

Energy Statement

Planning Submission

Oak Park Health and Wellbeing Campus,
Havant,
Hampshire

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-	Mr F. Stannard	Mr C. Waldron	02.03.15	First Draft
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Introduction

Couch Perry Wilkes (CPW) have been appointed to formulate an energy strategy and provide an Energy Statement, to demonstrate how the proposed Health and Wellbeing Campus in Havant, Hampshire, will comply with local planning policy pertaining to energy efficiency and generation of energy from low carbon and renewable sources.

The new health and wellbeing campus is to benefit from (i) a nursing care home, (ii) extra care living comprising self-contained flats and communal areas, (iii) supported living accommodation, and (iv) a central community Hub building facility.

The new Nursing Care Home development has been designed to target a BREEAM Excellent standard, which we understand exceeds the minimum policy requirements of the planning authority.

The Supported Living and Extra Care accommodation development are both designed to target a Code for Sustainable Homes Level 4 standard.

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1.0 Methodology

The predicted energy demand for the Nursing Care Home development has been calculated via SBEM analysis using Communities & Local Government (CLG) approved national calculation methodology (NCM) and accredited software, namely Virtual Environment IES software. This software applies to buildings other than dwellings.

The predicted energy demands for both the Extra Care and Supported Living development has been calculated using SAP assessment, again according to approved national calculation methodology (NCM), as this is specific for buildings classed as dwellings.

Summation of each area’s predicted energy demand provides the annual energy demand for the development that is the basis of the analysis in this statement.

To ensure that best value is provided from the measures proposed, the energy strategy has been considered across three hierarchical and sequential stages;

- I.

Be Lean: Energy demand reduction through consideration of passive design principles.
- II.

Be Clean: Promote energy efficiency through specification of engineering services and consideration of clean technologies including heat recovery and investigation of CHP and community heating networks.
- III.

Be Green: Consideration of renewable energy to enhance the carbon emissions rating once stages I and II above have been assessed.

2.0 Baseline Building (TER)

In order to benchmark the proposed Nursing Care Home development (circa 4,600m²), estimated ‘regulated’ energy demands and CO₂ emissions data have been assessed using SBEM analysis.

In order to benchmark the proposed Extra Care and Supported Living dwellings, estimated ‘regulated’ energy demands and CO₂ emissions data have been assessed using the SAP analysis.

The baseline building is based on the NCM calculated TER, which is used as a guideline to Compare the percentage of the building’s total energy consumption and CO₂ emissions that can be reduced or offset by applying suitable low carbon design measures.

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The baseline building emission prior to implementation of low carbon design measures considered further in this report is summarized in the tables below: -

80 Bed Care Home	kgCO ₂ /m ²
TER	40.8

Example Dwelling in Sup Living	kgCO ₂ /m ²
TER	18.32

Example Dwelling in Extra Care	kgCO ₂ /m ²
TER	17.03

A full set of results are appended to the end of this report.

3.0 Be Lean – Energy Efficient Design

Reducing energy usage is the priority in the energy hierarchy. It is often the measure with the least cost implementation and social impact, and any reduction will reduce the requirement for on-site generation from renewable energy sources.

Achieving optimum use of energy throughout a building’s life requires passive design to reduce the need for energy associated with controlling the environment and efficient controls to assist in occupants’ use of energy.

The calculated energy demand for this section is based on the following specification:

- Light fittings shall be LED technology
- High efficiency gas-fired boiler plant.
- Mechanical ventilation, where provided, shall be via high efficiency heat recovery ventilation units with low energy fans.
- An air permeability of 3m³/h.m² @ 50Pa
- High efficiency extract fans to en-suites
- The following U values, improving upon 2013 Building Regulations, were selected for materials:

Element	Minimum Part L U-Values (W/m ² .K)	U Value (W/m ² .K)
External Walls	0.35	0.15
Ground Floor	0.25	0.15
Roof	0.25	0.15
Glazing	2.2	1.4

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4.0 Be Clean – Combined Heat and Power (CHP)

An initial study completed by CPW found that a small scale gas fired CHP installation would offer benefit to the entire scheme. The Care Home shall have a dedicated plant room, and the Extra Care plant room shall serve the Extra Care block as well as the Supported Living blocks.

Each unit has been sized with a knowledge of the building's predicted heating & electrical load profiles, but is primarily sized based on the predicted hot water usage (being the base heat load). The units shall be selected to match approximately 70% of the building's domestic hot water load (DHW). This has been modelled within dynamic software to give estimated energy savings for the building.

The CHP will be the lead boiler for DHW to meet approximately 70% base load demand. However, the CHP boiler will only be capable of providing part of the peak instantaneous load. Additional demands for heating will be met by gas-fired boiler plant, sequenced to come on only when the demand is greater than the CHP can provide. The space heating will be provided by a wet heating system.

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5.0 Be Green – Renewable Energy Technology

The third and final stage of the energy hierarchy refers to the generation of renewable energy. In order to maximise the developments energy savings, having already considered all passive improvements, energy efficiency equipment and CHP, we would look to renewable technologies to find a viable way of offsetting further energy and carbon.

A range of approved renewable energy technologies have therefore been appraised, examining the size and cost of each system. A summary of the appraisal is tabularised below:

Technology	Brief Description	Benefits	Issues/Limitations	Feasible for site
Solar Photovoltaic	Solar photovoltaic panels convert solar radiation into electrical energy through semiconductor cells. They are not to be confused with solar panels which use the sun's energy to heat water (or air) for water and space heating.	Low maintenance/no moving parts Easily integrated into building design No ongoing costs	Any overshadowing affects panel performance Panels ideally inclined at 30° to the horizontal facing a southerly direction	Yes
Solar Thermal	Solar thermal energy can be used to contribute towards space heating and hot water requirements. The two most common forms of collector are panel and evacuated tube.	Low maintenance Little/no ongoing costs	Must be sized for the building hot water requirements. However with the inclusion of CHP, which will be integrated into the hot water system, so there will be no requirement to lower the hot water demand Panels ideally inclined at 30° to the horizontal facing a southerly direction	No
Ground Source Heat Pump (GSHP)	GSHP systems tap into the earth's considerable energy store to provide both heating and cooling to buildings. A number of installation methods are possible including horizontal trench, vertical boreholes, piled foundations (energy piles) or plates/pipe work submerged in a large body of water. The design, installation and operation of GSHPs is well established.	Minimal maintenance Unobtrusive technology Flexible installation options to meet available site footprint	Large area required for horizontal pipes and no available space on this project Full ground survey required to determine geology More beneficial to the development if cooling is required Integration with piled foundations must be done at an early stage	No
Wind Turbine (Stand-alone column mounted)	Wind generation equipment operates on the basis of wind turning a propeller, which is used to drive an alternator to generate electricity. Small scale (1kW – 15kW) wind turbines can be pole or roof mounted.	Low maintenance/ongoing costs Local wind speed is sufficient (www.bwea.com) Excess electricity can be exported to the grid	Aesthetic impact and background noise Space limitations on site Wind survey to be undertaken to verify 'local' viability – Local turbulence is highly likely from the local buildings	No
Wind Turbine (Roof Mounted)	As above	Low maintenance/ongoing costs Minimum wind speed available (www.bwea.com) Excess electricity can be exported to the grid	Aesthetic impact and background noise Structural/vibration impact on building to be assessed Proximity of other buildings raises issues with downstream turbulence Wind survey to be undertaken to verify 'local' viability – Local turbulence is highly likely from the	No

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Technology	Brief Description	Benefits	Issues/Limitations	Feasible for site
			local buildings	
Bio-Renewable Energy Sources <i>(Automated feed – wood-fuel boiler plant)</i>	Modern wood-fuel boilers are highly efficient, clean and almost carbon neutral (the tree growing process effectively absorbs the CO ₂ that is emitted during combustion). Automated systems require mechanical fuel handling and a large storage silo.	Stable long term running costs Potential good CO ₂ saving	Large area needed for fuel delivery and storage and no available space on this project Reliable fuel supply chain required Regular maintenance required Significant plant space required	No
Fuel Cells	Fuel cells convert chemical energy directly into electricity by combining hydrogen and oxygen in a controlled reaction.	Virtually no pollution High electrical efficiency	Expensive Early stages of commercialisation High technology risk	No

Solar Photovoltaic (PV) Panels

Solar photovoltaic panels convert solar radiation into electrical energy through semiconductor cells. They are not to be confused with solar panels which use the sun’s energy to heat water (or air) for water and space heating.



Photovoltaic panels are available in a number of forms including mono-crystalline, polycrystalline, amorphous silicon (thin film) or hybrid panels (discussed later). They are fixed or integrated into a building’s un-shaded south facing façade or pitched roof ideally at an incline of 30° to the horizontal for maximum energy yield. It is essential that the panels remain un-shaded, as even a small shadow can significantly reduce output.

The individual modules are connected to an inverter to convert their direct current (DC) into alternating current (AC) which is usable in buildings. Although sloping rooftops provide an ideal site for fixing PV panels using traditional mounting frames, there are a number of alternative solutions whereby PV panels can be incorporated into the actual building fabric of the development.

Solar louvres use PV panels to provide solar shading on the south façade of buildings as part of the brise soleil, and this can be a highly effective way of controlling overheating and help reduce glare (see above).

Solar glazing uses a combination of solar PV and glass, where the PV cells are laminated between two panes of specialised glazing.

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The resulting glass laminate serves the dual function of creating energy and shade at the same time. Solar glazing can be used wherever conventional glass would be specified but is particularly effective in atria.

Vertical solar facades can be used to directly replace conventional rain screen cladding materials providing a smooth, flat facade surface for the building. Where circumstances allow, the PV panels can be tilted towards the sun to maximize the energy yield.

As mentioned earlier, there are a number of types of PV cell:

Mono-crystalline Silicon Cells: These are made using cells saw-cut from a single cylindrical crystal of silicon. The principle advantage of mono-crystalline cells is their high efficiency, typically around 15%, although the manufacturing process required to produce mono-crystalline silicon is complicated, resulting in slightly higher costs than other competing technologies.

Polycrystalline Silicon Cells: These are made from cells cut from an ingot of melted and re-crystallised silicon. In the manufacturing process, molten silicon is cast into ingots of polycrystalline silicon. The ingots are then saw-cut into very thin wafers and assembled into complete cells giving a granular textured finish. Polycrystalline cells are cheaper to produce than mono-crystalline types, due to the simpler manufacturing process but tend to be slightly less efficient, with average efficiencies of circa 12%.

Thick-Film Silicon: This is another polycrystalline technology where the silicon is deposited in a continuous process onto a base material giving a fine grained, sparkling appearance. Like all crystalline PV, this is encapsulated in a transparent insulating polymer with a tempered glass cover and usually bound into a strong aluminium frame.

Amorphous Silicon: Amorphous silicon cells are composed of silicon atoms in a thin homogenous layer rather than a crystalline structure. Amorphous silicon absorbs light more effectively than crystalline silicon, so the cells can be thinner. For this reason, amorphous silicon is also known as a 'thin film' PV technology. Amorphous silicon can be deposited on a wide range of substrates, both rigid and flexible, which makes it ideal for curved surfaces and 'fold-away' modules. Amorphous cells are, however, less efficient than crystalline based cells, with typical efficiencies of around 6%, but they are easier and, therefore, cheaper to produce.

Photovoltaic technology may be feasibly incorporated into the building design with little/no maintenance or on-going costs. Installations are scalable in terms of active area; size being restricted only by available façade and/or roof space.

A particular advantage of solar PV, even over other types of LZC technology, is that running costs are very low (requires no fossil fuel for operation) and, since there are no moving parts, very little maintenance is required.

PV Application to site – Deemed suitable

PV panels made of mono-crystalline photovoltaic cells that have the highest efficiency would be most appropriate for the site, meaning that a smaller surface area is required to generate the same output as lower efficiency panels. Depending on their installation they

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need a certain area of space around them to prevent each panel shading another panel, which depends on the orientation of the sun throughout the day.

PV panels are a feasible option for the site to enhance the carbon reduction.

The extent of the photovoltaic array included within the proposals has been determined in accordance with the available ‘useful’ roof space and for the Nursing Care Home, a Target of achieving BREEAM excellent.

The panels shall be distributed across the useful roof space, best location and positioning of the panels shall be determined by the specialist supplier.

Results for each building incorporating all passive improvements, CHP and PV’s:-

80 Bed Care Home	kgCO ₂ /m ²
TER	40.8
CHP and 250m ² roof mounted PV panels	37.7
% improvement over regs	8

Example Dwelling in Sup Living	kgCO ₂ /m ²
TER	18.32
CHP and PV	14.26
% improvement over regs	22

Example Dwelling in Extra Care	kgCO ₂ /m ²
TER	17.03
CHP and PV	13.57
% improvement over regs	20

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6.0 Recommendations and Conclusions

The energy strategy detailed within this report has been carefully formulated in accordance with the 'energy hierarchy'.

