept Design, assessing risk against the expected impact of extreme weather conditions arising from climate change. There would be cost implication to preparation of this report.

<b>Wst 06</b>	Functional adaptability	1	0	0	0	<b>Not Targeted:</b> One credit where a building specific functional adaptation strategy appraisal has been carried out by Concept Design. It covers adaptation of building to changes in working practices or change in use, easy replacement of plant, and accessibility of local services, as well as ability for major refurbishment. There would be cost implication to preparation of this report.
<b>Waste Totals:</b>		<b>8</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>Waste score totals:</b>		<b>8.5</b>	<b>3.19</b>	<b>4.25</b>	<b>5.313</b>	
<b>Land Use &amp; Ecology</b>						
<b>LE 01</b>	Site Selection	2	1	2	2	<b>Targeted:</b> The new development is on a site where previously there was a community centre. <b>Potential:</b> The site has some contamination issues, such as an underground oil tank, and potential for asbestos in the ground, all requiring further investigation.
<b>LE 02</b>	Ecological Value of Site and Protection of Ecological Features	2	2	2	2	<b>Targeted:</b> Ecologist (Syntegra) has confirmed that the site has low ecological value therefore these credits can be targeted.
<b>LE 03</b>	Minimising impact on existing site ecology	2	2	2	2	<b>Targeted</b> There should be no negative impact on site ecology by this development.
<b>LE 04</b>	Enhancing site ecology	2	2	2	2	<b>Targeted</b> Employment of an ecologist to enhance site ecology and their recommendations incorporated into the landscape plan. Syntegra will work with the team to gain the maximum credits available for this site.
<b>LE 05</b>	Long Term Impact on Biodiversity	2	2	2	2	<b>Targeted</b> Two credits where a suitably qualified ecologist will be appointed prior to works commencing to ensure that all relevant EU/UK legislation is complied with, a landscape management plan is produced and 4 of the additional BREEAM LE 05 requirements met. Syntegra have been commissioned to help with these credits.
<b>Land Use &amp; Ecology Totals:</b>		<b>10</b>	<b>9</b>	<b>10</b>	<b>10</b>	
<b>Land Use &amp; Ecology score totals:</b>		<b>10</b>	<b>9</b>	<b>10</b>	<b>10</b>	
<b>Pollution</b>						
<b>Pol 01</b>	Impact of Refrigerants	3	0	0	0	<b>Not Targeted:</b> There will be some comfort cooling in the gym area, therefore the refrigerants will have a high direct effect life cycle CO2 emissions, and the charge will be greater than 6kg. <b>Please note there is still a required pre-requisite that:</b> All systems (with electric compressors) must comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.
<b>Pol 02</b>	NOx emissions	3	3	3	3	<b>Targeted:</b> 3 credits where CHP/gas boilers are used to heat the building and have a NOx emission of less than 40mg/kWh for heating and hot water.

<b>Poi 03</b>	Surface Water Run Off	5	2	4	4	<p><b>Targeted:</b>                      Credit 3: an appropriate consultant confirms that drainage measures will ensure the peak rate of run-off from the site is no greater than pre-development and complies with the 1 in 100 year return event.                      Credit 4: an appropriate consultant confirms that flooding will not occur in the event of local drainage system failure and either the post development run-off volume is no greater than pre-development (for the 100 year, 6 hour event and allowing for climate change) and any additional volume is prevented from leaving the site by SuDS or infiltration.  <b>Potential:</b>                      Credits 1 and 2: where a flood risk assessment can demonstrate the site is in a low flood risk zone from all sources, though it is thought unlikely. FRA required.  <b>Not Targeted:</b>                      Credit 5: There is no discharge up the the first 5mm rainfall, there is pollution prevention in car parking areas in accordance with PPG3. Also, a comprehensive drainage plan will be made available to future occupants and maintenance agreements are in place for all SuDS.</p>
<b>Poi 04</b>	Reduction of Night Time Light Pollution	1	1	1	1	<p><b>Targeted:</b>                      One credit where the external lighting strategy has been designed in accordance with Table 2 of the ILP Guidance for obtrusive light, 2011 and can be switched off between 2300-0700hrs with a timeswitch.</p>
<b>Poi 05</b>	Noise Attenuation	1	1	1	1	<p><b>Targeted:</b>                      One credit where an acoustician has carried out a noise impact assessment on the surrounding sensitive buildings in accordance with BS2775 and the difference must be no greater than +5dB in the day and +3dB at night to background noise.</p>
<b>Pollution Totals:</b>		<b>13</b>	<b>7</b>	<b>9</b>	<b>9</b>	
<b>Pollution score totals:</b>		<b>10</b>	<b>5.38</b>	<b>6.923</b>	<b>6.923</b>	
<b>Innovation</b>						
<b>Man 03</b>	Responsible construction practices	1	0	1	1	<p><b>Potential:</b>                      When the contractor achieves a CCS score of 40+ points.</p>
<b>Man 05</b>	Aftercare	1	1	1	1	<p><b>Targeted:</b>                      For provision of aftercare to the client for 3 years following occupancy.</p>
<b>Hea 01</b>	Visual Comfort	1	0	0	0	-
<b>Hea 02</b>	Indoor Air Quality	2	0	0	0	-
<b>Ene 01</b>	Reduction of energy use and carbon emissions	5	0	0	0	-
<b>Wat 01</b>	Water Consumption	1	0	0	0	-
<b>Mat 01</b>	Life Cycle Impacts	3	0	0	0	-
<b>Mat 03</b>	Responsible Sourcing of Materials	1	0	0	0	-
<b>Wst 01</b>	Construction Waste Management	1	0	0	0	-
<b>Wst 02</b>	Recycled Aggregates	1	0	0	0	-
<b>Wst 05</b>	Adaptation to climate change	1	0	0	0	-



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AI	Approved Innovation	1	0	0	0	-
<b>Innovation Totals:</b>		<b>19</b>	<b>1</b>	<b>2</b>	<b>2</b>	
<b>Innovation score totals:</b>		<b>19</b>	<b>1</b>	<b>2</b>	<b>2</b>	
<b>OVERALL SCORE TOTALS:</b>		<b>119</b>	<b>57.07</b>	<b>71.49</b>	<b>75.32</b>	

## A4. GENERAL NOTES

- A4.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.
- A4.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.
- A4.3 No site visits have been carried out.
- A4.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.
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