

ENERGY AND SUSTAINABILITY STATEMENT



PROPERTY ADDRESS

No 8 POLYGON ROAD,
MANCHESTER,
M8 5DD

DATE

May 2021

PREPARED BY

EAL Consult



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1. EXECUTIVE SUMMARY

This Sustainability statement has been prepared to support the proposed works at No 8 Polygon Road in Manchester, including the erection of a 4 storey building, and is hereafter referred to as Proposed Development. The strategy highlights how the Proposed Development will promote sustainability through both design and operation and summarises the relevant regulatory and planning policies applicable and how the relevant policy targets will be addressed and achieved.

The strategy responds to the UK Planning and regulatory framework, and Manchester's Local Development Framework and Core Strategy 2012 to 2027.

In accordance with the Local's Authority requirement, this statement outlines an overall commitment to meet the planning requirement of BREEAM 'Very Good' through an appropriate and efficient use of energy, water, materials, minerals, and other natural resources. Through the adoption of a 'Fabric First' principle, the proposed development will seek to enhance Roof, Wall and Floor insulation while improve heating and lighting efficiencies in comparison to the standard requirements of Approved Document Part L1A 2013 (with 2016 amendments).

The methodology and measures used are outlined below:

- Newly constructed thermal elements will meet the standards as set out in Building Regulations Part L1A
- Doors and windows will meet the standards set out in Building Regulations Part L1A – 2.35
- Installation and use of an efficient boiler

Material and waste management:

- Minimising the use of virgin materials during construction by recycling and reusing where feasible.
- Low waste benchmark levels will be targeted during construction with requirements identifying that the diversion of waste from landfill is to be achieved by the contractor.

Recommendation and Results:

This report demonstrates that the proposed Flats by incorporating the measures above can achieve an average carbon emission reduction of **42.1% with the use of: a) a Heatpump System and b) a PV System**

The following tables demonstrate the carbon emissions reduction, based on 10 flats which have been used as samples for this assessment.

Table 1. Emission Rate Comparison

Building	Sample Flat	Proposed Flat		CO2 Reduction %	PV kWp per Flat
		TER	DER		
No 8 Polygon Road	LGF1	35.94	21.16	41.1	0.65kWp
	LGF2	25.78	14.98	41.9	0.65kWp
	GF2	22.33	13.01	41.7	0.60kWp
	GF5	30.29	17.61	41.9	0.65kWp
	GF7	28.29	16.22	42.7	0.50kWp
	FF2	34.12	19.95	41.5	0.65kWp
	FF7	23.29	13.49	42.1	0.50kWp
	SF1	27.13	15.70	42.1	0.60kWp
	TF1	28.59	16.10	43.7	0.60kWp
	TF2	26.14	15.15	42.0	0.65kWp

SAP methodology and Building regulations Part L 2013 have been used in the assessment

Sustainable Design and Construction: Sustainable Design and Construction measures incorporated in the development are in accordance with Manchester Council Local Plan (2012 to 2027) and Manchester Supplementary Planning Document (2007).

Energy Use: Energy efficiency measures such as High Efficacy Lighting and use of 100% energy efficiency lighting has been proposed.

Pollution: Air, Noise and Light: Measures to reduce pollution during construction will be included in the project management brief. The development could be registered under Considerate Constructors Scheme. The development will be naturally ventilated with good internal air quality. Good indoor air quality will be achieved through sustainable building techniques and the use of products with low Volatile Organic Compounds (VOCs). Robust details could be used to achieve good levels of sound insulation. The development is also designed to provide good levels of daylight for its occupants.

Transport: Internal storage for bicycles has been incorporated in the design.

Improving Resource Efficiency: The development has been designed to meet a target of 110 litres of water per person per day (including an allowance of 5 litres or less per person per day for external water consumption). A Site Waste Management Plan will be in place from the demolition stage, which will include targets for re-use and recycling.

Additional Notes: The proposed development forms part of an existing Building and certain restrictions may be in place.

BREEAM: An initial assessment has been carried out, which demonstrates that the proposed development can achieve 72.57% in line with the Council's requirement of a 'Very Good' rating.

2. INTRODUCTION:

This energy assessment outlines the energy demand from the development together with the associated CO₂ emissions, using the present Building Regulations Part L as a baseline. It demonstrates how the emissions from energy use in the development will be reduced through energy efficiency measures.

The proposed scheme is required to make carbon emission reduction principles in accordance with the UK Planning and regulatory framework, and Manchester's Local Development Framework and Core Strategy 2012 to 2027.

The methodology employed to determine the potential CO₂ savings is in accordance with the three-step Energy Hierarchy.

- **Be Lean** - Improve the energy efficiency of the scheme;
- **Be Clean** - Supply as much of the remaining energy requirement with low carbon; technologies such as district heating if available or combined heat and power (CHP); and
- **Be Green** - Offset a proportion of the remaining carbon dioxide emissions by using renewable technologies.

The government approved Standard Assessment Procedure (SAP) methodology software (2013) has been used to determine the CO₂ emissions and energy requirements. It compares CO₂ emissions from regulated energy use (DER) with those of an equivalent dwelling built to Part L1A 2013 (TER), a notional dwelling of the same size and shape. These calculations do not include emissions from cooking or appliances.

Opportunities for incorporating features into the development that contribute to the objectives of sustainable development were explored during the design process, to ensure that where possible, the proposals achieve best practice.

Site description:

The site is located on the corner of Polygon Road and Crumpsall Lane. The proposal includes the demolition of the existing later addition of the building and erection of a 4 storey building to create apartments.



Figure 1 - Site Plan

3. PLANNING POLICY CONTEXT

National Planning Policy Framework 2019 – emphasised the concept of sustainable development by encouraging local authorities to adopt proactive strategies to mitigate and adapt to climate change. It recommends the move to a low carbon future by:

- Planning new development in locations and ways, which reduce greenhouse gas emissions;
- Actively supporting energy efficiency improvements to existing buildings; and
- When setting any local requirement for a building's sustainability do so in a way consistent with the Government's zero carbon buildings policy and adopts nationally described standards.

The government's Energy Policy, including its policy on renewable energy, is set out in the Energy White Paper. This aims to put the UK on a path to cut its carbon dioxide emissions by 60% by 2025. As part of the strategy for achieving these reductions the White Paper sets out, the Government's target to generate 20% of UK Electricity from renewables by 2020.

Manchester, Core Strategy – 2012 to 2027.

Policy EN4 – Reducing CO₂ emissions by enabling low and zero carbon development

The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO₂ emissions, and rising fossil fuel prices, through the following actions:

- All development must follow the principle of the Energy Hierarchy, being designed:
 - to reduce the need for energy through design features that provide passive heating, natural lighting and cooling
 - to reduce the need for energy through energy efficient features such as improved insulation and glazing
 - to meet residual energy requirements through the use of low or zero carbon energy generating technologies
- Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.
- Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.
- Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.
- The use of building materials with low embodied carbon in new development and refurbishment schemes.

Policy EN6 – Target Framework for CO₂ reductions from low or zero carbon energy supplies

Applications for residential development of 10 or more units and all other development over 1,000 sqm will be expected as a minimum to meet the target shown in Tables 12.1 or 12.2, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO₂ emissions for all phases of the development.

Developments smaller than the above threshold, but involving the erection of a building or substantial improvement to an existing building will also be expected to meet the minimum target, where viable, but will not be expected to submit an energy statement.

The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).
- Target 2 Electricity intense areas: Locations where the predominant building type has an all-electric fit-out such as retail units and leisure complexes.
- Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical.

Policy EN7 – Energy Infrastructure Opportunities

There will be a general presumption in favour of low and zero carbon decentralised energy schemes, subject to the following considerations:

- That any new generating plant capable of producing heat and cooling as well as electricity should be located in a way that facilitates future connection to a local distributed energy system.
- That any energy centre, including generating plant, standby/boiler plant and substations, shall be located and designed to a high quality so as to integrate with and contribute to the townscape.
- Biofuels should be obtained from sustainable sources and processes and in a way that minimises transport impacts, following a sequential approach in order to minimise CO2 emissions – firstly prioritising local and regional sources, followed by national, European and international.
- Consideration should be given to biofuel delivery by rail and waterways where possible. Where large-scale fuel or feedstock delivery is required by road the energy centre must be located in or adjacent to light industrial, industrial or leisure uses with any impact on local residential amenity minimised.
- The cumulative impact of energy schemes will be taken into account when considering applications, to include modelled impacts on air quality and landscape character, with reference to Policy EN16.
- Flood risk, through the Manchester-Salford-Trafford Strategic Flood Risk Assessment.