The predicted energy demand for the development has been calculated via SBEM/SAP analysis using Communities & Local Government (CLG) approved national calculation methodology (NCM) and accredited software.

The technologies being proposed have been chosen as the most suitable for this care home, extra care and supported living development taking into account the energy demand profiles associated with these building types.

With the addition of PV for the 'be green' stage of the hierarchy a significant carbon improvement over Building Regulations TER has been predicted for the development.

The care home development is also reaching the necessary standards for energy efficiency credits in order to target a BREEAM Excellent rating.

The supported living and extra care developments are also meeting energy efficiency standards to be classed as 'Code for Sustainable Homes Level 4', and in some dwellings are achieving 'Level 5-6' standards.

In summary, the proposed measures for the Oak Park Health and Wellbeing development combine to achieve reduced energy consumption and subsequent carbon emissions far over and above current building regulation levels.

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Appendix I – BRUKL Document for Nursing Care Home Development

Appendix II – SAP calculation Document for Supported Living and Extra Care Development

Appendix III – BREEAM Pre-Assessment summary (Nursing Care Home)

Appendix IV – CfSH Pre-Assessment Summary (Supported Living and Extra Care Development)

Project name

Oak Park

As designed

Date: Thu Feb 12 14:01:48 2015

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.2

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.2

BRUKL compliance check version: v5.2.b.1

Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Criterion 1: The calculated CO₂ emission rate for the building should not exceed the target

1.1	CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	40.8
1.2	Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	40.8
1.3	Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	37.7
1.4	Are emissions from the building less than or equal to the target?	BER ≤ TER
1.5	Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services should achieve reasonable overall standards of energy efficiency

Values which do not meet standards in the 2013 Non-Domestic Building Services Compliance Guide are displayed in red.

2.a Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.15	0.19	GF0000A1:Surf[14]
Floor	0.25	0.15	0.15	FF00002E:Surf[1]
Roof	0.25	0.15	0.15	GF0000DF:Surf[0]
Windows***, roof windows, and rooflights	2.2	1.4	1.4	GF0000FB:Surf[1]
Personnel doors	2.2	2.2	2.2	GF0000A1:Surf[1]
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	No High usage entrance doors in building

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]

* There might be more than one surface where the maximum U-value occurs.

** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

*** Display windows and similar glazing are excluded from the U-value check.

N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	3

2.b Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- Nat Gas and Natural Vent

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	0.2	0	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

2- Nat Gas and Dirty Extract

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	0.2	0	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

"No HWS in project, or hot water is provided by HVAC system"

1- CHECK2-CHP

	CHPQA quality index	CHP electrical efficiency
This building	0	0.24
Standard value	Not provided	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I		
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
FF_Acc. WC 224		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 210		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 226		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 229		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 230		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 237		0.4	-	-	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
FF_Acc.WC 243	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 250	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Acc.WC 257	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Assisted Bathroom 211	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Assisted Bathroom 244	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Assisted Shower 249	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_Assisted Shower 256	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 176	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 177	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 180	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 181	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 184	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 185	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 188	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 189	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 191	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 193	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 195	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 197	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 199	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 264	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 267	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 268	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 271	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 272	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 275	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 276	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 279	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 280	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 283	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 284	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 287	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 288	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 291	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 292	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 295	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 296	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 298	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 300	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 303	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 304	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 307	0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 308	0.4	-	-	-	-	-	-	-	-	-	N/A

Zone name		SFP [W/(l/s)]									HR efficiency	
ID of system type		A	B	C	D	E	F	G	H	I		
Standard value		0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
FF_WC 311		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 312		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 315		0.4	-	-	-	-	-	-	-	-	-	N/A
FF_WC 316		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc WC 135		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 111		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 117		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 119		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 123		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 124		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 147		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Acc. WC 98		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Assisted Shower 130		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_Assisted Shower 134		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 01		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 04		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 05		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 08		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 09		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 12		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 13		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 16		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 17		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 20		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 21		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 24		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 25		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 28		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 29		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 32		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 33		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 36		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 37		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 40		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 41		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 44		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 45		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 48		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 49		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 52		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 53		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 56		0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 57		0.4	-	-	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
GF_WC 60	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 61	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 64	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 65	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 67	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 69	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 71	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 73	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 75	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 80	0.4	-	-	-	-	-	-	-	-	-	N/A
GF_WC 83	0.4	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
FF_Wheel Chair Storage 251		58	-	-	100
FF_Acc. WC 224		-	104	-	67
FF_Acc.WC 210		-	122	-	47
FF_Acc.WC 226		-	102	-	71
FF_Acc.WC 229		-	129	-	54
FF_Acc.WC 230		-	101	-	71
FF_Acc.WC 237		-	91	-	91
FF_Acc.WC 243		-	125	-	45
FF_Acc.WC 250		-	118	-	51
FF_Acc.WC 257		-	119	-	50
FF_Assisted Bathroom 211		-	85	-	132
FF_Assisted Bathroom 244		-	84	-	137
FF_Assisted Shower 249		-	85	-	131
FF_Assisted Shower 256		-	85	-	131
FF_Circulation Space		-	72	-	647
FF_Circulation Space		-	71	-	667
FF_Circulation Space		-	63	-	401
FF_Circulation Space		-	73	-	654
FF_Circulation Space		-	71	-	667
FF_Cirulation Space		-	64	-	295
FF_Ensuite Bedroom 178		-	76	-	110
FF_Ensuite Bedroom 179		-	76	-	107
FF_Ensuite Bedroom 182		-	76	-	107
FF_Ensuite Bedroom 183		-	76	-	109
FF_Ensuite Bedroom 186		-	76	-	107
FF_Ensuite Bedroom 187		-	76	-	107
FF_Ensuite Bedroom 190		-	77	-	106
FF_Ensuite Bedroom 192		-	76	-	107

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
FF_Ensuite Bedroom 194		-	76	-	110
FF_Ensuite Bedroom 196		-	76	-	106
FF_Ensuite Bedroom 198		-	76	-	106
FF_Ensuite Bedroom 200		-	77	-	104
FF_Ensuite Bedroom 265		-	77	-	105
FF_Ensuite Bedroom 266		-	77	-	105
FF_Ensuite Bedroom 269		-	76	-	107
FF_Ensuite Bedroom 270		-	78	-	101
FF_Ensuite Bedroom 273		-	76	-	108
FF_Ensuite Bedroom 274		-	76	-	110
FF_Ensuite Bedroom 277		-	76	-	107
FF_Ensuite Bedroom 278		-	76	-	108
FF_Ensuite Bedroom 281		-	76	-	107
FF_Ensuite Bedroom 282		-	76	-	107
FF_Ensuite Bedroom 285		-	76	-	107
FF_Ensuite Bedroom 286		-	77	-	103
FF_Ensuite Bedroom 289		-	76	-	110
FF_Ensuite Bedroom 290		-	76	-	110
FF_Ensuite Bedroom 293		-	76	-	107
FF_Ensuite Bedroom 294		-	76	-	110
FF_Ensuite Bedroom 297		-	77	-	104
FF_Ensuite Bedroom 299		-	78	-	101
FF_Ensuite Bedroom 301		-	77	-	103
FF_Ensuite Bedroom 302		-	77	-	103
FF_Ensuite Bedroom 305		-	76	-	107
FF_Ensuite Bedroom 306		-	76	-	109
FF_Ensuite Bedroom 309		-	77	-	105
FF_Ensuite Bedroom 310		-	76	-	110
FF_Ensuite Bedroom 313		-	76	-	106
FF_Ensuite Bedroom 314		-	76	-	109
FF_Ensuite Bedroom 317		-	77	-	105
FF_Ensuite Bedroom 318		-	76	-	109
FF_Hoist Room 209		78	-	-	63
FF_Hoist Room 239		82	-	-	60
FF_Hoist Storage 247		72	-	-	88
FF_Hoist Storage 254		72	-	-	87
FF_Lounge Dining 01		-	64	-	313
FF_Lounge Dining 01		-	64	-	313
FF_Lounge Dining 01		-	63	-	337
FF_Lounge Dining 01		-	63	-	324
FF_Nurses Office 217		63	-	-	125
FF_Quiet Room 223		51	-	-	225
FF_Quiet Room 225		52	-	-	206

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
FF_Quiet Room 227		52	-	-	211
FF_Quiet Room 228		51	-	-	224
FF_Staircase 232		-	74	-	100
FF_Staircase 233		-	74	-	101
FF_Staircase 234		-	74	-	100
FF_Staircase 238		-	115	-	82
FF_Staircase 262		-	73	-	110
FF_Store 219		87	-	-	25
FF_Store 235		50	-	-	184
FF_Store 236		45	-	-	177
FF_Store 240		48	-	-	196
FF_Store 246		48	-	-	185
FF_Store 248		48	-	-	172
FF_Store 253		48	-	-	184
FF_Store 255		48	-	-	169
FF_Treatment Room 215		64	-	-	119
FF_WC 176		-	102	-	70
FF_WC 177		-	107	-	64
FF_WC 180		-	103	-	69
FF_WC 181		-	106	-	66
FF_WC 184		-	102	-	70
FF_WC 185		-	107	-	64
FF_WC 188		-	103	-	69
FF_WC 189		-	104	-	68
FF_WC 191		-	105	-	66
FF_WC 193		-	105	-	66
FF_WC 195		-	107	-	64
FF_WC 197		-	105	-	67
FF_WC 199		-	108	-	64
FF_WC 264		-	105	-	67
FF_WC 267		-	102	-	71
FF_WC 268		-	106	-	66
FF_WC 271		-	102	-	70
FF_WC 272		-	107	-	64
FF_WC 275		-	102	-	70
FF_WC 276		-	107	-	64
FF_WC 279		-	103	-	69
FF_WC 280		-	109	-	62
FF_WC 283		-	101	-	71
FF_WC 284		-	106	-	66
FF_WC 287		-	102	-	71
FF_WC 288		-	105	-	66
FF_WC 291		-	104	-	67

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
FF_WC 292		-	107	-	63
FF_WC 295		-	105	-	67
FF_WC 296		-	106	-	66
FF_WC 298		-	102	-	70
FF_WC 300		-	106	-	65
FF_WC 303		-	103	-	69
FF_WC 304		-	105	-	68
FF_WC 307		-	101	-	73
FF_WC 308		-	105	-	67
FF_WC 311		-	102	-	71
FF_WC 312		-	106	-	65
FF_WC 315		-	103	-	69
FF_WC 316		-	106	-	66
FF_Wheel Chair Storage 208		60	-	-	94
FF_Wheel Chair Storage 242		62	-	-	90
FF_Wheel Chair Storage 258		58	-	-	101
GF_Acc WC 135		-	118	-	51
GF_Acc. WC 111		-	104	-	67
GF_Acc. WC 117		-	119	-	50
GF_Acc. WC 119		-	101	-	71
GF_Acc. WC 123		-	125	-	45
GF_Acc. WC 124		-	91	-	91
GF_Acc. WC 147		-	107	-	62
GF_Acc. WC 98		-	102	-	71
GF_Admin Office 142		56	-	-	167
GF_Archive 141		64	-	-	85
GF_Assisetd Storage 116		43	-	-	219
GF_Assisted Shower 130		-	84	-	137
GF_Assisted Shower 134		-	85	-	131
GF_Circulation Space		-	73	-	669
GF_Circulation Space		-	73	-	654
GF_Circulation Space		-	71	-	690
GF_Circulation Space		-	73	-	465
GF_Cleaners 170		50	-	-	162
GF_Electric / Gas Intake 99		64	-	-	52
GF_Ensuite Bedroom 02		-	76	-	107
GF_Ensuite Bedroom 03		-	78	-	101
GF_Ensuite Bedroom 06		-	76	-	107
GF_Ensuite Bedroom 07		-	76	-	108
GF_Ensuite Bedroom 10		-	76	-	107
GF_Ensuite Bedroom 11		-	77	-	103
GF_Ensuite Bedroom 14		-	76	-	107
GF_Ensuite Bedroom 15		-	76	-	110

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
GF_Ensuite Bedroom 18		-	77	-	104
GF_Ensuite Bedroom 19		-	78	-	101
GF_Ensuite Bedroom 22		-	77	-	103
GF_Ensuite Bedroom 23		-	77	-	103
GF_Ensuite Bedroom 26		-	76	-	107
GF_Ensuite Bedroom 27		-	76	-	109
GF_Ensuite Bedroom 30		-	77	-	105
GF_Ensuite Bedroom 31		-	76	-	110
GF_Ensuite Bedroom 34		-	76	-	106
GF_Ensuite Bedroom 35		-	76	-	109
GF_Ensuite Bedroom 38		-	77	-	105
GF_Ensuite Bedroom 39		-	76	-	109
GF_Ensuite Bedroom 42		-	76	-	110
GF_Ensuite Bedroom 43		-	76	-	107
GF_Ensuite Bedroom 46		-	76	-	107
GF_Ensuite Bedroom 47		-	76	-	109
GF_Ensuite Bedroom 50		-	76	-	106
GF_Ensuite Bedroom 51		-	76	-	107
GF_Ensuite Bedroom 54		-	76	-	107
GF_Ensuite Bedroom 55		-	77	-	105
GF_Ensuite Bedroom 58		-	76	-	107
GF_Ensuite Bedroom 59		-	77	-	105
GF_Ensuite Bedroom 62		-	77	-	107
GF_Ensuite Bedroom 63		-	77	-	107
GF_Ensuite Bedroom 66		-	76	-	107
GF_Ensuite Bedroom 68		-	76	-	106
GF_Ensuite Bedroom 70		-	76	-	106
GF_Ensuite Bedroom 72		-	77	-	104
GF_Ensuite Bedroom 74		-	76	-	107
GF_Ensuite Bedroom 76		-	77	-	105
GF_Ensuite Bedroom 81		-	76	-	107
GF_Ensuite Bedroom 82		-	76	-	107
GF_Entrance		-	174	-	47
GF_Hoist Storage 114		72	-	-	87
GF_Hoist Storage 129		87	-	-	41
GF_Hoist Storage 138		72	-	-	88
GF_Interview 102		59	-	-	143
GF_Kitchen Cold Store 146		48	-	-	165
GF_Kitchen Office 155		57	-	-	157
GF_Kitchen Store 144		47	-	-	176
GF_Laundry 103		-	64	-	460
GF_Lobby		-	61	-	128
GF_Lounge Dining 01		-	64	-	313

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
GF_Lounge Dining 01		-	63	-	324
GF_Lounge Dining 01		-	64	-	313
GF_Managers Office 150		54	-	-	202
GF_Nursing Home Kitchen 149		-	64	-	741
GF_Plant 101		43	-	-	380
GF_Quiet Lounge 110		52	-	-	266
GF_Quiet Lounge 132		53	-	-	199
GF_Quiet Lounge 133		54	-	-	197
GF_Quiet Room 121		52	-	-	125
GF_Reception / Waiting 145		-	63	35	1661
GF_Reception Office 145		-	95	35	189
GF_Staff Room 01		44	-	-	681
GF_Staircase 106		-	74	-	100
GF_Staircase 122		-	125	-	37
GF_Staircase 127		-	74	-	101
GF_Staircase 171		-	73	-	110
GF_Staircase 172		-	74	-	100
GF_Storage 148		83	-	-	79
GF_Store 107		87	-	-	36
GF_Store 113		48	-	-	184
GF_Store 115		48	-	-	169
GF_Store 120		87	-	-	25
GF_Store 126		45	-	-	215
GF_Store 137		48	-	-	185
GF_Store 139		48	-	-	172
GF_Treatment Room 131		53	-	-	119
GF_Waiting / Refreshment 100		-	64	35	1380
GF_WC 01		-	106	-	66
GF_WC 04		-	102	-	70
GF_WC 05		-	107	-	64
GF_WC 08		-	103	-	69
GF_WC 09		-	106	-	66
GF_WC 12		-	102	-	71
GF_WC 13		-	107	-	63
GF_WC 16		-	105	-	67
GF_WC 17		-	106	-	66
GF_WC 20		-	102	-	70
GF_WC 21		-	106	-	65
GF_WC 24		-	103	-	69
GF_WC 25		-	105	-	68
GF_WC 28		-	101	-	73
GF_WC 29		-	105	-	67
GF_WC 32		-	102	-	71

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
GF_WC 33		-	106	-	65
GF_WC 36		-	103	-	69
GF_WC 37		-	106	-	66
GF_WC 40		-	102	-	70
GF_WC 41		-	107	-	64
GF_WC 44		-	103	-	69
GF_WC 45		-	106	-	66
GF_WC 48		-	102	-	70
GF_WC 49		-	107	-	64
GF_WC 52		-	103	-	68
GF_WC 53		-	106	-	65
GF_WC 56		-	103	-	69
GF_WC 57		-	106	-	66
GF_WC 60		-	100	-	73
GF_WC 61		-	107	-	64
GF_WC 64		-	102	-	69
GF_WC 65		-	105	-	66
GF_WC 67		-	107	-	64
GF_WC 69		-	105	-	67
GF_WC 71		-	108	-	64
GF_WC 73		-	104	-	68
GF_WC 75		-	103	-	69
GF_WC 80		-	107	-	64
GF_WC 83		-	103	-	69
GF_Wheel Chair Storage 118		58	-	-	101
GF_Wheel Chair Storage 128		62	-	-	90
GF_Wheel Chair Storage 136		58	-	-	100
Local Shade		-	68	-	492
GF_Circulation Space		-	77	-	500

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
FF_Ensuite Bedroom 178	NO (-64.6%)	NO
FF_Ensuite Bedroom 179	NO (-60.8%)	NO
FF_Ensuite Bedroom 182	NO (-60.5%)	NO
FF_Ensuite Bedroom 183	NO (-64.5%)	NO
FF_Ensuite Bedroom 186	NO (-60.5%)	NO
FF_Ensuite Bedroom 187	NO (-60.6%)	NO
FF_Ensuite Bedroom 190	NO (-44.7%)	NO
FF_Ensuite Bedroom 192	NO (-43.8%)	NO
FF_Ensuite Bedroom 194	NO (-49.2%)	NO
FF_Ensuite Bedroom 196	NO (-44%)	NO
FF_Ensuite Bedroom 198	NO (-48.5%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
FF_Ensuite Bedroom 200	NO (-43.3%)	NO
FF_Ensuite Bedroom 265	NO (-44.4%)	NO
FF_Ensuite Bedroom 266	NO (-44.2%)	NO
FF_Ensuite Bedroom 269	NO (-43.1%)	NO
FF_Ensuite Bedroom 270	NO (-66.7%)	NO
FF_Ensuite Bedroom 273	NO (-62.1%)	NO
FF_Ensuite Bedroom 274	NO (-64.4%)	NO
FF_Ensuite Bedroom 277	NO (-62%)	NO
FF_Ensuite Bedroom 278	NO (-63.7%)	NO
FF_Ensuite Bedroom 281	NO (-45.3%)	NO
FF_Ensuite Bedroom 282	NO (-50.7%)	NO
FF_Ensuite Bedroom 285	NO (-47.4%)	NO
FF_Ensuite Bedroom 286	NO (-49.2%)	NO
FF_Ensuite Bedroom 289	NO (-48.9%)	NO
FF_Ensuite Bedroom 290	NO (-55.7%)	NO
FF_Ensuite Bedroom 293	NO (-44%)	NO
FF_Ensuite Bedroom 294	NO (-52.7%)	NO
FF_Ensuite Bedroom 297	NO (-65.5%)	NO
FF_Ensuite Bedroom 299	NO (-77%)	NO
FF_Ensuite Bedroom 301	NO (-65.5%)	NO
FF_Ensuite Bedroom 302	NO (-76.7%)	NO
FF_Ensuite Bedroom 305	NO (-45.2%)	NO
FF_Ensuite Bedroom 306	NO (-52.7%)	NO
FF_Ensuite Bedroom 309	NO (-46.9%)	NO
FF_Ensuite Bedroom 310	NO (-55.4%)	NO
FF_Ensuite Bedroom 313	NO (-48.6%)	NO
FF_Ensuite Bedroom 314	NO (-54.9%)	NO
FF_Ensuite Bedroom 317	NO (-43.2%)	NO
FF_Ensuite Bedroom 318	NO (-48.8%)	NO
FF_Lounge Dining 01	NO (-29.6%)	NO
FF_Lounge Dining 01	NO (-15.1%)	NO
FF_Lounge Dining 01	NO (-21.3%)	NO
FF_Lounge Dining 01	NO (-32.4%)	NO
FF_Nurses Office 217	NO (-42.2%)	NO
FF_Quiet Room 223	NO (-45.9%)	NO
FF_Quiet Room 225	NO (-37.9%)	NO
FF_Quiet Room 227	NO (-42%)	NO
FF_Quiet Room 228	NO (-42.6%)	NO
FF_Treatment Room 215	NO (-46.2%)	NO
GF_Admin Office 142	NO (-76.5%)	NO
GF_Ensuite Bedroom 02	NO (-44.8%)	NO
GF_Ensuite Bedroom 03	NO (-67.3%)	NO
GF_Ensuite Bedroom 06	NO (-70.9%)	NO
GF_Ensuite Bedroom 07	NO (-72.4%)	NO
GF_Ensuite Bedroom 10	NO (-58.3%)	NO
GF_Ensuite Bedroom 11	NO (-63.8%)	NO
GF_Ensuite Bedroom 14	NO (-45.1%)	NO
GF_Ensuite Bedroom 15	NO (-54%)	NO
GF_Ensuite Bedroom 18	NO (-66.6%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Ensuite Bedroom 19	NO (-78.2%)	NO
GF_Ensuite Bedroom 22	NO (-66.6%)	NO
GF_Ensuite Bedroom 23	NO (-76.9%)	NO
GF_Ensuite Bedroom 26	NO (-56.1%)	NO
GF_Ensuite Bedroom 27	NO (-60.8%)	NO
GF_Ensuite Bedroom 30	NO (-57.7%)	NO
GF_Ensuite Bedroom 31	NO (-62.6%)	NO
GF_Ensuite Bedroom 34	NO (-54.3%)	NO
GF_Ensuite Bedroom 35	NO (-60.1%)	NO
GF_Ensuite Bedroom 38	NO (-44.7%)	NO
GF_Ensuite Bedroom 39	NO (-49.8%)	NO
GF_Ensuite Bedroom 42	NO (-65.6%)	NO
GF_Ensuite Bedroom 43	NO (-61.9%)	NO
GF_Ensuite Bedroom 46	NO (-62.1%)	NO
GF_Ensuite Bedroom 47	NO (-65.5%)	NO
GF_Ensuite Bedroom 50	NO (-71.5%)	NO
GF_Ensuite Bedroom 51	NO (-73.4%)	NO
GF_Ensuite Bedroom 54	NO (-71.7%)	NO
GF_Ensuite Bedroom 55	NO (-72.8%)	NO
GF_Ensuite Bedroom 58	NO (-56.8%)	NO
GF_Ensuite Bedroom 59	NO (-58%)	NO
GF_Ensuite Bedroom 62	NO (-58%)	NO
GF_Ensuite Bedroom 63	NO (-58.6%)	NO
GF_Ensuite Bedroom 66	NO (-44.7%)	NO
GF_Ensuite Bedroom 68	NO (-45.4%)	NO
GF_Ensuite Bedroom 70	NO (-61%)	NO
GF_Ensuite Bedroom 72	NO (-44.3%)	NO
GF_Ensuite Bedroom 74	NO (-74.5%)	NO
GF_Ensuite Bedroom 76	NO (-74.3%)	NO
GF_Ensuite Bedroom 81	NO (-61.9%)	NO
GF_Ensuite Bedroom 82	NO (-61.9%)	NO
GF_Interview 102	N/A	N/A
GF_Kitchen Office 155	N/A	N/A
GF_Lounge Dining 01	NO (-48.7%)	NO
GF_Lounge Dining 01	NO (-48.9%)	NO
GF_Lounge Dining 01	NO (-48.9%)	NO
GF_Managers Office 150	NO (-62.8%)	NO
GF_Quiet Lounge 110	N/A	N/A
GF_Quiet Lounge 132	N/A	N/A
GF_Quiet Lounge 133	N/A	N/A
GF_Quiet Room 121	NO (-54.8%)	NO
GF_Reception / Waiting 145	NO (-92.7%)	NO
GF_Reception Office 145	N/A	N/A
GF_Staff Room 01	NO (-43.5%)	NO
GF_Treatment Room 131	NO (-57.5%)	NO
GF_Waiting / Refreshment 100	N/A	N/A
Local Shade	NO (-71.7%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	4612.6	4612.6
External area [m ²]	7945.6	7945.6
Weather	SOU	SOU
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	2092.23	3209.09
Average U-value [W/m ² K]	0.26	0.4
Alpha value* [%]	9.99	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