Policy EN8 – Adaptation to Climate Change

All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability
- Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways
- The need to control overheating of buildings through passive design
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation

4. ENERGY STRATEGY

The Energy strategy for the proposed scheme is based on the Building Regulations Part L1A; it adopts a set of principles to guide design and decisions regarding energy, balanced with the need to optimise environmental and economic benefits. It seeks to incorporate energy efficiency through the approach detailed below.

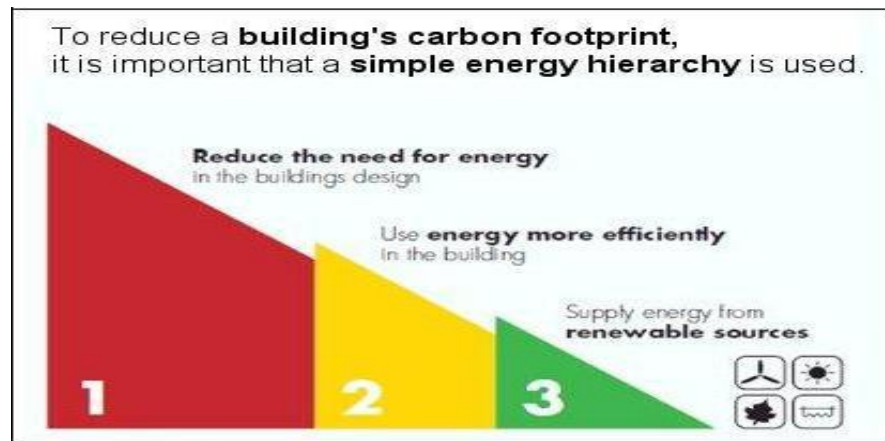


Figure 2. Energy Hierarchy

Be 'Lean' - Demand Reduction

The building fabric performance and engineering systems have been optimised in order to use less energy prior to the inclusion or consideration of Low and Zero Carbon (LZC) Technology.

Passive Design Measures:

Fabric Performance - The fabric performance values aim to reduce unwanted heat loss and heat gains, whilst maintaining a comfortable internal environment.

Table 2. Fabric energy Efficiency Standard

Thermal element	Part L1A Minimum Standard
Wall	0.30 W/m ² k
Roof	0.20 W/m ² k
Floor	0.25 W/m ² k
Glazing	2.00 W/m ² k
Doors	2.00 W/m ² k

The heat loss of different building elements is dependent upon their U –value. A building with low U values provides better levels of insulation and reduced heating demand.

The scheme will incorporate high levels of insulation and efficient glazing; thereby reduce demand for space heating. The table below shows the U values for the development and the associated improvements over Building Regulations.

Table 3. Energy Efficient design Specification

Element	Part L1A Minimum Standard	Proposed Conditions
Wall	0.30 W/m ² k	0.26 W/m ² k (existing) 0.16 W/m ² k (proposed)
Floor	0.25 W/ m ² k	0.25 W/m ² k (existing)
Flat Roof	0.20 W/ m ² k	0.12 W/ m ² k (proposed)
Flat Roof	0.20 W/ m ² k	0.12 W/ m ² k (existing)
Glazing	2.00 W/ m ² k	1.20 W/ m ² k
Doors	2.00 W/ m ² k	1.20 W/ m ² k
Air Permeability	10 m ³ /hr.m ² @ 50Pa	4 m ³ /hr.m ² @ 50Pa

Air-tightness and Thermal Bridging - Air tightness of a building is important in reducing heat loss, but also in the prevention of drafts that can ultimately mean warm temperatures feel uncomfortably cold. The flats have been designed so that air permeability will be significantly below the target set in Building Regulations as shown in Table 3.

Efficient Lighting and Controls

Throughout the development natural lighting will be optimised. The development will also incorporate low energy light fittings throughout. All light fittings will be specified as low energy lighting and will accommodate compact fluorescent (CFLs) or fluorescent luminaries only. Internal areas that are not frequently used will be fitted with occupant sensors.

Ventilation

The layout of the flats will provide good internal air quality for all areas but not too much so as to waste heat. The use of openable windows will also create horizontal airflow. By achieving a good naturally ventilated building the energy demand for air conditioning and mechanical ventilation will thereby be reduced.

Be 'Clean' – Supply Energy Efficiently

The Be Clean step of the energy hierarchy refers to the use of 'Clean energy supply'. This includes, but is not limited to, the use of Combined Heat and Power (CHP) and District Heat Networks. Policy LP20 seeks for new development to promote the use of CHP and district heating.

Community heating and Combined Heat and Power (CHP system)

Clean Measures ensures that energy is supplied and used efficiently within a property. Local Heat and power sources minimise distribution losses and achieve greater efficiencies when compared to separate energy systems, thus reducing CO2 emissions.



CHP systems are usually specified for large schemes due to the need to have a large enough heat demand to supply from the CHP system. Plant room space is also required on site.

Although the thermal demand generated by the concept stage Part L modelling is sufficient to consider CHP as a viable option, considering that the proposed scheme is proposed to utilise an all-electric approach i.e. Electric heating and hot water. Therefore, CHP has not been considered further for this scheme bases upon the current strategy.

Be 'Green' - Renewable Energy

Once energy demand reduction measures have been applied, methods for generating low and -zero carbon energy can be assessed. The renewable technologies considered for the development are:

- Biomass
- Ground/water source heat pump
- Air source heat pump
- Wind energy
- Solar thermal panels
- Photovoltaic panels

Table 4. Renewable Technologies

Technology	Pros	Cons
Biomass Heating A biomass system designed for wood pellets, which have a high-energy content, would fuel this development. 	• Less volume of storage • Less maintenance and produce considerably less ash residue	• Nox Emissions which may impacts • High Costs
Ground Source Heat Pump It circulates a mixture of water and antifreeze around a loop of pipe, called a ground loop, which is buried in the garden. Heat from the ground is absorbed into the fluid and then passes through a heat exchanger into the heat pump. 	• Use all the year	• High Costs • Not adapted to the site
Air Source Heat Pump They are an efficient and environmentally-friendly way of heating using air drawn freely from the atmosphere. They operate rather like a refrigerator in reverse, absorbing heat from the air into a working fluid which is passed into a compressor where its temperature is increased before it is transferred into the heating and hot water circuits of the building.	• Can generates less CO₂ than conventional heating systems. • Cheaper • Provides heating and hot water • Less maintenance • Can be used as air-conditioning in the summer	• Needs electricity • Can be noisy
Wind Turbines Wind turbines are available in	• Cheaper • Less CO₂	• Local wind speeds in the area is likely to be

various sizes from large rotors able to supply whole communities to small roof or wall-mounted units for individual hons. 		below the level generally required for investment in large wind turbines. • Noise and signal interference. • Detrimental aesthetic impact
Solar Thermal Solar hot water systems (also known as Solar Thermal) harness heat from sunlight by capturing energy which is radiated by the sun within solar panels or collectors. 	• Cheaper	• Not enough reduction
Photovoltaic Panels (PV) Photovoltaic panels extract the energy of the sun to generate electricity. They operate most efficiently when oriented to the south and are inclined to about 35 degrees. 	• Cheaper • Less CO₂ • No input power in order to generate electricity	• Usually not suitable for conservation areas

Potential renewable technologies were assessed in conjunction with the Energy Efficiency and Carbon Compliance measures discussed in previous sections of the report. To determine the appropriate renewable technology for the site, the following factors were considered.

- CO₂ savings
- Their compatibility with the site and site constraints
- Installation and maintenance costs

Table 5 presents a comparative analysis for the different renewable technologies:

Table 5. Criteria Analysis for Renewable Technologies

Renewable technology	Criteria		
	CO2 Savings	Compatibility with the site	Cost
Biomass Heating	✓	☒	☒
Ground Source heat Pump	✓	☒	☒
Air Source Heat Pump	✓	✓	✓
Wind Turbines	✓	☒	✓
Solar Thermals	✓	☒	✓
Photovoltaic	✓	✓	✓

Heatpump and PV Panels

The estimated onsite electricity generated would provide a reduction of **42.1%** in carbon emissions.

5. SUSTAINABLE DESIGN

The proposed development will incorporate sustainable design and construction measures capable of mitigating and adapting to climate change to meet future needs. This section details site-specific initiatives which demonstrate how the conversion helps to meet the sustainability objectives set out in the National Planning Framework 2012, and Manchester's Local Development Framework and Core Strategy 2012 to 2027.

Energy Use and Pollution

The design of the scheme will not alter the location of the existing windows. Good levels of daylight will offer occupants a pleasant and highly valued connection to the outdoors and plenty of natural light. It will also reduce the use of artificial lighting and therefore energy use. All light fittings will be specified as low energy lighting. The location and orientation of the proposed windows help to create a design that avoids overheating in the summer.

Pollution: Air, Noise and Light

The layout of the residential units can provide good internal air quality for the areas but not too much so as to waste heat. The use of openable windows will create horizontal airflow.

The development will not increase the air pollution of the area by reducing as a start, its energy consumption, which in turn will reduce emissions that lead to air pollution.

Other measures will include:

- a. Use of eco-friendly building materials
- b. Non-toxic paints
- c. Installation of energy efficient appliances and devices

Light pollution can best be described as artificial light that is allowed to illuminate or intrude upon areas not intended to be lit. Light in the wrong place at the wrong time can be intrusive.

Intrusive light is over bright or poorly directed lights shining onto neighbouring property which affect the neighbours' right to enjoy their property. Therefore, the proposal will incorporate lighting measures in order to avoid causing a nuisance.

Materials

Materials can have a significant impact on environmental performance, both in construction but also ongoing use. Materials used for the studios will have lower environmental impacts over their lifecycle.

It is expected that all timber used in the development will come from a legal Source (FSC Scheme). At least 80% of the building materials will be responsibly sourced and will use suppliers who can provide an EMS certificate or equivalent. Materials rated with an A or B in the BRE Green Guide to Specification will be preferred.

Waste Management

Adequate storage for bins will be on site – on ground floor level.

Pollution

All contractors would be required to sign up to the nationally recognised Considerate Constructors Scheme which requires, amongst other things that dust emissions, potential noise pollution, impacts on water quality and the potential for ground contamination are minimised during demolition and construction. The Contractor would also be obliged to adhere to a site-specific Code of Construction Practice to reduce potential nuisance effects.

Flood Risk

The scheme is in an area which does not require any flood defences.

Biodiversity

The proposed development will incorporate measures to support and enhance the environment through consideration of the existing site, including measures to mitigate the impact of the development and enhance site biodiversity.

Improving Resource Efficiency

A Site Waste Management Plan can be in place, which will include targets for re-use and recycling.

Water: Water Efficiency

In domestic buildings, the demand for water can be reduced as much as 50% using a variety of simple and innovative strategies that are integrated into the plumbing and mechanical systems. In order to reduce water consumption the proposed development will include efficient fixtures with low flow rates. Total internal water consumption will not exceed 105 litres/person/day.

Table 6. Water Fittings Standards

Schedule Appliance Water Consumption		
Appliance	Flow rate or Capacity	Total Litres
WC	Dual flush WC 4/2.6 litre	16.18
Shower	8 litres/minute flow	34.96
Bath	160 litres	15.95
Sink	4 litres/min	12.64
W/machine	Default used	17.16
Dish Washer	Default used	4.50
		104.99

6. CONCLUSION

The proposed flats have been designed to exceed Part L1A building regulations requirements. In line with the national and local policies, regulated CO₂ emissions from the development will be reduced by **42.1%** once energy efficiency measures and green measures are considered.

In order to achieve the required carbon emissions reduction, the report concludes and proposes the use of energy efficient measures, an Air Source Heatpump and a PV system.

An appraisal of the proposed development has been undertaken against key sustainability objectives identified from relevant policy guidance. The framework for the appraisal was guided by National Planning Framework 2012, and Manchester's Local Development Framework and Core Strategy 2012 to 2027. This process has ensured that the development responds to the sustainable development objectives that are relevant to the area. Key sustainability initiatives in ecology, waste management, water, health and wellbeing, materials, pollution, and surface water management have been incorporated in the design of the proposed development.

A BREEAM BDR assessment has been carried out for the proposed refurbishment. The initial appraisal **demonstrates a 'Very Good' rating, in line with Manchester Council requirement.**

Additional Notes:

The assessment considered further systems to meet the required CO₂ reduction, such as:

- An Electric Boiler - (plus Radiators with Thermostatic Valves, Roomstats, and Instantaneous Hot water System)
- Gas Boiler - (Combi Boiler : Vaillant ecoFIT pure 835 VUW 356/6-3, Radiators with Thermostatic Valves, Roomstats)
- Gas Boiler with PVs - (Combi Boiler : Vaillant ecoFIT pure 835 VUW 356/6-3, Radiators with Thermostatic Valves, Roomstats) – will require a major amount of PVs
- Heatpump only - (Heatpump : Daikin Altherma ERLQ004CAV3 + EHBH04CA3V, Radiator with thermostativ valves, Time and Temperature Zone Controller)

However, this assessments concludes that the use of Heatpump with PVs can result to a minimum CO₂ reduction of 41%. – (Heatpump : Daikin Altherma ERLQ004CAV3 + EHBH04CA3V, Radiator with thermostativ valves, Time and Temperature Zone Controller). This system has been considered as the most suitable and appropriate solution for the specific proposed development.

The following tables demonstrate the results of other systems which do not provide the required CO2 reduction.

Table 7. Electric Boiler

Building	Sample Flat	Proposed Flat		CO2 Reduction %
		TER	DER	
No 8 Polygon Road	LGF1	35.94	44.21	0.00
	LGF2	25.78	32.54	0.00
	GF2	22.33	24.31	0.00
	GF5	30.29	31.08	0.00
	GF7	28.29	31.59	0.00
	FF2	34.12	39.58	0.00
	FF7	23.29	22.61	0.00
	SF1	27.13	29.46	0.00
	TF1	28.59	32.24	0.00
	TF2	26.14	27.60	0.00

Table 8. Gas Boiler

Building	Sample Flat	Proposed Flat		CO2 Reduction %
		TER	DER	
No 8 Polygon Road	LGF1	24.30	25.68	0.00
	LGF2	18.28	21.98	0.00
	GF2	15.90	15.40	3.20
	GF5	20.83	19.60	5.90
	GF7	19.83	18.77	5.30
	FF2	23.09	23.64	0.00
	FF7	16.25	15.03	7.50
	SF1	18.83	18.08	4.00
	TF1	20.16	19.85	1.50
	TF2	18.64	17.70	5.10

Table 9. Gas Boiler & PVs (Will require a substantial amount of PVs)

Building	Sample Flat	Proposed Flat		CO2 Reduction %
		TER	DER	
No 8 Polygon Road	LGF1	24.30	14.05	42.2
	LGF2	18.28	9.97	45.4
	GF2	15.90	9.07	43.0
	GF5	20.83	11.27	45.9
	GF7	19.83	11.51	41.9
	FF2	23.09	13.08	43.3
	FF7	16.25	9.17	43.6
	SF1	18.83	10.87	42.3
	TF1	20.16	11.80	41.5
	TF2	18.64	10.87	41.7

Table 10. Heatpump Only

Building	Sample Flat	Proposed Flat		CO2 Reduction %
		TER	DER	
No 8 Polygon Road	LGF1	35.94	28.72	20.1
	LGF2	25.78	19.09	26.0
	GF2	22.33	16.81	24.7
	GF5	30.29	23.62	22.0
	GF7	28.29	19.13	32.4
	FF2	34.12	27.58	19.2
	FF7	23.29	16.74	28.1
	SF1	27.13	19.63	27.6
	TF1	28.59	19.68	31.2
	TF2	26.14	19.38	25.9

7. Appendix

- Regulation Compliance Report – Sample Flat LGF1
- Regulation Compliance Report - Sample Flat LGF2
- Regulation Compliance Report - Sample Flat GF2
- Regulation Compliance Report - Sample Flat GF5
- Regulation Compliance Report - Sample Flat GF7
- Regulation Compliance Report - Sample Flat FF2
- Regulation Compliance Report - Sample Flat FF7
- Regulation Compliance Report - Sample Flat SF1
- Regulation Compliance Report - Sample Flat TF1
- Regulation Compliance Report - Sample Flat TF2
- Plans indicating the selected flats for the assessment
- BREEAM BDR Pre – Estimator

Project Information

Building type Ground-floor flat

Reference

Date 14 May 2021

Email: none Project LGF1
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

assessed by program JPA Designer version 6.05.046, printed on 14/05/2021 at 13:52:25

New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 35.94	
Dwelling Carbon Dioxide Emission Rate	DER = 21.16	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 63.3	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 58.4	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.19 (max. 0.30)	0.26 (max. 0.70)	OK
Floor	0.25 (max. 0.25)	0.25 (max. 0.70)	OK
Roof	0.00 (max. 0.20)	0.00 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	307.23
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Ground-floor flat

Reference

Date 14 May 2021

Email: none Project LGF2
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

assessed by program JPA Designer version 6.05.046, printed on 14/05/2021 at 13:52:25

New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 25.78	
Dwelling Carbon Dioxide Emission Rate	DER = 14.98	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 44.4	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 42.1	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.19 (max. 0.30)	0.26 (max. 0.70)	OK
Floor	0.25 (max. 0.25)	0.25 (max. 0.70)	OK
Roof	0.00 (max. 0.20)	0.00 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	201.93
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Mid-floor flat