A1/A2 Retail/Financial and Professional services
A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
B1 Offices and Workshop businesses
B2 to B7 General Industrial and Special Industrial Groups
B8 Storage or Distribution
C1 Hotels
100 C2 Residential Inst.: Hospitals and Care Homes
C2 Residential Inst.: Residential schools
C2 Residential Inst.: Universities and colleges
C2A Secure Residential Inst.
Residential spaces
D1 Non-residential Inst.: Community/Day Centre
D1 Non-residential Inst.: Libraries, Museums, and Galleries
D1 Non-residential Inst.: Education
D1 Non-residential Inst.: Primary Health Care Building
D1 Non-residential Inst.: Crown and County Courts
D2 General Assembly and Leisure, Night Clubs and Theatres
Others: Passenger terminals
Others: Emergency services
Others: Miscellaneous 24hr activities
Others: Car Parks 24 hrs
Others - Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	22.66	49.96
Cooling	0	0
Auxiliary	4.14	3.96
Lighting	41.37	25.52
Hot water	79.01	69.66
Equipment*	47.97	47.97
TOTAL**	139.01	149.11

* Energy used by equipment does not count towards the total for calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	5.82	0
Wind turbines	0	0
CHP generators	8.17	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	66.69	155.07
Primary energy* [kWh/m ²]	235.18	234.2
Total emissions [kg/m ²]	37.7	40.8

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	74.2	0	15.9	0	2	0.9	0	0.96	0
	Notional	165.9	0	53.4	0	2	0.86	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	31.7	0	7.2	0	15.7	0.9	0	0.96	0
	Notional	111.8	0	36	0	15.7	0.86	0	----	----

Key to terms	
Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Key Features

The BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.15	GF0000FB:Surf[2]
Floor	0.2	0.12	GF000124:Surf[14]
Roof	0.15	0.15	GF0000DF:Surf[0]
Windows, roof windows, and rooflights	1.5	1.4	GF0000FB:Surf[1]
Personnel doors	1.5	2.2	GF0000A1:Surf[1]
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{i-Typ} = Typical individual element U-values [W/(m²K)]			U _{i-Min} = Minimum individual element U-values [W/(m²K)]
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	3

DESIGN STAGE PRELIMINARY RESULTS

(England & Wales - Part L1a 2013)

Disclaimer:- NHBC (for itself and as agent for its staff) and its staff shall not be liable whether in Contract or in Tort or otherwise for any loss or damage sustained as a result of using or relying on the information contained in this report.

Date:

23/04/2015

Base Option

Site Name	Extra Care Home, Oak Park, Southampton
Client Name	CPW Services Ltd
Other energy specific requirements	
General Notes	All U-values calculated as per BR443, BS EN ISO 6946 & BS EN ISO 13370.

ERDSAP27628	
No	
100	

Job Reference

Is NHBC carrying out the Building Control?

No of Units on Site

Links

[BFERC](#)

[SAP Appendix Q](#)



Specification Section

SAP Element	Part L1a Specification	Source of Information	Notes
Thermal Mass Parameter	Medium - Assumption based on SAP Conventions - Table 1	Assumed	
Ground Floor	Proposed U-value of 0.15 W/m²K	Assumed	Thermal properties of the ground taken from Table 1 of BS EN ISO 13370:2007. Floor U-value based on Clay/Silt.
Upper Floor	Proposed U-value of 0.15 W/m²K	Assumed	Suspended Floors - Mean Wind Speed assumed as 5m/s. Shielding factor for average exposure (0.05) assumed where appropriate. One air brick per 2 metres assumed where appropriate.
Main Wall - Apartments	Proposed U-value of 0.15 W/m²K	Assumed	
Party Walls	Fully filled cavity with effective sealing at all exposed edges and in line with insulation layers in abutting elements - Party Wall U-value - 0.00 Watts/m²K	Assumed	
Secondary Walls - Apartments	Proposed U-value of 0.15 W/m²K	Assumed	Filling / sealing of cavities must be done in accordance with the MIMA document "Preventing Thermal Bypasses in Party Separating walls, Design Guide, 2010 Building Regulations Issue
Pitched Roof - Insulation at joist level	Proposed U-value of 0.15 W/m²K	Assumed	
Pitched Roof - Insulation at rafter level	Proposed U-value of 0.15 W/m²K	Assumed	
Flat Roof	Proposed U-value of 0.15 W/m²K	Assumed	
Windows	Proposed U-value of 1.4 W/m²K	Assumed	
Doors	Proposed U-value of 1.4 W/m²K	Assumed	
Air Permeability Rate	Set at (3) m³/m² per hour as tested at 50 Pa (see notes) for the basis of B Regs submissions on the basis that pressure tests will be carried out on (all/a selection of properties) with the aim of achieving better than (3/4) m³/hm². Sample Pressure Testing - Where the tested dwellings do not achieve (1) m³/hm² or better then this will raise the air permeability figure applied on the untested plots to greater than the design of (3) m³/hm², with the potential for non-compliance with Criterion 1 of Part L1a.	E-mail	Extract from Part L1a 2013 regarding Air Leakage Testing and Achieving the TER [at completion stage]: The assessed air permeability. The assessed air permeability shall be determined as follows: i) Where the dwelling has been pressure tested, the assessed air permeability is the measured air permeability; ii) Where the dwelling has not been pressure tested, the assessed air permeability is the average test result obtained from other dwellings of the same dwelling type on the development, increased by +2.0 m³/(h.m²) at 50 Pa; iii) On small developments (see paragraph 3.22) where the builder has opted to avoid testing, the assessed air permeability is the value of 15 m³/(h.m²) at 50 Pa.
Ventilation (Apartments)	System 3 - Continuous Mechanical Extract (MEV) - Centralised	E-mail	It is assumed that the continuous mechanical ventilation system installer will be part of a Competent Persons Scheme, and the Registration Number will be provided as part of the Installation Checklists at As-Built Stage. If the installer is not part of a Competent Persons Scheme, a penalty will be applied to the DER, with the potential for non-compliance with Criterion 1 of Part L1a.
Summer Overheating Minimum Requirements	Windows can be opened fully	Required to Comply with Part L1a 2013	N.B. To meet the summer overheating requirements of Part L1a windows may be required to be fully openable. Additional security measures may be required in certain types of dwelling (e.g. ground floor flats & single storey houses). These requirements must be confirmed with Building Control.
Primary Heating System - extra care flats	Bosch 12na CHP CE with boilers. Heating responsibility split 50/50 between boilers and CHP system (assumption). Assumed distribution system pre-insulated , low temp variable flow.	E-mail	
Primary Heating System - supported living flats	Bosch 12na CHP CE with boilers. Heating responsibility split 50/50 between boilers and CHP system (assumption). Assumed distribution system pre-insulated , low temp variable flow.	E-mail	
Heating Controls - extra care flats	linked to usage – heat metering and local programmable controller in each flat (assumed programmer and TRVs). Energy use on demand	E-mail	N.B. Heating designs must comply with minimum standards as set out in the Domestic Building Services Compliance Guide 2013.
Heating Controls - supported living flats	linked to usage – heat metering and local programmable controller in each flat (assumed programmer and TRVs). Energy use on demand	Assumed	N.B. Heating designs must comply with minimum standards as set out in the Domestic Building Services Compliance Guide 2013.
Emitter - extra care flats	LST Radiators.	E-mail	
Emitter - supported living flats	LST Radiators	E-mail	
Compensator - extra care flats	N/A	Assumed	
Compensator- supported living flats	N/A	Assumed	
Hot Water	Assumed from central hot water cylinder plants, no plate heat exchanger or cylinder in dwelling	Pick From Drop Down List	
Hot Water - supported living flats	Assumed from central hot water cylinder plants, no plate heat exchanger or cylinder in dwelling	E-mail	

Code Disclaimer - The code energy level achieved and the credits achieved in Ene 1 and Ene 2 are indicative, these figures need to be confirmed with your code assessor as they may vary depending on the code registration date.

Water Usage	Equal to or less than 105 litres/person/day (Code for Sustainable Homes (Nov 10) Level 3-4 Minimum Standard)			Required to Comply with Code for Sustainable Homes	Extract from Part G 2010 In order to meet Part G minimum requirements "The Potential consumption of wholesome water by persons occupying a dwelling to which this regulation applies must not exceed 125 litres per person per day, calculated in accordance with the methodology set out in the document "The Water Efficiency Calculator for New Dwellings".
Secondary Heating	N/A			Assumed	
Solar Water Heating	N/A			E-mail	
Solar - PV - extra care flats	N/A			E-mail	
Solar - PV- supported living flats	N/A			As Per Discussion	
Internal Lighting	100% low energy lighting			Assumed	
Thermal Bridging	Accredited Construction Details			Assumed	
Appendix Q	N/A			Assumed	

Results Section

Plot Number	URN	Description - If stepped/staggered terraced houses/bungalows or house with an internal garage or drive through please select staggered & complete R-value Calc to obtain ENE2 Credits	Minimum Energy Rating Target	DFEE Achieved	Part L1a TFE	DER Achieved	Part L1a TER	Total Floor Area - m²	House Type Reference	Improvement over Regs	Code Target Emission Rate	Ene 1 - Credits Code 2014 Addendum (% improvement in Resultant DER / TER rounded to 1 decimal place)	Applicable Ene1 Code 2014 Addendum level (% improvement in Resultant DER / TER rounded to 1 decimal place)	Ene 2 - Credits Code 2014 Addendum (FEE rounded to 1 decimal place)	Applicable Ene2 Code 2014 Addendum level (FEE rounded to 1 decimal place)	PV Peak Power (kWp)	Comments
1 Bed	1 Bed	Ground Floor Flat	Code Level 4	41.56	44.67	14.8	18.59	53.80	Sup Liv	20.39%	15.06		Level 4	5.7	n/a		
1 Bed	1 Bed	Mid-Floor Flat	Code Level 4	29.7	33.66	12.68	16.51	53.80	Sup Liv	23.20%	13.38		Level 4	9.0	Level 5-6		
1 Bed	1 Bed	Top Floor Flat	Code Level 4	38.54	43.25	14.26	18.32	53.80	Sup Liv	22.16%	14.84		Level 4	7.1	Level 5-6		
2 Bed	2 Bed	Ground Floor Flat	Code Level 4	40.14	43.86	13.57	17.03	70.50	Sup Liv	20.32%	13.80		Level 4	6.4	n/a		
2 Bed	2 Bed	Mid-Floor Flat	Code Level 4	28.76	33.08	11.52	14.98	70.50	Sup Liv	23.10%	12.14		Level 4	9.0	Level 5-6		
2 Bed	2 Bed	Top Floor Flat	Code Level 4	39.15	42.93	13.39	16.86	70.50	Sup Liv	20.58%	13.66		Level 4	6.9	n/a		
1 Bed	1 Bed	Ground Floor Flat	Code Level 4	41.56	44.67	14.8	18.59	53.80	Xtra Care	20.39%	15.06		Level 4	5.7	n/a		
1 Bed	1 Bed	Mid-Floor Flat	Code Level 4	29.7	33.66	13.16	16.51	53.80	Xtra Care	20.29%	13.38		Level 4	9.0	Level 5-6		
1 Bed	1 Bed	Top Floor Flat	Code Level 4	38.54	43.25	14.26	18.32	53.80	Xtra Care	22.16%	14.84		Level 4	7.1	Level 5-6		
2 Bed	2 Bed	Ground Floor Flat	Code Level 4	40.14	43.86	13.57	17.03	70.50	Xtra Care	20.32%	13.80		Level 4	6.4	n/a		
2 Bed	2 Bed	Mid-Floor Flat	Code Level 4	28.76	33.08	11.52	14.98	70.50	Xtra Care	23.10%	12.14		Level 4	9.0	Level 5-6		
2 Bed	2 Bed	Top Floor Flat	Code Level 4	39.15	42.93	13.39	16.86	70.50	Xtra Care	20.58%	13.66		Level 4	6.9	n/a		



Ashley House

BREEAM 2014 New Construction
Oak Park Health & Wellbeing Campus
Multi-residential Pre-Assessment Report

DOCUMENT REVISION HISTORY			Ref:	14599 Oak Park
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-	C Harker	H. Andrews	27/01/15	Issue

BREEAM 2014 New Construction Pre-Assessment Report

Prepared on behalf of Couch Perry and Wilkes by

Name:	Catherine Harker
Position:	BREEAM Assessor
Date:	27 th January 2014
Signature:	

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BREEAM 2014 New Construction Pre-Assessment Report

Executive Summary

Couch Perry and Wilkes LLP (CPW) has undertaken a BREEAM (Building Research Establishment's Environmental Assessment Method) pre-assessment of the Oak Park Health & Wellbeing Campus. This report details the performance of Oak Park Health & Wellbeing Campus against the BREEAM 2014 New Construction Multi-residential Design Stage criteria. The building currently achieves a score of 70.86% which translates into a BREEAM rating of EXCELLENT. The object of the assessment was to establish a base score for the scheme against the current design.