Reference

Date 14 May 2021

Email: none Project GF2
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

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New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 22.33	
Dwelling Carbon Dioxide Emission Rate	DER = 13.01	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 34.0	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 27.6	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.20 (max. 0.30)	0.26 (max. 0.70)	OK
Floor	0.00 (max. 0.25)	0.00 (max. 0.70)	OK
Roof	0.00 (max. 0.20)	0.00 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	187.58
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Ground-floor flat

Reference

Date 14 May 2021

Email: none Project GF5
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

assessed by program JPA Designer version 6.05.046, printed on 14/05/2021 at 13:52:24

New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 30.29	
Dwelling Carbon Dioxide Emission Rate	DER = 17.61	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 46.6	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 34.2	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.15 (max. 0.30)	0.16 (max. 0.70)	OK
Floor	0.11 (max. 0.25)	0.11 (max. 0.70)	OK
Roof	0.00 (max. 0.20)	0.00 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	288.30
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Ground floors U-value 0.11 W/m²K
Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Mid-floor flat

Reference

Date 14 May 2021

Email: none Project GF7
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

assessed by program JPA Designer version 6.05.046, printed on 14/05/2021 at 13:52:24

New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 28.29	
Dwelling Carbon Dioxide Emission Rate	DER = 16.22	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 52.6	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 39.2	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.15 (max. 0.30)	0.16 (max. 0.70)	OK
Floor	0.11 (max. 0.25)	0.11 (max. 0.70)	OK
Roof	0.12 (max. 0.20)	0.12 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	209.32
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Flat roofs U-value 0.12 W/m²K
Ground floors U-value 0.11 W/m²K
Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Top-floor flat

Reference

Date 14 May 2021

Email: none Project FF2
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

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New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 34.12	
Dwelling Carbon Dioxide Emission Rate	DER = 19.95	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 57.0	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 49.6	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.22 (max. 0.30)	0.26 (max. 0.70)	OK
Floor	0.00 (max. 0.25)	0.00 (max. 0.70)	OK
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	296.46
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Mid-floor flat

Reference

Date 14 May 2021

Email: none Project FF7
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

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New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 23.29	
Dwelling Carbon Dioxide Emission Rate	DER = 13.49	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 34.6	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 24.2	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Floor	0.11 (max. 0.25)	0.11 (max. 0.70)	OK
Roof	0.00 (max. 0.20)	0.00 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	212.46
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Floors U-value 0.11 W/m²K
Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Top-floor flat

Reference

Date 14 May 2021

Email: none Project SF1
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

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New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 27.13	
Dwelling Carbon Dioxide Emission Rate	DER = 15.70	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 47.8	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 36.5	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.17 (max. 0.30)	0.26 (max. 0.70)	OK
Floor	0.00 (max. 0.25)	0.00 (max. 0.70)	OK
Roof	0.13 (max. 0.20)	0.16 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	133.44
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Flat roofs U-value 0.12 W/m²K
Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Top-floor flat

Reference

Date 14 May 2021

Email: none Project TF1
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

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New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 28.59	
Dwelling Carbon Dioxide Emission Rate	DER = 16.10	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 52.4	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 44.8	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.15 (max. 0.30)	0.16 (max. 0.70)	OK
Floor	0.00 (max. 0.25)	0.00 (max. 0.70)	OK
Roof	0.12 (max. 0.20)	0.12 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2207 Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (West Pennines):		OK
	Medium	OK

Based on:

Thermal mass parameter :	126.33
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Flat roofs U-value 0.12 W/m²K
Walls U-value 0.14 W/m²K
Photovoltaic array

Project Information

Building type Top-floor flat

Reference

Date 14 May 2021

Email: none Project TF2
Westwood Nursing Home
8 Polygon Road
MANCHESTER
M8 5DD

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

assessed by program JPA Designer version 6.05.046, printed on 14/05/2021 at 13:52:26

New dwelling created by change of use

1 TER and DER

Fuel for main heating system: Standard tariff (fuel factor = 1.55)

Target Carbon Dioxide Emission Rate	TER = 26.14	
Dwelling Carbon Dioxide Emission Rate	DER = 15.15	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 39.8	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 29.1	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Floor	0.00 (max. 0.25)	0.00 (max. 0.70)	OK
Roof	0.12 (max. 0.20)	0.12 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.00	OK
Maximum :	10.00	

4 Heating efficiency

Main heating system:

Air source heat pump, radiators, electric
Daikin Altherma ERLQ004CAV3 + EHBH04CA3V

Source of efficiency: from boiler database

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	2206 Delayed start thermostat + programmer + TRVs	OK
Hot water controls	No cylinder	
Boiler Interlock	No	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

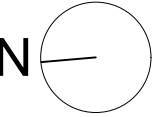
Overheating risk (West Pennines):		OK
	Not significant	OK

Based on:

Thermal mass parameter :	213.90
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : North	
Ventilation rate :	6.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Flat roofs U-value 0.12 W/m²K
Walls U-value 0.14 W/m²K
Photovoltaic array



General Notes:

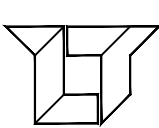
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Rev	Description	Date	Dr by	App by



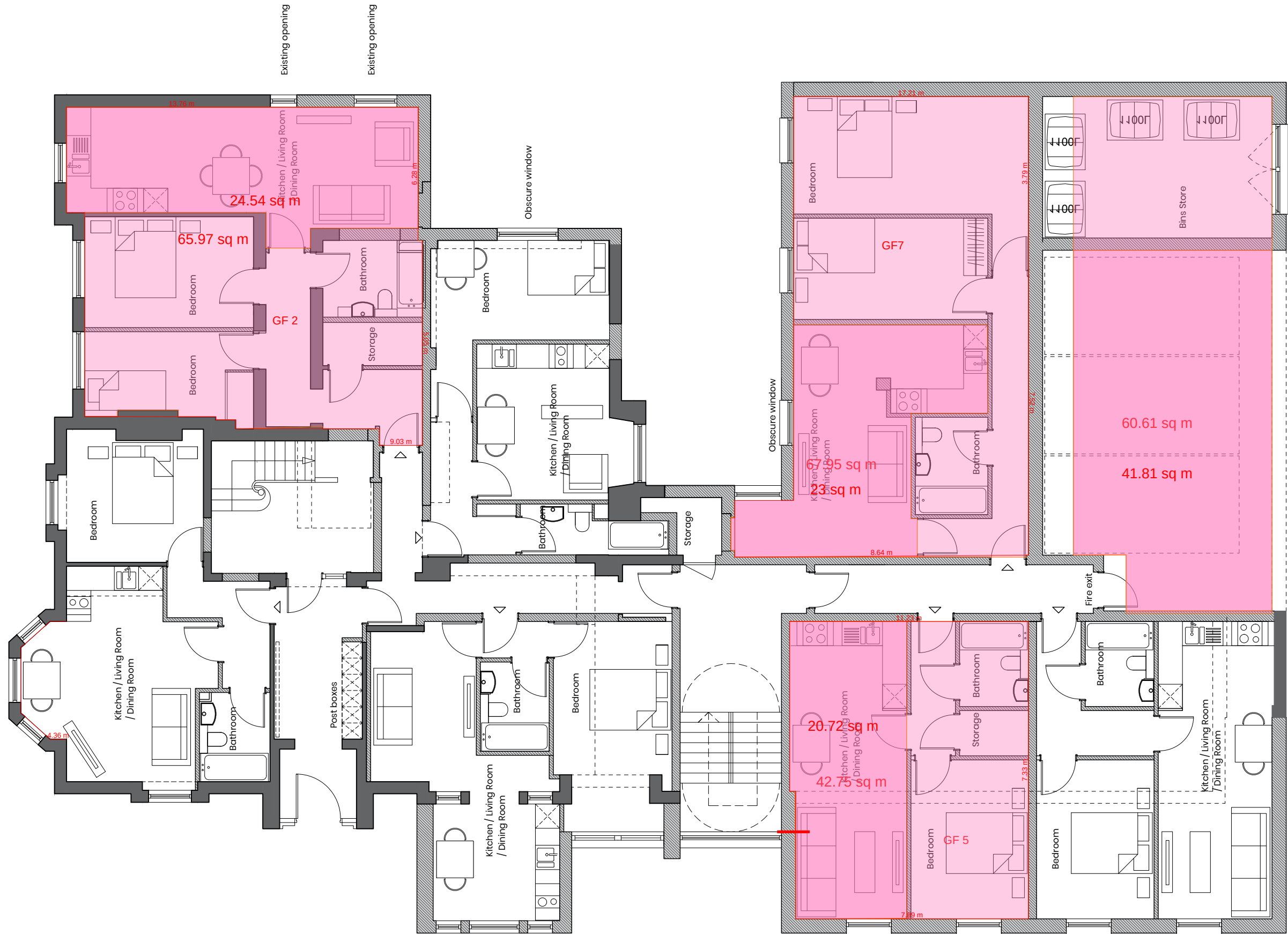
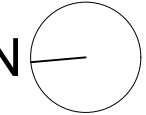
**STUDIO TASHKEEL
ARCHITECTURE LTD.**
89 Princess Street
Manchester M1 4HT
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www.studiotashkeel.com

client name		Mr. Adnan Muhammad Aslam	
project		8 Polygon Road	
drawing		Proposed Lower Ground Floor	
project number	1811105	scale	1:100 @ A3
drawing number	1811105_02_002	rev	issue status
			Planning
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Proposed Lower Ground Floor Plan

Scale 1:100



General Notes:

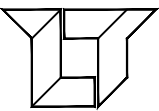
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Rev	Description	Date	Dr by	App by



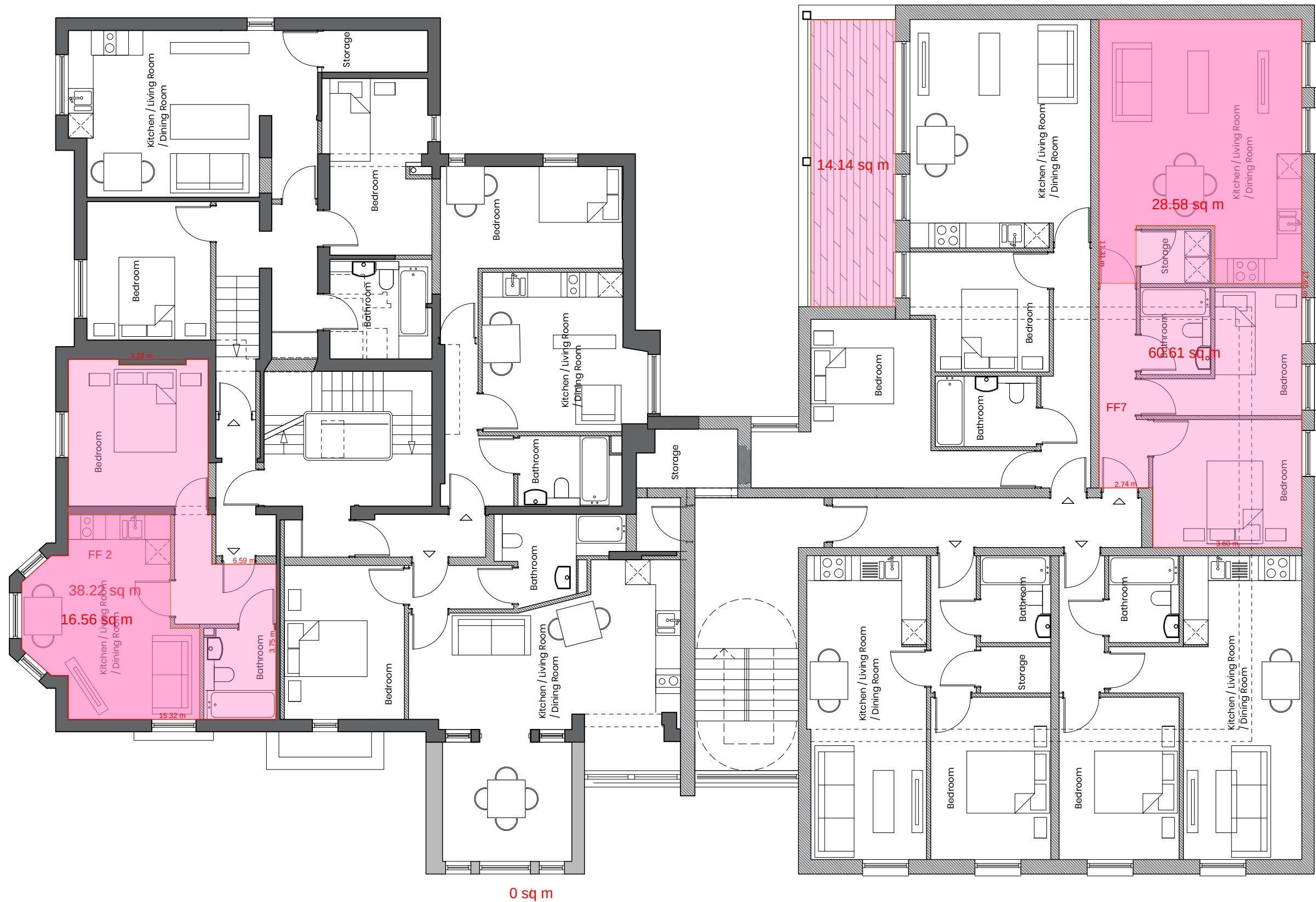
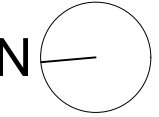
**STUDIO TASHKEEL
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Manchester M1 4HT
United Kingdom

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client name		
Mr. Adnan Muhammad Aslam		
project		
8 Polygon Road		
drawing		
Proposed Ground Floor		
project number		scale
1811105		1:100 @ A3
drawing number	rev	issue status
1811105_02_003		Planning
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Proposed Ground Floor Plan

Scale 1:100



Proposed First Floor Plan

Scale 1:100

General Notes:

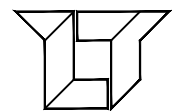
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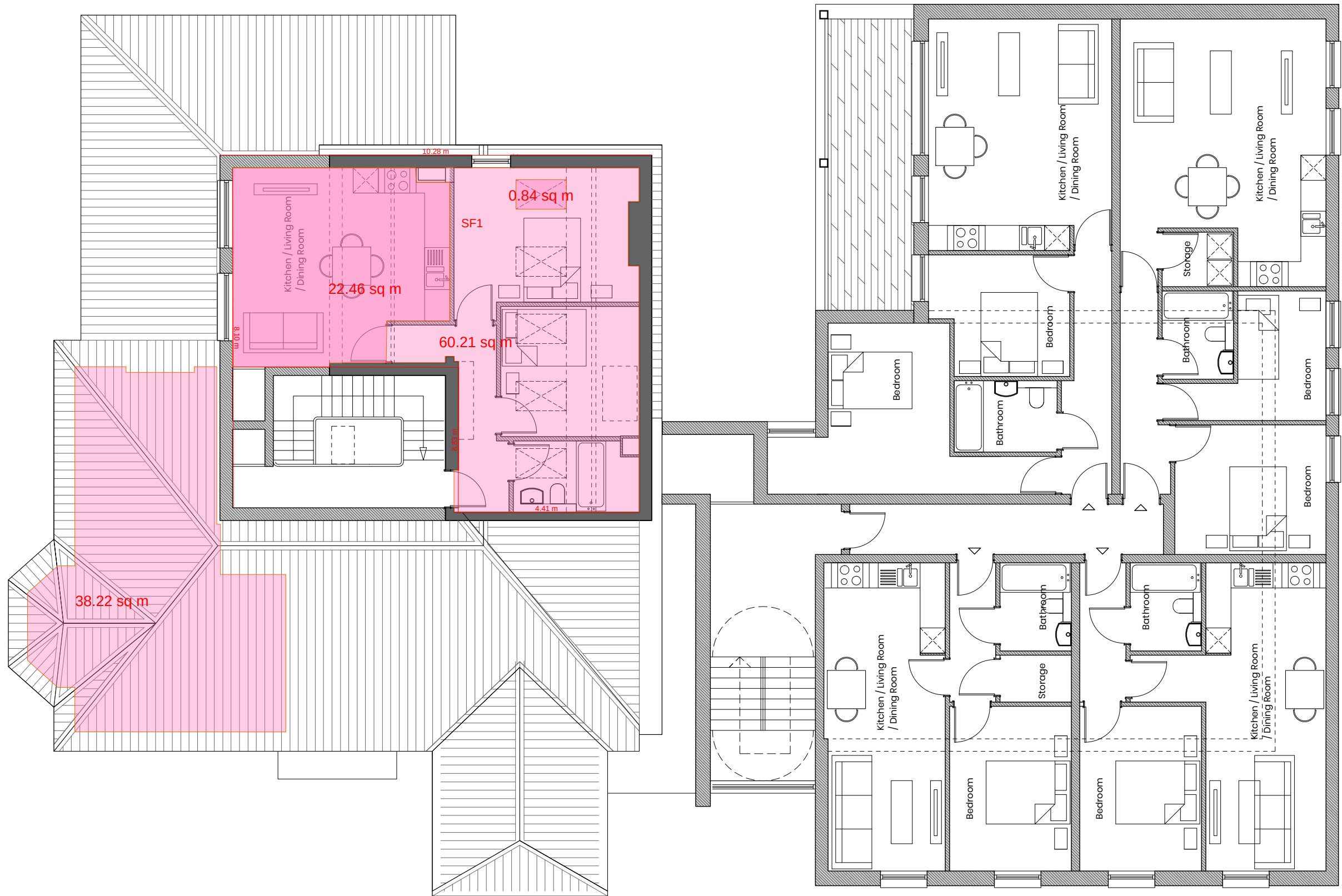
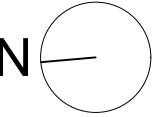
Rev	Description	Date	Dr by	App by