BREEAM 2014 New Construction Pre-Assessment Report

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BREEAM 2014 New Construction Pre-Assessment Report

1.0 Introduction

Couch Perry and Wilkes LLP (CPW) has undertaken a BREEAM (Building Research Establishment's Environmental Assessment Method) pre-assessment of the Oak Park Health & Wellbeing Campus. The pre-assessment was conducted on 17th December 2014 by CPW at the project architect's office, and this report has been compiled to summarise the findings of the pre-assessment against the BREEAM 2014 New Construction Multi-residential criteria.

1.1 BREEAM

BREEAM is a voluntary scheme that aims to quantify and reduce the environmental burdens of buildings by rewarding those designs that take positive steps to minimise their environmental impacts. Projects are assessed using a system of credits. The credits are grouped within the following categories:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution

The assessment process results in a report covering the issues assessed together with a formal certification giving a rating on a scale of UNCLASSIFIED, PASS, GOOD, VERY GOOD, EXCELLENT and OUTSTANDING.

The diagram and text below describes how BREEAM scores and rates an assessed building:

BREEAM Rating	Score (%)
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
VERY GOOD	≥55
EXCELLENT	≥70
OUTSTANDING	≥85

BREEAM 2014 New Construction Pre-Assessment Report

The BREEAM categories contain a number of environmental issues, which reflect the options available when designing, procuring and constructing a building.

Tradable Credits

Each environmental issue has a set number of 'credits' available and these credits are awarded where the building demonstrates that it complies with the requirements of that issue.

Minimum Standards

A number of issues within a category have set minimum standards, i.e. a minimum number of credits that must be achieved in order for a particular BREEAM rating level to be met.

Minimum Standards by BREEAM Rating Level					
BREEAM Issue	Pass	Good	Very Good	Excellent	Outstanding
Man 03: Responsible construction practices	None	None	None	One credit (Considerate construction)	Two credits (Considerate construction)
Man 04: Commissioning and handover	None	None	None	Criterion 9 (Building User Guide)	Criterion 9 (Building User Guide)
Man 05: Aftercare	None	None	None	One credit (Seasonal commissioning)	One credit (Seasonal commissioning)
Ene 01: Reduction of energy use and carbon emissions	None	None	None	Five credits	Eight Credits
Ene 02: Energy monitoring	None	None	One Credit (First sub-metering credit)	One Credit (First sub-metering credit)	One Credit (First sub-metering credit)
Wat 01: Water consumption	None	One Credit	One Credit	One Credit	Two credits
Wat 02: Water monitoring	None	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only
Mat 03: Responsible sourcing of materials	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only
Wst 01: Construction waste management	None	None	None	None	One Credit
Wst 03: Operational waste	None	None	None	One Credit	One Credit
LE 03: Minimising impact on existing site ecology	None	None	One Credit	One Credit	One Credit

BREEAM 2014 New Construction Pre-Assessment Report

Innovation Credits

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above and beyond the level that is currently recognised and rewarded by standard BREEAM issues. Innovation credits are awarded for either complying with pre-defined BREEAM issue exemplary level requirements, or via application to BRE Global to have a particular building feature, system or process recognised as 'innovative'.

Within each of the BREEAM categories outlined above, there are a number of credit requirements that reflect the options available to designers and managers of buildings.

An environmental weighting is applied to the scores achieved under each category, as shown below, in order to calculate the final BREEAM score. The weighting factors have been derived from consensus based research with various groups such as government, material suppliers and lobbyists. This research was carried out by BRE Global to establish the relative importance of each environmental issue.

The environmental weightings are as follows:

BREEAM Section	Weighting (%)
Management	12.0
Health and Wellbeing	15.0
Energy	15.0
Transport	9.0
Water	7.0

BREEAM Section	Weighting (%)
Materials	13.5
Waste	8.5
Land Use and Ecology	10.0
Pollution	10.0

BREEAM 2014 New Construction Pre-Assessment Report

2.0 Summary of Building Performance and Score Calculation

The proposed Oak Park Health & Wellbeing Campus currently achieves a score of 70.86% against the BREEAM 2014 New Construction Multiresidential criteria; this translates into an overall BREEAM rating of EXCELLENT.

The tables below illustrate how the BREEAM score has been calculated.

N.B. Due to an error in the BREEAM UK New Construction 2014 Pre-Assessment Estimator, issue Ene 09 (Drying Space) was not filtered out of the assessment. BRE have subsequently confirmed that this issue should not be included in a Care Home assessment. Whilst the targeted score shown below is 70.5%, the adjustment made from removing Ene 09 increases the target to **70.86%**.

BREEAM UK New Construction 2014 Pre-Assessment Estimator



Building details

Building name	Oak Park Health & Wellbeing Campus
Country	England
Building type (main description)	Multi-Residential Accommodation
Building type (sub-group)	Multi-Residential - Care home
Building floor area (GIA) m ²	4200
Building floor area (NIFA) m ²	4000
BREEAM scheme	New Construction
BREEAM version	2014 (SD5076)
BREEAM UK 2014 technical manual issue number	SD5076 Issue 1.0
Project type	New Construction (Fully fitted)
Assessment stage	Pre-Assessment
Location type	Medium urban (>25,000 population)
If applicable, does this industrial building have a heated or cooled operational area?	Option not applicable to building type
Commercial/industrial refrigeration and storage systems	Yes
Building user transportation systems (lifts and/or escalators)	Yes
Laboratory function/area and size category	No laboratory
Laboratory containment level	No laboratory
Fume cupboard(s) and/or other containment devices	No
Unregulated water uses present? (e.g. vehicle wash system, irrigation)	No
If applicable, will this healthcare building house inpatients?	Option not applicable to building type
If applicable, does this industrial building have an office area?	Option not applicable to building type
If applicable, does this building contain areas requiring SAP assessment?	No
If SAP used, what proportion of the building's total floor area (GIA) does it apply to?	

BREEAM 2014 New Construction Pre-Assessment Report

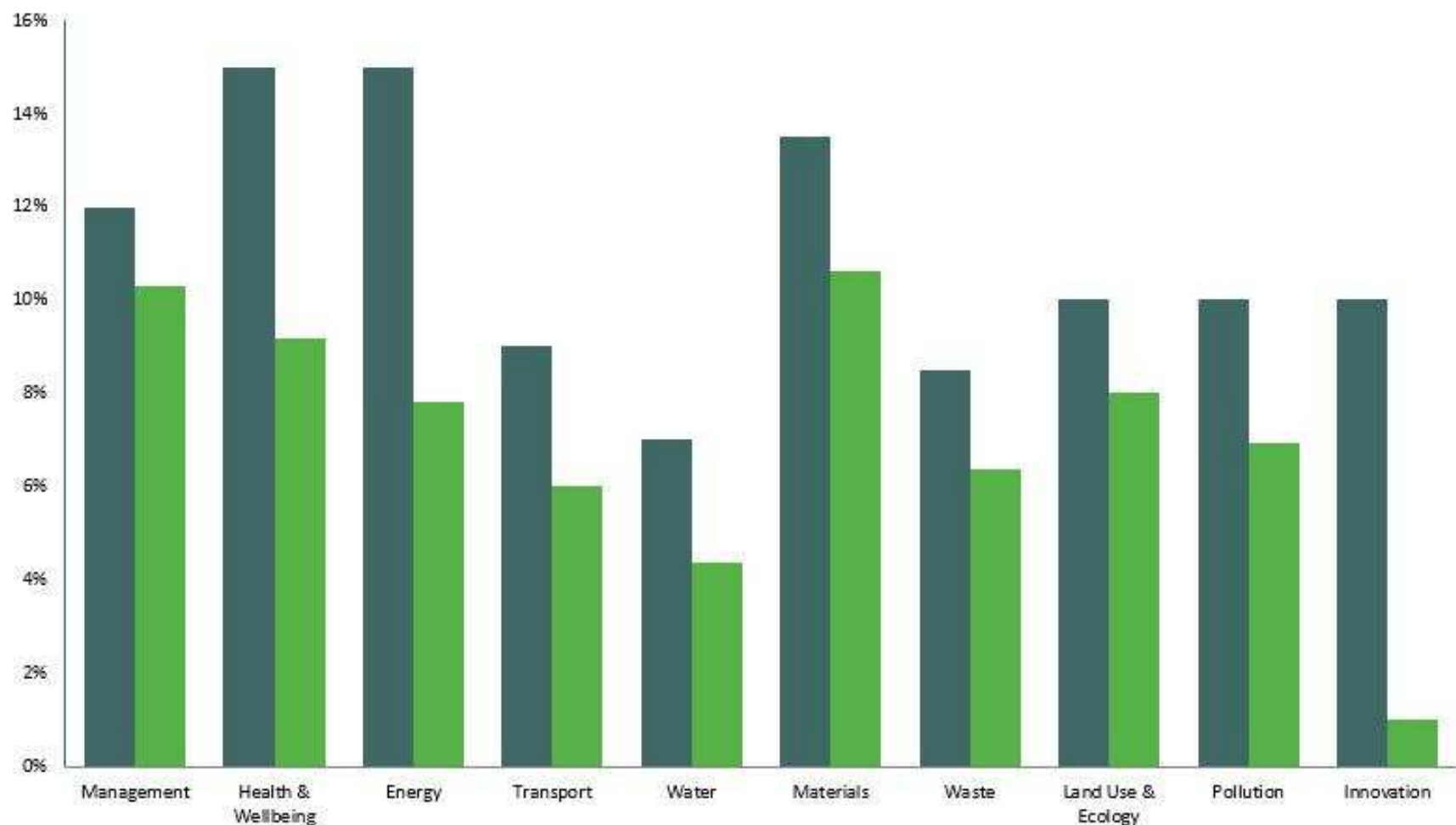
BREEAM UK New Construction 2014 Pre-Assessment Estimator: Indicative Rating & Building Performance



Overall Building Performance

Building name	Oak Park Health & Wellbeing Campus
Indicative BREEAM rating	Excellent
Indicative Total Score	70.5%
Min. standards level achieved	Excellent level

Building Performance by Environment Section



Environmental Section	Indicative no.			Section Weighting	Indicative Section Score
	No. credits available	credits Achieved	% credits achieved		
Management	21	18	85.7%	12.0%	10.3%
Health & Wellbeing	18	11	61.1%	15.0%	9.2%
Energy	25	13	52.0%	15.0%	7.8%
Transport	9	6	66.7%	9.0%	6.0%
Water	8	5	62.5%	7.0%	4.4%
Materials	14	11	78.6%	13.5%	10.6%
Waste	8	6	75.0%	8.5%	6.4%
Land Use & Ecology	10	8	80.0%	10.0%	8.0%
Pollution	13	9	69.2%	10.0%	6.9%
Innovation	10	1	10.0%	10.0%	1.0%

BREEAM 2014 New Construction Pre-Assessment Report

3.0 Comments Relating to the Pre-Assessment

The full output from the BREEAM 2014 New Construction Multiresidential assessment has been sent as a separate document and shows a breakdown of the individual credits that have been awarded resulting in a BREEAM rating of EXCELLENT.

The following section provides some comments relating to those credits already being pursued, and highlighted in yellow are where further additional credits could be targeted by the design team to improve the rating. Mandatory credits that must be achieved for an EXCELLENT rating have been outlined in grey.