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Manchester M1 4HT
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client name		
Mr. Adnan Muhammad Aslam		
project		
8 Polygon Road		
drawing		
Proposed First Floor		
project number	scale	
1811105	1:100 @ A3	
drawing number	rev	issue status
1811105_02_004		Planning
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General Notes:

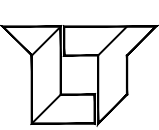
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Rev	Description	Date	Dr by	App by



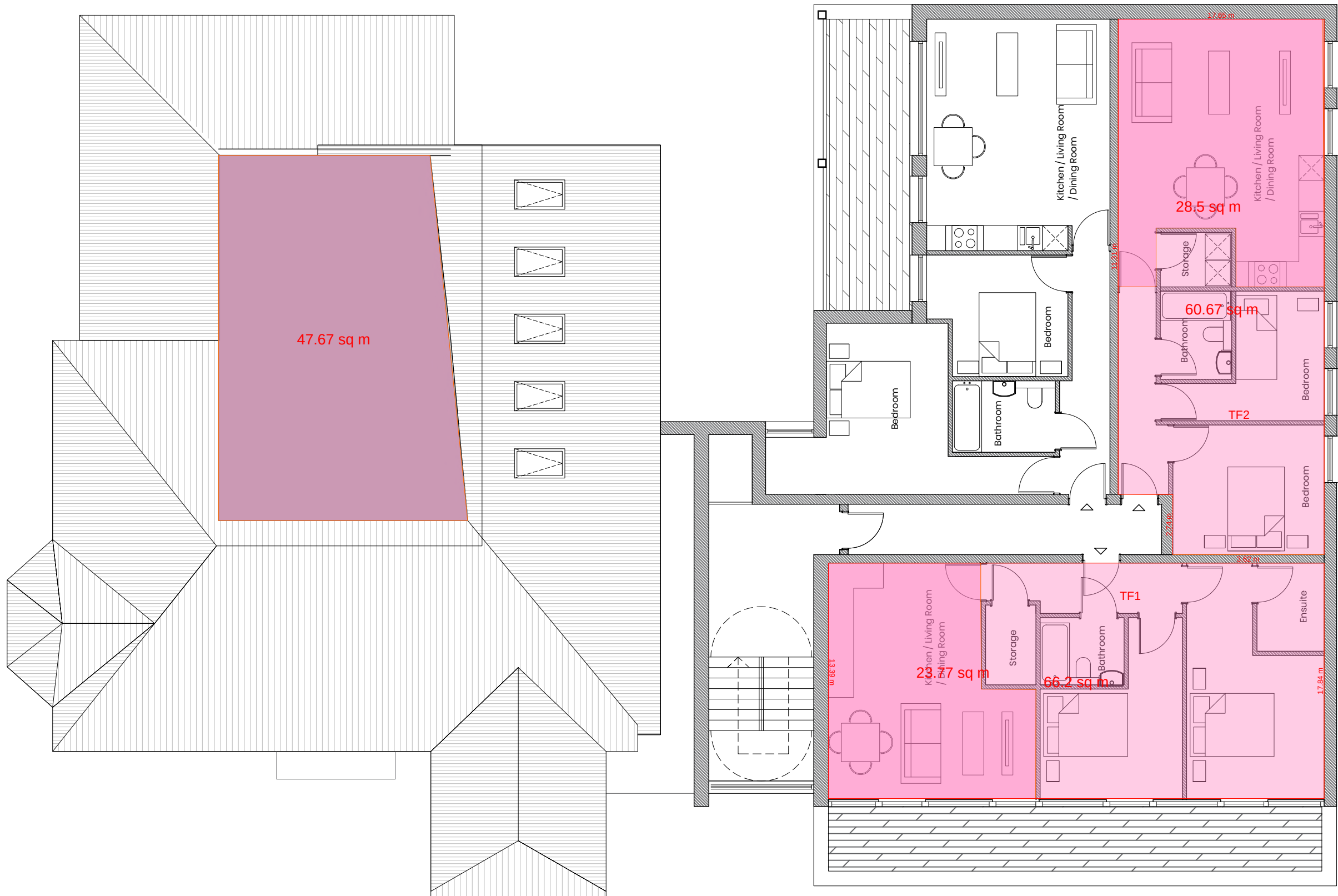
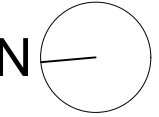
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client name		
Mr. Adnan Muhammad Aslam		
project		
8 Polygon Road		
drawing		
Proposed Second Floor		
project number		scale
1811105		1:100 @ A3
drawing number	rev	issue status
1811105_02_005		Planning
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Proposed Second Floor Plan

Scale 1:100



General Notes:

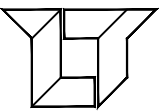
All site dimensions shall be verified by the Contractor on site prior to commencing any works.

Do not scale from this drawing.

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Rev	Description	Date	Dr by	App by



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client name		
Mr. Adnan Muhammad Aslam		
project		
8 Polygon Road		
drawing		
Proposed Third Floor		
project number		scale
1811105		1:100 @ A3
drawing number	rev	issue status
1811105_02_006		Planning
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Proposed Second Floor Plan

Scale 1:100

BREEAM UK Domestic Refurbishment 2014 Pre-Assessment Estimator v0.1: Results Summary



Building name	No 8 Polygon Road
Indicative Building Score	72.57%
Indicative Building Rating	BREEAM Very Good

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

	Issue	Credits Available	Indicative Credits Achieved	Weighting	Section Score
Management	Man 01	3	3	12%	12.00%
	Man 02	2	2		
	Man 03	1	1		
	Man 04	2	2		
	Man 05	1	1		
	Man 06	2	2		

Health and Wellbeing	Hea 01	2	2	17%	11.33%
	Hea 02	4	2		
	Hea 03	1	1		
	Hea 04	2	1		
	Hea 05	2	1		
	Hea 06	1	1		

Energy	Ene 01	6	5.5	43%	28.17%
	Ene 02	4	2		
	Ene 03	7	1.5		
	Ene 04	2	2		
	Ene 05	2	2		
	Ene 06	1	0		
	Ene 07	2	2		
	Ene 08	2	2		
	Ene 09	2	2		
	Ene 10	1	0		

Water	Wat 01	3	2.5	11%	7.70%
	Wat 02	1	0		
	Wat 03	1	1		

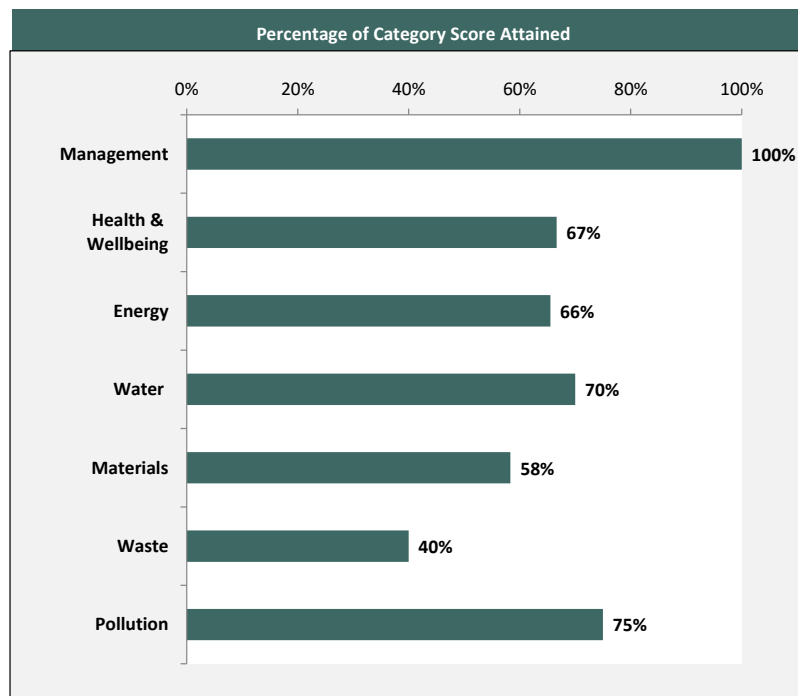
Materials	Mat 01	25	10	8%	4.67%
	Mat 02	15	10		
	Mat 03	8	8		

Waste	Was 01	2	1	3%	1.20%
	Was 02	3	1		

Pollution	Pol 01	3	3	6%	4.50%
	Pol 02	3	1		
	Pol 02	2	2		

Innovation	10	3	N/A		3.00%
------------	----	---	-----	--	-------

	Minimum Standards				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02	✓	✓	✓	✗	✗
Wat 01	✓	✓	✓	✓	✗
Hea 05	✓	✓	✓	✓	✓
Hea 06	✓	✓	✓	✓	✓
Pol 03	✓	✓	✓	✓	✓
Mat 02	✓	✓	✓	✓	✓



BREEAM UK Domestic Refurbishment 2014 Pre-Assessment Estimator v0.1



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

Building name				No 8 Polygon Road		
Indicative building score (%)				72.57%		
Indicative BREEAM rating				BREEAM Very Good		
Management	Health & Wellbeing	Energy	Water	Materials	Waste	Pollution

	Minimum Standards				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02	✓	✓	✓	✗	✗
Wat 01	✓	✓	✓	✓	✗
Hea 05	✓	✓	✓	✓	✓
Hea 06	✓	✓	✓	✓	✓
Pol 03	✓	✓	✓	✓	✓
Mat 02	✓	✓	✓	✓	✓

INNOVATION	Section Weighting: 10%	Indicative Section Score: 3.00%
------------	------------------------	---------------------------------

Comments

MANAGEMENT	Section Weighting: 12%	Indicative Section Score: 12.00%
------------	------------------------	----------------------------------

Man 01 Home Users Guide				
No. of BREEAM credits available	3	Available contribution to overall score	3.27%	
No. of BREEAM innovation credits	0	Minimum Standards applicable:	No	

Assessment Criteria	Indicative Credits
Where a Home Users Guide be provided to all dwellings, covering all issues set out in the 'Users Guide Contents list', three credits may be awarded	3

Comments

Man 02 Responsible Construction Practices				
No. of BREEAM credits available	2	Available contribution to overall score:	2.18%	
No. of BREEAM innovation credits	1	Minimum Standards	No	

Assessment Criteria	Indicative Credits
Where a compliant considerate construction scheme will be used, credits are awarded depending the score achieved as outlined below:	2

Large Scale - project with more than 5 units

	One Credit	Two Credits
Considerate Constructors Scheme	Score of 25-34 with a score of 5 in each section	Score of 35-39 with a score of 7 in each section
Alternative Compliant Scheme	Compliance	Beyond Compliance

Small Scale - project with 5 units or fewer

	One Credit	Two Credits
Considerate Constructors Scheme	Score of 25-34 with a score of 5 in each section	Score of 35-39 with a score of 7 in each section
Alternative Compliant Scheme	Compliance	Beyond Compliance
Checklist A-3	50% of the optional items	80% of the optional items

Exemplary Credit

Considerate Constructors Scheme	Score of 40 or more with a score of 7 in each section
Alternative Compliant Scheme	Exemplary Level Compliance
Checklist A-3*	All Items (Optional & Mandatory)

* Small Scale Project Only

Indicative Innovation Credits Achieved
0

Comments

Man 03 Construction Site Impacts				
No. of BREEAM credits available	1	Available contribution to overall score	1.09%	
No. of BREEAM innovation credits	0	Minimum Standards applicable	No	

Assessment Criteria	Indicative Credits
Where evidence demonstrate that site impacts will be monitored, as detailed below:	1

	One Credit
Large Scale	Where there is evidence to demonstrate that 2 or more of the sections in Checklist A-4 are completed
Small Scale	Where there is evidence to demonstrate that 2 or more of the sections in Checklist A-5 are completed

Sections of Checklist	
Large Scale - Checklist A-4	Small Scale - Checklist A-5
Monitor, report and set targets for CO2 production of energy use arising from site activities	Set objectives for reducing CO2 production from energy use arising from site activities
Monitor, report and set targets for water consumption arising from site activities	Set objectives for reducing water use arising from site activities
A main contractor with an environmental materials policy	Main contractor environmental materials statement
A main contractor that operates an Environmental Management System	80% of site timber is reclaimed, re-used or responsibly sourced
80% of site timber is reclaimed, re-used or responsibly sourced	

Same definition of small and large scale as in Man 02

Comments

Man 04 Security				
No. of BREEAM credits available	2	Available contribution to overall score:	2.18%	
No. of BREEAM innovation credits	0		Minimum Standards applicable:	No
Assessment Criteria				Indicative Credits
Where the following requirements will be met:			⇒	2
One Credit Secure windows and doors		External doors and accessible windows meet minimum standards and appropriately certified		
Two Credits Secured by design		Principles and guidance of Secured by Design Section 2 are complied with		
		A suitably qualified security consultant is consulted at the design stage and their recommendations are incorporated into the refurbishment		
Comments				
Man 05 Protection and Enhancement of Ecological Features				
No. of BREEAM credits available	1	Available contribution to overall score:	1.09%	
No. of BREEAM innovation credits	1		Minimum Standards applicable:	No
Assessment Criteria				Indicative Credits
Where the following requirements will be met:			⇒	1
One Credit Protecting Ecological Features		Site survey carried out to determine presence of ecological features		
		Statutory Nature Conservation Organisation notified of protected species		
		Features of ecological value protected during refurbishment works		
Exemplary Credit Ecological enhancement		A suitably qualified ecologist recommends features to enhance ecology of the site		Indicative Innovation Credits Achieved
		adopts all general ecological recommendations		
				adopts 30% of additional recommendations
Comments				
Man 06 Project Management				
No. of BREEAM credits available	2	Available contribution to overall score	2.18%	
No. of BREEAM innovation credits	2		Minimum Standards applicable	No
Assessment Criteria				Indicative Credits
Where the following requirements will be met:			⇒	2
One Credit Project Roles and Responsibilities		Where all of the project team are involved in the project decision making		
		Small Scale - the project manager assigns individual and shared responsibilities amongst the project team including all trades on site		
		Large Scale - the project manager assigns individual and shared responsibilities across the following key design and refurbishment stages: i. Planning and Building control notification ii. Design iii. Refurbishment iv. Commissioning and handover v. Occupation		
Small Scale projects: five units or fewer and less than £100k		Large Scale projects: more than five units and more than £100k		
One Credit Handover and Aftercare		Handover meeting arranged		
		2 or more of the following committed to: - A site inspection within 3 months of occupation - Conduct post occupancy interviews with building occupants or a survey via phone or posted information within 3 months of occupation - Longer term after care e.g. a helpline, nominated individual or other appropriate system to support building users for at least the first 12 months of occupation		
Exemplary Credits		⇒		
One Exemplary Credit Early Design Input		Where A BREEAM Accredited Professional has been appointed to oversee key stages within the project. OR Where a BREEAM Domestic Refurbishment Assessor has been appointed at an early stage of the project, prior to the production of a refurbishment specification		Indicative Innovation Credits Achieved
One Exemplary Credit Thermographic Surveying and Airtightness Testing		Where Thermographic surveying and Airtightness testing have been carried out at both pre and post refurbishment stages Where an improved air tightness target has been set at design stage and testing demonstrates that this has been achieved post refurbishment		
Comments				