	Description	Credits	Comments
--	-------------	---------	----------

3.1 Management

01	Project Brief and Design	Targeted	Total 4
	Stakeholder consultation (project delivery)	1	Consultation meeting has taken place with Paul Brand representing the contractor's interests. Meeting minutes need to be recorded to meet the requirements of the first credit.
	Stakeholder consultation (third party)	1	
	Sustainability champion (design)	1	
	Sustainability champion (monitoring progress)	1	AP is the sustainability champion for these stages.
02	Life Cycle Cost and Service Life Planning		Total 1
	Elemental Life Cycle Cost (LCC)	0	Life Cycle Costing not targeted.
	Component Level LCC plan	0	
	Capital cost reporting	1	Client is to report capital costs (£k/m ²) to BRE.
03	Responsible Construction Practices		Total 6
	PRE-REQUISITE: Legally harvested and traded timber	Y	Contractor must have ISO14001 or equivalent. Contractor <i>must have their own</i> Sustainability Champion. Considerate Constructors Scheme (CCS) score between 25 and 34, achieving a score of 5 in each of 5 sections. Minimum standard for Excellent. CCS score between 35 and 39, achieving a score of 7 in each of 5 sections. Contractor must record data on transport of materials from factory gate to site (including intermediate storage and distribution) AND transport of waste from site to disposal centre.
	Environmental management	1	
	Sustainability champion (construction stage)	1	
	Considerate Construction (compliance)	1	
	Considerate Construction (exceeded)	1	
	Monitoring of construction site impacts (energy and water)	1	
	Monitoring of construction site impacts (transport of materials and waste)	1	
	Exemplary Credit: Considerate Construction (exemplary)	0	

BREEAM 2014 New Construction Pre-Assessment Report

04	Commissioning and Handover		Total 4
	Commissioning and testing schedule and responsibilities	1	Testing schedule meeting the requirements of the first credit.
	Commissioning building services	1	
	Testing and inspecting building fabric (thermographic survey/ air tightness testing)	1	A thermographic study is to be commissioned and any defects to be rectified.
	Hand over (building user guide and training schedule)	1	A BREEAM compliant Building User guide and training schedule is required for the final credit. Minimum standard for Excellent.

05	Aftercare		Total 3 + 1 Exemplary
	Aftercare support	1	Support to be provided to building occupier for 12 months.
	Seasonal commissioning	1	Minimum standard for Excellent.
	Post occupancy evaluation (12 Months)	1	A third party survey of building occupants 12 months after occupancy including dissemination of information.
	Exemplary Credit: Post occupancy evaluation (3 Years)	1	3 years reporting of occupant satisfaction, and water and energy data to BRE on a quarterly basis.

3.2 Health and Wellbeing

01	Visual Comfort		Total 2
	Glare control	0	Not targeted as curtains won't comply.
	Daylighting	0	Daylight factors are not targeted due to room depths.
	View out	1	Credit available if 95% of relevant floor areas are within 7m of a window.
	Internal and external lighting levels, zoning and control	1	
	Exemplary Credit: Daylighting	0	Exemplary credit not targeted.

02	Indoor Air Quality		Total 4
	Indoor Air Quality (IAQ) plan	1	
	Ventilation	0	Ventilation credit cannot be targeted due to proximity of car park.
	Volatile Organic Compound (VOC) emission levels (products)	1	
	Volatile Organic Compound (VOC) emission levels (post construction)	1	PCR VOC credit requires testing <i>post</i> completion but <i>prior</i> to occupancy
	Potential for natural ventilation	1	Modelling can show potential to provide natural ventilation.
	Exemplary Credit: Volatile Organic Compound (VOC) emission levels (products)	0	

04	Thermal Comfort		Total 2
	Thermal modelling	1	
	Adaptability – for a projected climate change scenario	0	One potential credit if thermal model is re-run under different external temperatures.
	Thermal zoning and controls	1	

BREEAM 2014 New Construction Pre-Assessment Report

05	Acoustic Performance		Total 1
	Acoustic performance standards	1	1 credit targeted for airborne sound levels at least 3dB lower than Building Regulations.

06	Safety and Security		Total 2
	Safe access - pedestrians and cyclists, deliveries and parking	1	Delivery routes not to cross parking areas or pedestrian or cycle paths.
	Security of site and building	1	ALO to be appointed at Stage 2. ALO's recommendations to be implemented.

3.3 Energy

01	Reduction of Energy Use and Carbon Emissions		Total 6
	Energy performance	6	Six credits have been targeted based on the EPR for similar development. CHP & PV likely to be specified. (5 credits are the minimum standard for Excellent.)
	Exemplary credits: Zero Regulated Carbon or Carbon Negative	0	Exemplary credits feasible.

02	Energy Monitoring		Total 1
	Sub-Metering of major energy consuming systems	1	Sub-metering credit is minimum standard for Excellent level.

03	External Lighting		Total 1
	Lamp/luminaire efficiency and lighting control	1	Specify lights with minimum 60lm/cW. All fittings to be automatically controlled.

04	Low Carbon Design		Total 2
	Passive design analysis	1	CPW can complete passive design report as required.
	Free cooling	0	Free cooling credit not targeted due to inclusion of mechanical vent.
	Low Zero Carbon feasibility study	1	CPW to carry out LZC feasibility study.

05	Energy Efficient Cold Storage		Total 0
	Refrigeration energy consumption	0	A walk-in cold store is present. Credits not targeted due to complexity of requirements.
	Indirect greenhouse gas emissions	0	

06	Energy Efficient Transportation Systems		Total 3
	Energy consumption	1	Compliant analysis required for first credit.
	Energy efficient features	2	If regenerative drives will save energy they must be specified.

08	Energy Efficient Equipment		Total 0
	Standards or controls used to minimise energy consumption or environmental impact	0	Not targeted as heat recovery or greywater recycling would be needed in the laundry.

09	Drying Space		Total 0
	Sufficient secure area available for drying clothes	0	This credit has been confirmed by BRE as being non-applicable to this assessment.

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3.4 Transport

01	Public Transport Accessibility		Total 2 Buses run down Petersfield Rd & Crossland Drive. Havant railway station is within 1000m.
	Accessibility Index (AI)	2	
02	Proximity to Amenities		Total 1 Distance must be measured via a safe walking route.
	Building is close to a range of amenities	1	
03	Cyclist Facilities		Total 1 One credit targeted for cycle racks (1 for every 10 staff) and wheelchair/electric buggy storage/charging points.
	Provision of cycle storage, or cycle storage and other cyclist facilities	1	
04	Maximum Car Parking Capacity		Total 1 Credit dependent upon number of building users.
	Car parking capacity is limited to encourage other forms of transport	1	
05	Travel Plan		Total 1 Travel plan to be developed during feasibility stages and must make reference to disabled building users.
	A travel survey and plan have influenced project design	1	

3.5 Water

01	Water Consumption		Total 2 One credit is minimum standard for Excellent level. No rainwater harvesting/greywater recycling, therefore additional credits unlikely.
	The water consumption (litres/person/day) has been compared with targets	2	
	Exemplary Credit: Improvement by 65% or more on the baseline performance	0	
02	Water Monitoring		Total 1 Water meter on the mains supply is a minimum standard for Excellent level.
	Consumption is monitored by a suitable meter (and, if appropriate, sub meters)	1	
03	Water Leak Detection		Total 2 Criteria only applicable to communal WCs, not residential or ensuite facilities.
	Leak detection system	1	
	Flow control devices	1	

3.6 Materials

01 C	Life Cycle Impacts		Total 4 Potential for 2 additional credits dependent upon materials specified.
	The Green Guide is used to assess the environmental life cycle impact of materials used	4	
	Exemplary Credit: Points scored Green Guide or life cycle assessment software reach exemplary level	0	

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02	Hard Landscaping and Boundary Protection		Total 1
	The Green Guide rating of 80% of these materials (by area) should be A or A+	1	
03	Responsible Sourcing of Materials		Total 3 Timber from a legal source is a minimum standard for Excellent level. One potential credit for higher percentage of responsibly sourced materials.
	PRE-REQUISITE: Legally harvested and traded timber	Y	
	Sustainable procurement plan	1	
	Responsible sourcing of materials	2	
	Exemplary credit:: 70+% of the available responsible sourcing points are achieved	0	
04	Insulation		Total 1
	Embodied impact	1	
05	Designing for Durability and Robustness		Total 1 Degradation of building fabric from environmental and biological factors needs to be considered.
	Protecting vulnerable parts of the building, Protecting exposed parts of the building from material degradation	1	
06	Material Efficiency		Total 1 BREEAM compliant reports required at every RIBA stage 1-5 (inclusive).
	Measures implemented to optimise the use of materials from design stage to end of life	1	

3.7 Waste

01	Construction Waste Management		Total 3 Two credits targeted for amount of construction waste (excluding demolition & excavation) generated. Waste figures are not to include waste from construction of Supported Living accommodation.
	Construction resource efficiency	2	
	Diversion of resources from landfill	1	
	Exemplary Credit: exceptional diversion from landfill and low waste production	0	
02	Recycled Aggregates		Total 0 Credit not targeted. Difficult to achieve in practice.
	Recycled aggregates	0	
	Exemplary Credit : Higher percentages of recycled aggregates used	0	
03	Operational Waste		Total 1 Minimum standard for Excellent. Recycling bins may be placed in a staff-only area if the communal space is not suitable.
	Operational waste	1	
05	Adaptation to Climate Change		Total 1 BREEAM complaint resilience appraisal required at RIBA stage 2.
	Structural and fabric resilience	1	
	Exemplary Credit: Responding to adaptation to climate change	0	
06	Functional Adaptability		Total 1 BREEAM complaint adaptation strategy required at RIBA stage 2.
	Functional adaptation strategy report and measures implemented	1	

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3.8 Land Use and Ecology

01	Site Selection		Total 1 75% of the development's footprint needs to be on land that was previously occupied by buildings or fixed surface infrastructure. Land is not contaminated.
	Previously occupied land	1	
	Contaminated land	0	
02	Ecological Value of Site and Protection of Ecological Features		Total 1 Initial Ecology Survey concludes the site is of some ecological value. Credit unavailable. Features of ecological value will be protected during construction.
	Ecological value of site	0	
	Protection of ecological features	1	
03	Minimising Impact on Existing Site Ecology		Total 2 No negative ecological change is a minimum standard for Excellent level. Ecologist to be appointed to report on plot types and species richness.
	Change in ecological value 1	1	
	Change in ecological value 2	1	
04	Enhancing Site Ecology		Total 2 Ecologist to be appointed and their recommendations to be followed. A large increase in plant species richness is targeted for the second credit.
	Ecologist's report and recommendations	1	
	Increase in ecological value	1	
05	Long Term Impact on Biodiversity		Total 2 The Contractor will be obliged to protect ecology and biodiversity on site.
	Ecologist appointed; management plan produced; contractor meets additional measures	2	

3.9 Pollution

01	Impact of Refrigerants		Total 0 Not targeted as refrigerants to be used in server room & treatment room, unlikely to comply with BREEAM requirements. One potential credit if each unit's refrigerant charge is less than 6kg.
	PRE-REQUISITE: All systems comply with BS EN 378:2008	-	
	Impact of refrigerant	0	
	Leak detection	0	
02	NO_x Emissions		Total 3 Three credits targeted for NO _x levels ≤40mg/kWh.
	Minimising NO _x emissions from heating and hot water	3	
03	Surface Water Run-Off		Total 4 One potential credit, although it is unlikely that 5mm can be retained onsite. Structural Engineer to confirm.
	Flood resilience	2	
	Surface water run-off PRE-REQUISITE: Appropriate consultant engaged	Y	
	Surface water run-off: Peak run-off not increased	1	
	Surface water run-off: Drainage failure will not cause flooding	1	
	Minimising watercourse pollution	0	

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04	Reduction of Night Time Light Pollution		Total 1
	Standards are followed and appropriate switching employed	1	Lighting to follow ILP guidelines.
05	Reduction of Noise Pollution		Total 1
	Noise from the building is controlled to prevent nuisance to neighbours	1	Acoustician to be appointed and any noise attenuation measures recommended to be installed.

3.10 Innovation

01	Innovation credits for exemplary performance in these issues:	Max 10	Total 1
	Man 03 Responsible construction practices	0	
	Man 05 Aftercare	1	See Man 05 comment.
	Hea 01 Visual Comfort	0	
	Hea 02 Indoor Air Quality	0	
	Ene 01 Reduction of Energy Use and Carbon Emissions	0	
	Wat 01 Water Consumption	0	
	Mat 01 Life Cycle Impacts	0	
	Mat 03 Responsible Sourcing of Materials	0	
	Wst 01 Construction Site Waste Management	0	
	Wst 02 Recycled Aggregates	0	
	Wst 05 Adaptation to Climate Change	0	

Code for Sustainable Homes

Design Pre-Assessment

Cover Sheet



Developer :	Ashley House plc	Site Name :	Extra Care/Supported Living Flats
Contact :		Site Address :	Oak Park
Email :		Area :	Havant
		Town :	Southampton
CSH Version :	Code Addendum (2014)	County :	Hampshire
CSH Reg :	RDL-0001014	Post Code :	
		Planning Authority :	City of Southampton
Required Rating :	Code Level 4 (68%)		
Total Plots :	99	Client / HA :	TBC

Assessor :	Jeremy Stacy	Job Ref Number :	ER27629 - Extra Care Home, Oak Park, Southampton
Telephone :	01908 747401	Issue Number :	1
Email :	jstacy@nhbc.co.uk	Date Of Issue :	18-Dec-14
Fax :	0844 633 0032		
Address :	NHBC House, Davy Avenue, Knowlhill, Milton Keynes, MK5 8FP	NOTE: Please use the above job ref number on all correspondence relating to this assessment	

Current Performance

SCORE ACHIEVED (based on worst case Achieved score at time of issue)	0.00%
PREDICTED POSSIBLE SCORE (based on worst case Achieved + Likely score at time of issue)	71.09%

Development Summary:

<i>This summary has been based on discussions held on Wednesday 17/12/14, at the offices of the Architects, Penoyre & Prasad, together with initial overall floor plans.</i>
<i>It shows the predicted credits considered likely and as further possibilities, for both an "Extra Care" and a "Supported Living" sample flat.</i>
<i>Detailed Action Lists will be produced in due course, showing what is needed to satisfy the Code Technical Guide evidence requirements, as the design progresses.</i>

On the following pages is an overview of the current scores of representative dwellings, and a list of required actions to fully achieve these scores. This information is split into the Achieved, Likely and Possible scores and actions. These designations are used as follows:

Achieved :	Credits are deemed ACHIEVED when the assessor has received sufficient compliant evidence to enable the credits to be fully awarded, for the stage of assessment being considered. No further action is required at this stage, unless design/specification details are changed.
Likely	Credits are deemed LIKELY when it is our understanding that the developer wishes to pursue these credits in order to obtain the desired rating. However, the assessor has NOT YET received sufficient compliant evidence to enable the credits to be fully awarded, for the stage of assessment being considered. Actions which need to be completed to enable the assessor to award the credits are detailed on the sheet titled Actions_L.
Possible	Credits are deemed POSSIBLE where the sum of Achieved plus Likely credits is falling short of the desired score. The assessor has identified some credits which the developer could pursue in order to improve the score. Should you wish to pursue any of these Possible credits, the Actions which need to be completed to enable the assessor to award the credits are detailed on the sheet titled Actions_P.

Disclaimer: The purpose of this document is to provide guidance to the developer/design team. It is not a Code for Sustainable Homes certificate and does not guarantee that a specific CSH rating will be achieved for any or all of the dwellings referred to.

Code for Sustainable Homes Action List

Design Stage Assessment

MANDATORY ITEMS

This sheet presents the criteria and actions for the MANDATORY parts of the CSH assessment, and the plots each action relates to. Note: If Mandatory requirements are not met this may result in a ZERO Star rating or, for credit-scoring mandatory items, restrict the achievable CSH Level .

Issue	Mandatory Requirement	Action Requirement	Applicable Plots
Ene1	Under issue Ene1 there is a mandatory requirement at each CSH Level for a minimum % improvement in Dwelling Emission Rate (DER) over Target Emission Rate (TER) to be achieved. If this is not achieved, then the achievable CSH Level is restricted. The minimum % improvement in DER over Part L 2013 TER required for each CSH Level is: Level 4 19%	Refer to Likely Actions: As this is a 'credit-scoring' mandatory item, please refer to the Likely Actions sheet for the required action(s) for the targeted CSH Rating.	All Plots
Wat1	Under issue Wat1 there is a maximum calculated potable water usage which must not be exceeded set as a mandatory requirement at each CSH Level. If this is not achieved, then the achievable CSH Level is restricted. The maximum potable indoor water usage required for each CSH Level is: Levels 3-4 105 litres/person/day	Refer to Likely Actions: As this is a 'credit-scoring' mandatory item, please refer to the Likely Actions sheet for the required action(s) for the targeted CSH Rating.	All Plots
Mat1	Under issue Mat1 there is a minimum mandatory requirement which must be satisfied for all CSH Levels: At least 3 out of the 5 key building elements must be D-rated or better in the "Green Guide" - Roof, External Walls, Internal Walls, Floors, Windows. For reference, the Green Guide can be accessed online at www.thegreenguide.org.uk.	Refer to Likely Actions: Fulfilling the action set out in Likely Actions for this issue will usually result in the mandatory requirement being met. Your assessor will advise you if they have any specific concerns regarding achieving this requirement on this development.	All Plots
Was1	Under issue Was1 there is a minimum mandatory requirement which must be satisfied for all CSH Levels: An adequate external space must be allocated for waste storage. This must be accessible and must be sized to accommodate sufficient volume of waste (refer to action text for sizing).	The space allocated for waste storage for each dwelling is able to accommodate containers according to the larger of the following two volumes: 1) at least the minimum volume recommended by British Standard 5906:2005 based on a maximum collection frequency of once per week. This is 100 litres volume for a single bedroom dwelling, with a further 70 litres volume for each additional bedroom. 2) the TOTAL volume of the external waste containers provided by the Local Authority (containers MUST NOT be stacked) Provide completed Checklist IDP, confirming the Inclusive Design Principles necessary to provide access and usability to the amenities required under Was1 are incorporated for each dwelling.	All Plots

Code for Sustainable Homes Action List

Design Stage Assessment

MANDATORY ITEMS

Sur1	Under issue Sur1 there is a mandatory requirement for surface water drainage design which must be satisfied for all CSH Levels. Reduced Area: Where there is NO increase in the Man-Made impermeable area for the developed site compared to pre-development, Criterion 1 and 2 below do not apply. Criterion 3 must still be met. Where there is an increase in the man-made impermeable area, the following 3 Hydraulic Control Criteria must be satisfied : 1) the peak rate of run-off over the development lifetime must be no greater for the developed site than it was for the pre-development site. This should be demonstrated for the 1-year and 100-year return period events; Criterion 2: 2-A) the volume of run-off is no greater post-development than it would have been pre-development, for the 100-year 6-hour event. If there is additional volume then this must be prevented from leaving site by using infiltration or other SuDs techniques (as defined in CSH Technical Guide - p. 134); 2-B) Where it is not possible to prevent all of the additional volume (in 2A) from leaving site, then the post-development peak rate of run-off must be reduced to the "limiting discharge". The limiting discharge is the highest of the following: a) the pre-development 1-year peak flow rate b) mean annual flood flow rate, Qbar c) 2 litres/second/hectare Where the limiting discharge requires a flow rate of less than 5 l/s at a discharge point, a flow rate of up to 5 l/s may be used where required to reduce the risk of blockage. Criterion 3: 3) designed such that flooding of the property would not occur in the event of local drainage system failure (caused by extreme rainfall or lack of maintenance).	Provide a report from appropriately qualified professional containing all information necessary to demonstrate compliance with Criterion 1 and 2. The report should include: * areas of permeable and impermeable surfaces on the site pre- and post-development * details of the permeability characteristics of the site * peak rate of run-off (l/s) for the 1 year & 100 year events, pre- and post-development (including an allowance for climate change over the development lifetime) * detailed documentary evidence showing the methods used to reduce the post-development peak rate * the pre-development volume of run-off (m3) for the 100 year 6 hour event * the additional volume of run-off for this event caused by the development without mitigation measures (infiltration / SuDS) * the additional volume with mitigation measures * information to demonstrate that the hierarchical approach to reducing the additional volume of run-off has been followed * information on all of the calculation methods used, as well as summary results. NB: Guidance on calculation procedures etc to be used for this issue is given in the CSH Technical Guide, November 2010 (pages 136-140). Note that current Planning Policy Guidance and the NPPF can also be considered as one of the key publications referred to for guidance (not referred to in the Technical Guide published in November 2010, but now accepted as a valid standard). * A Flood Risk Assessment confirming the risk of flooding from all sources of flooding * Drawings showing the pre-development drainage for the site (natural or constructed) * Drawings showing the proposed drainage solution, system failure floor flow routes, potential flood ponding levels and ground floor levels. * Confirmation from the appropriately qualified professional that local drainage system failure would not cause an increase in the risk of flooding within dwellings either on or off site.	Whole Site
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Code for Sustainable Homes Action List

Design Stage Assessment

This sheet shows the Credits which are designated as LIKELY for each issue, by dwelling/dwelling type. Where some credits have already been Achieved for an issue, the credits shown here are the additional credits available if the specification is enhanced to achieve the LIKELY option (i.e. Actions set out for this issue on the Actions-L page(s) are fully satisfied).

			"Likely" Credits		"Possible" Credits	
Plot Number		Max Credits For Issue	Extra Care	Supported	Extra Care	Supported
Dwelling Type			Flat	Flat	Flat	Flat
Ene1	Dwelling Emission Rate (DER)	10	3.0	3.0	0.5	0.5
Ene2	Fabric Energy Efficiency (FEE)	9	7.0	7.0		
Ene3	Energy Display Devices	2	2	2		
Ene4	Drying Space	1			1	1
Ene5	Energy Labelled White Goods	2	1	1		
Ene6	External Lighting	2	2	2		
Ene7	Low/Zero Carbon (LZC) Technologies	2	2	1		
Ene8	Cycle Storage	2				
Ene9	Home Office	1	1	1		
approx. Ene credit value		1.17%	21.13%	19.96%	1.76%	1.76%
Wat1	Indoor Water Use	5	3	3		
Wat2	External Water User	1			1	1
approx. Wat credit value		1.50%	4.50%	4.50%	1.50%	1.50%
Mat1	Environmental Impact of Materials	15	8	8		
Mat2	Sourcing Materials - Basic Building Elements	6	4	4		
Mat3	Sourcing Materials - Finishing Elements	3	2	2		
approx. Mat credit value		0.30%	4.20%	4.20%	0.00%	0.00%
Sur1	Management of Surface Water Runoff	2			1	1
Sur2	Flood Risk	2	2	2		
approx. Sur credit value		0.55%	1.10%	1.10%	0.55%	0.55%
Was1	Storage of Non-recyclable / Recyclable Waste	4	4	4		
Was2	Construction Site Waste Management	3	3	3		
Was3	Composting	1			1	1
approx. Was credit value		0.80%	5.60%	5.60%	0.80%	0.80%
Pol1	Global Warming Potential of Insulants	1	1	1		
Pol2	NOx Emissions	3	3	3		
approx. Pol credit value		0.70%	2.80%	2.80%	0.00%	0.00%
Hea1	Daylighting	3	2	2		
Hea2	Sound Insulation	4	1	1	2	2
Hea3	Private Space	1			1	1
Hea4	Lifetime Homes	4			4	4
approx. Hea credit value		1.17%	3.50%	3.50%	8.16%	8.16%
Man1	Home User Guide	3	3	3		
Man2	Considerate Constructors Scheme	2	2	2		
Man3	Construction Site Impacts	2	2	2		
Man4	Security	2	2	2		
approx. Man credit value		1.11%	10.00%	10.00%	0.00%	0.00%
Eco1	Ecological Value of Site	1	1	1		
Eco2	Ecological Enhancement	1	1	1		
Eco3	Protection of Ecological Features	1	1	1		
Eco4	Change in Ecological Value of Site	4	2	2		
Eco5	Building Footprint	2				
approx. Eco credit value		1.33%	6.66%	6.66%	0.00%	0.00%
Total Likely Score			59.49%	58.32%	12.77%	12.77%
TotalLikely + Achieved Score			59.49%	58.32%	72.26%	71.09%
Target CSH Level			Level 4	Level 4	Level 4	Level 4
Score Required For Target			68%	68%	68%	68%
Remaining Score Required			8.51%	9.68%	0.00%	0.00%

Code for Sustainable Homes Action List

Design Stage Assessment

BASIS OF LIKELY CREDITS

This sheet presents how to achieve credits designated as LIKELY, and shows the total number of credits associated with each Option (NOTE: there may be more than one Action which must be satisfied to achieve an Option).

The 'Credits' and 'Available Score' columns are default values for the associated option. Where a dwelling has already Achieved credits for an issue, the remaining credits available can be seen in the LIKELY CREDITS table.

Issue	Option	Credits	Action required (Likely)	Applicable Plots	Available score (%)
Ene1	At least 19% improvement of DER over ADL2013 TER	3.00	This credit is based on the SAP Ratings and 3 credits are obtained by meeting the mandatory requirement for Code Level 4. [For dwellings within a single block, scores can be averaged.] Note - a further 0.5 credits (worth0.58%) for 25.5% improvement has been included as possible.	All Plots	3.52%
Ene2	Fabric Energy Efficiency ≤46 (end terrace), ≤39 (mid terrace/flat)	7.00	This credit is based on the SAP Ratings - 7 credits are predicted based on similar developments with a "fabric first" approach. [For flats within a single block, scores can be averaged - multiple blocks each need to be assessed separately.] Note, there is now a Part L requirement that the fabric meets a set target (based on dwelling form) but this does not guarantee any particular FEE level.	All Plots	8.22%
Ene3	Electricity & Primary Heating fuel consumption displayed on a correctly specified energy display device	2.00	This credit is based on both Electricity and Primary Heating Fuel consumption data being displayed on "correctly specified" energy display device(s), which are dedicated to the dwelling. [For communal systems, heat metering will be required for individula dwellings.] The devices must comprise a self-charging sensor(s) fixed to the incoming mains supply/supplies, to measure energy consumption data and transmit it to a visual display unit. As a minimum the visual display unit must be capable of displaying the following information: - local time - Current mains energy consumption (kilowatts and kilowatt hours) - Current emissions (g/kg CO2) - Current tariff - Current cost (in pounds and pence). For pre-payment customers this should be ‘real time’ data and for ‘credit’ paying customers cost should be displayed on a monthly basis - Display accurate account balance information (amount in credit or debit) - Visual presentation of data (i.e. non-numeric) to allow consumers to easily identify high and low level of usage - Historical consumption data so that consumers can compare their current and previous usage in a meaningful way. This should include cumulative consumption data in any of the following forms day/week/month/billing period.	All Plots	2.35%

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Design Stage Assessment

BASIS OF LIKELY CREDITS

Ene5	Energy labelling advice supplied, no/not all white goods provided	1.00	This credit is based on no white goods considered under Ene5 being supplied to the dwellings (i.e. fridge, freezer, fridge-freezer, washing machine, washer-dryer, tumble-dryer, dishwasher). Information on the EU Energy Efficiency Labelling Scheme must be supplied to each dwelling at handover. If any white goods are to be provided as a purchase option to any dwellings these must meet the energy criteria for Ene 5 (as well as required water efficiency for Wat 1 - assessor to advise further where required).	All Plots	1.17%
Ene6	No security lighting, space lighting by energy efficient lamps with control system	2.00	This credit is based on all external space lighting being by energy efficient lamps, and adequately controlled to reduce unnecessary operation. For flats, fittings serving the following areas should be included in the assessment of space lighting: - Communal lobbies, main external entrances, internal entrance porches, external steps and pathways to be equipped with energy efficient lamps and to be controlled by a time clock or daylight sensor. - Hallways, landings, stairwells, internal corridors and garages to be equipped with energy efficient lamps that are controlled by push button time switches/PIR sensors or equivalent. - Specific communal rooms (laundries, cycle and other storage spaces etc) to be equipped with energy efficient lamps and manual switching or occupant sensors. It has been assumed that no burglar security lighting is being provided.	All Plots	2.35%
Ene7	15% reduction in CO2 emissions resulting from LZC technologies	2.00	This credit is based on the SAP Ratings and 2 credits are attained by gas CHP communal systems. Where communal PV is used the benefit is allocated by the SAPs on a floor area basis and this may lead to more exposed units falling short of the 10% need for at least one credit All specified low and zero carbon technologies must be certified under either: a) Microgeneration Certification Scheme (MCS) - OR b) for CHP schemes above 50kWe, CHPQA standard.	All relevant Plots	2.35%

Code for Sustainable Homes Action List

Design Stage Assessment

BASIS OF LIKELY CREDITS

Ene9	Home office provided with compliant services and 1.5%DF	1.00	This credit is based on each dwelling being supplied with a home office area in a suitable room. For one and two bedroom properties this can be in the living room, dining room or bedrooms, for three bedroom properties and larger the home office must be in a secondary bedroom The home office area is required to have two double electrical sockets and a phone point with Broadband, suitably located, with space for a desk (1.8m of wall) and a window for ventilation. A home office provided in the master bedroom, living or dining room must allow the normal furniture and the proposed home office to be accommodated. Daylight Factor calculations must demonstrate the home office will have a daylight factor of at least 1.5%.	All Plots	1.17%
Wat1	Internal Potable water use less than 105 litres per person per day	3.00	It has been assumed that the dwellings will meet the mandatory requirement and use less than 105 litres of potable water per person per day (internally). Calculations are based on capacity / flow rate of the following : - WC - volume (full / part flush) - Kitchen sink tap flow rates - Wash hand basin tap flow rates - Shower flow rate / manufacturer's name and product - Bath capacity to overflow (litres) - Washing machine manufacturer and model (where supplied) - Dishwasher manufacturer and model (where supplied) - Confirm whether water softener is to be provided The hot and cold water system must be designed to avoid the risk of microbial contamination in line with best practice.	All Plots	4.50%
Mat1	8 credits	8.00	This credit is based on the Green Guide ratings derived from theproposed materials (manufacturer and product) and construction of the following elements. - Pitched roof - Flat roof - All types of External walls - Internal non-load bearing partitions - Internal load bearing partitions - Separating / Party walls - Ground Floor construction - Upper floors to houses / maisonettes - Separating / Party floors - Windows	All Plots	2.40%

Code for Sustainable Homes Action List

Design Stage Assessment

BASIS OF LIKELY CREDITS

Mat2	4 credits	4.00	This credit is based on the manufacturer and product for the basic building element materials (frame / ground floor / upper floors / separating floors / roof / external walls / internal walls / separating walls / foundation / substructure and staircase). As a minimum, details will be needed for screeds / floor beams / concrete planks / plasterboard / render / upper floor joists / upper floor boarding / bricks / blocks / mortar / studwork / staircases / roof coverings - so that relevant CoC / BES6001 / EMS certificates can be used to carry out the necessary calculations on each "superstructure" to confirm the award of credits. Where any non-certified timber is used it must be confirmed that: - All timber will come from a legal source - All timber species and sources to be used in the development are not listed on any of the CITES appendices for endangered or threatened species Appendix I, II, or III*). * Or in the case of Appendix III of the CITES list, it will not be sourced from the country seeking to protect this species as listed in Appendix III. Where materials are re-used the following evidence will be required : Documentation stating specific materials to be re-used (supplier information or a letter from the developer is acceptable) Where materials are recycled the following evidence will be required : Documentation stating specific recycled materials AND A letter of intent to use suppliers who can provide an EMS certificate (or equivalent) for the recycling process.	All Plots	1.20%
Mat3	2 credits	2.00	This is similar to Mat 2, considering details for Staircase / Window / External and Internal Door / Skirting / Panelling / Furniture / Fascias/ frame.	All Plots	0.60%
Sur2	Low Flood Risk	2.00	This credit is based on a Flood Risk Assessment (prepared according to good practice guidance as outlined in PPS25 Development and Flood Risk or current Planning Policy Guidance and NPPF) confirming that there is a low risk of flooding from all sources.	All Plots	1.10%
Was1	Internal Storage & LA collect	4.00	This credit is based on providing dedicated, non obtrusive internal storage for recyclable household waste within a kitchen cupboard / adjacent to the kitchen. note: Free-standing recycling bins placed directly on the floor or in a cupboard do not comply. The storage shouldl comprise 3 individual bins and ensure an overall total capacity of 30 litres, with no individual bin smaller than 7 litres. Where flats are present the developer to seek written agreement from the local authority that they will collect from the flats and are satisfied with access arrangements to any communal bin store.	All Plots	3.20%

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Design Stage Assessment

BASIS OF LIKELY CREDITS

Was2	≥85% of non-hazardous construction waste diverted	3.00	This is based on the provision of a compliant SWMP containing the appropriate benchmarks, commitments and procedures for waste minimisation and diversion from landfill in line with the criteria and with Checklists Was2a, Was2b and Was2c. This should confirm that at least 85% by weight or by volume of the non-hazardous construction waste generated by the project will be diverted from landfill. If the SWMP is not yet available, provision of written confirmation from the developer that the SWMP will include the above would be acceptable.	All Plots	2.40%
Pol1	All insulation materials have Global Warming Potential less than 5	1.00	This credit is based on all thermal and acoustic insulation used in the dwelling having a Global Warming Potential of less than 5.	All Plots	0.70%
Pol2	NOx Less than 40	3.00	This credit is based heating and hot water being produce by systems/equipment that have an average dry NOx level (at 0% O2 excess) of less than or equal to 40 mg/kWh. For CHP systems credits are based on the NOx emissions per unit of heat supplied (mg/kWh heat) and the NOx emissions per unit of electricity generated (mg/kWh elec).	All Plots	2.10%
Hea1	Dwelling has a view of the sky and living spaces DF of 1.5%	2.00	This crediot is based on calculations using room dimenmsions and window glazing areasProvide demonstrating that dwellings will have a view of the sky from all habitable rooms and dwelling living spaces will have a DF of at least 1.5%.	All Plots	2.33%
Hea2	PCT -3 dB over building regs	1.00	This credit is based on separaing walls and floors being designed to provide airborne sound insulation values that will be at least 3dB higher, and impact sound insulation values that will be at least 3dB lower, than the performance standards set out in the Building Regulations for England and Wales, Approved Document E (2003 Edition, with Amendments 2004). Note - 5dB improvement would gain an extra 2 credits (2.34%) and has been included as possible.	All Plots	1.17%
Man1	Home User Guide - Parts1&2 of Man1 Checklist	3.00	This credit is based on a Home User Guide being provided to the ocupants of each dwelling, including all the areas listed in Parts One and Two of the Man1 checklist and made available in an appropriate format for all users. (such as foreign languages, Braille, large print or audio cassette/CD)	All Plots	3.33%
Man2	JAN 2013 Onwards CCS SCHEME - score of 35 or over	2.00	This credit is based on a commitment to register and comply with the Considerate Constructors Scheme and achieve formal certification under the scheme with a score of 35 points with at least 7 points in each section.	All Plots	2.22%
Man3	at least 4 items from the list A-F	2.00	This credit is based on at least four of the List A-F in Man3 checklist being implemented on site, e.g. monitoting water and electricvity usage and best practice in respect of air and water pollution.	All Plots	2.22%

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BASIS OF LIKELY CREDITS

Man4	Complies with Section 2 from "Secured by Design - New Homes"	2.00	This crediyt is based on following the advice provided by the ALO/CPDA from the local police to ensure the requirements of "Section 2 - Physical Security of Secured by Design - New Homes" are met.	All Plots	2.22%
Eco1	Ecologist credit awarded if features protected	1.00	This credit is based on the site being considered of low ecological value by a suitably qualified ecologist.	All Plots	1.33%
Eco2	Enhanced ecology	1.00	This credit is base on implementing 100% of key recommendations and 30% of additional recommendations made by the ecologist to enhance the ecology.	All Plots	1.33%
Eco3	Ecologist protected	1.00	This credit is based on protecting all feature of ecological value identified by a suitably qualified ecologis	All Plots	1.33%
Eco4	Species change between -3 and +3	2.00	This credit is based on a neutral change in Ecological value (between -3 and +3 per hectare.) It might be possible to gain extra credits but this would depend on assessment by a suitably qualified ecologist and cannot be predicted for this site.	All Plots	2.67%

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Design Stage Assessment
BASIS OF POSSIBLE CREDITS

This sheet presents further credits designated as POSSIBLE, where no credits have yet been included as likely.

The 'Credits' and 'Available Score' columns are default values for the associated option. Where a dwelling has already Achieved credits for an issue, the remaining credits available can be seen in the POSSIBLE CREDITS table.

Issue	Option	Credits	Action required (Possible)	Applicable Plots	Available score (%)
Ene4	Private Internal drying line with adequate ventilation	1.00	This credit is based on providing a secure internal drying space for each dwelling, to hold a minimum of 4 metres of line for each one or two bedroom dwelling; (e.g.tidy-drier over the bath). The space is to be heated with controlled intermittent extract ventilation, which achieves a minimum extract rate of 30 l/s and meets the requirements for control for intermittent extract ventilation defined in Approved Document F.	All Plots	1.17%
Wat2	Private gardens with water butts/rainwater harvesting system	1.00	This credit is based on providing each dwelling with a water butt in its priavte external space. Note, wher the space is a balcony, a water but is not required and the credit can be awarded by default.	All Plots	1.50%
Sur1	Appropriate level of treatment for run-off from all hard surfaces	1.00	This credit is based on the run-off from all hard surfaces receiving an appropriate level of treatment in accordance with The SuDs Manual (CIRIA C697, 2007) to minimise the risk of pollution. This may be provided by infiltartion through permeable paving or holding in swales.	All Plots	0.55%
Was3	Communal/commun ity composting scheme	1.00	This credit is based on providing a wheelchair accessible, communal composting bin facility, that will have suitable management and be licenced if required. Note - there also needs to be a dedicated space within the kitchen for a caddy of at least 7 litres capacity, e.g. on a worktop (note: the container does not have to be supplied).	All Plots	0.80%
Hea3	Private outdoor space with inclusive access and usability	1.00	This credit is based on the provision of a wheelchair accessible private outdoor space, with a minimum 1.5m² provided per bedroom.	All Plots	1.17%
Hea4	Fully Lifetime Homes Compliant	4.00	This credit is based on compliance with all 16 of the Lifetime Homes design criteria.	All Plots	4.67%