HEALTH & WELLBEING		Section Weighting: 17%		Indicative Section Score 11.33%	
Hea 01 Daylighting					
No. of BREEAM credits available	2	Available contribution to overall score	2.83%		
No. of BREEAM innovation credits	0	Minimum Standards applicable	No		
Assessment Criteria				Indicative Credits	
Where the refurbishment results in a neutral impact on daylighting or where minimum daylighting standards are met, up to two credits may be awarded as follows:				2	
For Existing Dwellings and Change of Use Projects					
First Credit Maintaining Good Daylighting		The refurbishment results in a neutral impact on the dwellings daylighting levels in the kitchen, living room, dining room and study			
Where the property is being extended					
First Credit Maintaining Good Daylighting		New spaces achieve minimum daylighting levels			
		The extension does not significantly reduce daylighting levels in the kitchen, living room, dining room or study of neighbouring properties			
For All Properties					
Second Credit Minimum Daylighting		The dwelling achieves minimum daylighting levels in the kitchen, living room, dining room and study			
Comments					
Hea 02 Sound Insulation					
No. of BREEAM credits available	4	Available contribution to overall score	5.67%		
No. of BREEAM innovation credits	0	Minimum Standards applicable	No		
Assessment Criteria				Indicative Credits	
To ensure the provision of acceptable sound insulation standards and so minimise the likelihood of noise complaints.				2	
Properties where sound testing has been carried out:					
Up to Four Credits		Four credits awarded according to the improvement over building regulations. See table in additional information in Technical Manual			
Properties where sound testing is not feasible and not required by the appointed Building Control body					
Two Credits		Where existing separating walls and floors are designed to meet the requirements of Building Regulations with compliant construction details			
Up to Four Credits		Where a Suitably Qualified Acoustician (SQA) provides recommendations for the specification of all existing separating walls and floors			
		SQA confirms in their professional opinion that they have the potential to meet or exceed the sound insulation credit requirements			
		Where these recommendations are implemented			
		See table in additional information in Technical Manual			
Historic Buildings					
Up to Four Credits		Where the dwelling is a Historic Building and sound testing results demonstrate existing separating walls and floor meet the Historic Building credit requirements			
		See table in additional information in Technical Manual			
		Where sound testing is not feasible and not required by the appointed Building Control body meeting criteria 2 and 3 using Table 12			
		Properties where sound testing has been carried out, credits awarded according to the improvement over building regulations. See table in additional information in Technical Manual			
		Where the dwelling is a detached property			
		Where the dwelling is a propertywith separating walls or floors only between non habitable rooms OR Testing not required by building control body			
Detached Properties					
Four Credits		By Default			
Properties with separating walls or floors only between non habitable rooms OR Testing not required by building control body					
Four Credits		By Default			
Comments					
Hea 03 Volatile Organic Compounds					
No. of BREEAM credits available	1	Available contribution to overall score	1.42%		
No. of BREEAM innovation credits	0	Minimum Standards applicable	No		
Assessment Criteria				Indicative Credits	
Where the refurbishment avoids the use of VOCs with new products meeting the following requirements:				1	
One Credit Avoiding the use of VOCs		Where all decorative paints and varnishes used in the refurbishment have met the requirement listed in table 5.4 in the Technical Manual			
		Where at least five of the eight remaining product categories listed in table 5.4 have met the testing requirements and emission levels for Volatile Organic Compound (VOC) emissions against the relevant standards identified within table 5.4 in the Technical Manual			
		Where five or less products are specified within the refurbishment, all must meet the requirements in order to achieve this credit.			
Comments					

Hea 04 Inclusive Design				
No. of BREEAM credits available	2	Available contribution to overall score	2.83%	
No. of BREEAM innovation credits	1		Minimum Standards applicable	No
Assessment Criteria				Indicative Credits
Where an access statement has been carried out using Checklist A-8 of the Technical Manual to optimise the accessibility of the home as follows:			➡	1
		Checklist A-8 of the Technical Manual		
		Section 1	Section 2	
One Credit		Completed with Evidence		
Two Credits		Completed with Evidence	Completed with Evidence	
Exemplary Performance				Indicative Innovation Credits Achieved
One Credit	Where an access expert suitably qualified member of the design team has completed sections 1, 2 and 3 of Checklist A-8, access statement template with evidence provided of the measures implemented in the refurbishment		➡	0
Comments				
Hea 05 Ventilation				
No. of BREEAM credits available	2	Available contribution to overall score	2.83%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	Yes
Assessment Criteria				Indicative Credits
Where the dwelling meets the following ventilation requirements:			➡	1
One Credit	Minimum Ventilation Requirements	A minimum level of background ventilation is provided (with trickle ventilators or other means of ventilation) for all habitable rooms, kitchens, utility rooms and bathrooms compliant with section 7, Building Regulations Approved Document Part F, 2010		
		A minimum level of extract ventilation is provided in all wet rooms (e.g. kitchen, utility and bath-rooms), compliant with section 5, Building Regulations Approved Document Part F 2010.		
		A minimum level of purge ventilation is provided in all habitable rooms and wet rooms, compliant with section 7, Building Regulations Approved Document Part F, 2010.		
		It is an historic building and meets historic building requirements in CN4 of the technical manual		
Two Credits	Advanced Requirements	Ventilation is provided for the dwelling that meets the requirements of Section 5 of Building Regulations Part F in full		
		Where the building is a historic building and meets the requirements for Historic Buildings in compliance note 4 of the technical manual		
Comments				
Hea 06 Safety				
No. of BREEAM credits available	1	Available contribution to overall score	1.42%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	Yes
Assessment Criteria				Indicative Credits
Where a fire and carbon monoxide (CO) detection and alarm system is specified as follows:			➡	1
One Credit	Fire and Carbon Monoxide (CO) Detection and Alarm Systems	Where a compliant fire detection and fire alarm system is provided		
		Carbon Monoxide detector installed if dwelling is supplied with mains gas or other fossil fuel		
		Mains supplied fire detection and alarm system if project involves re-wiring*		
		Battery operated fire detection and alarm system if no re-wiring* is to take place		
* see CN9 in Hea 06 for the definition of re-wiring				
Comments				
ENERGY Section Weighting: 43% Indicative Section Score 28.17%				
Ene 01 Improvement in Energy Efficiency Rating				
No. of BREEAM credits available	6	Available contribution to overall score	8.90%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	No
Assessment Criteria				Indicative Credits
Where the following targets are met for the improvement in Energy Efficiency Rating achieved as a result of refurbishment:			➡	5.5
	Improvement in EER	Credits		
	≥ 5	0.5		
	≥ 9	1		
	≥ 13	1.5		
	≥ 17	2		
	≥ 21	2.5		
	≥ 26	3		
	≥ 31	3.5		
	≥ 36	4		
	≥ 42	4.5		
	≥ 48	5		
	≥ 54	5.5		
	≥ 60	6		
Comments				

Ene 02Energy Efficiency Rating Post Refurbishment

No. of BREEAM credits available

4

No. of BREEAM innovation credits

2

Available contribution to overall score

5.93%

Minimum Standards applicable

Yes

Assessment Criteria

Where the following Energy Efficiency Rating benchmarks will be met as a result of refurbishment:

EER post refurbishment

Credits

Minimum requirements

≥50

0.5

'Pass' level EER of 50

≥55

1

'Good' level EER of 58

≥60

1.5

≥65

2

'Very Good level' EER of 65

≥70

2.5

'Excellent' level EER of 70

≥75

3

≥80

3.5

'Outstanding' level EER of 81

≥85

4

Exemplary

Credits

≥90

1

≥100

2

Indicative Credits

2

Indicative Innovation Credits Achieved

0

Comments

Ene 03Primary energy demand

No. of BREEAM credits available

7

No. of BREEAM innovation credits

0

Available contribution to overall score

10.38%

Minimum Standards applicable

No

Assessment Criteria

Where the following Primary Energy Demand benchmarks will be met as a result of refurbishment:

Primary Energy Demand Post Refurbishment

Credits

≤ 400

0.5

≤ 370

1

≤ 340

1.5

≤ 320

2

≤ 300

2.5

≤ 280

3

≤ 260

3.5

≤ 240

4

≤ 220

4.5

≤ 200

5

≤ 180

5.5

≤ 160

6

≤ 140

6.5

≤ 120

7

Indicative Credits

1.5

Comments

Ene 04Renewable Technologies

No. of BREEAM credits available

2

No. of BREEAM innovation credits

0

Available contribution to overall score

2.97%

Minimum Standards applicable

No

Assessment Criteria

Where the dwelling will meet the following % contribution from renewables and primary energy demand targets as a result of refurbishment

Dwelling Type

Primary Energy Demand

Percentage from Renewables

1 Credit

2 Credits

Detached

≤ 250 kWh/m²/year

≥10%

≥20%

Semi-Detached

≤ 250 kWh/m²/year

≥10%

≥20%

Bungalow

≤ 250 kWh/m²/year

≥10%

≥20%

End of Terrace

≤ 250 kWh/m²/year

≥10%

≥20%

Mid Terrace

≤ 220 kWh/m²/year

≥10%

≥20%

Low Rise Flat

≤ 220 kWh/m²/year

≥10%

≥20%

Mid Rise Flat

≤ 220 kWh/m²/year

≥10%

≥15%

High Rise Flat

≤ 220 kWh/m²/year

≥10%

≥15%

Indicative Credits

2

Comments

Ene 05Energy Labelled White Goods

No. of BREEAM credits available

2

No. of BREEAM innovation credits

0

Available contribution to overall score

2.97%

Minimum Standards applicable

No

Assessment Criteria

Where Energy Efficiency White goods are to be provided as follows:

First Credit

Appliance

Appliance provided

Appliance not to be provided

Fridges, Freezers and Fridge-Freezers

A+ Rating under EU Energy Efficiency Labelling Scheme

EU Energy Efficiency Labelling Scheme Information Leaflet provided to all dwellings

Second Credit

Appliance

Appliance provided

Appliance not to be provided

Washing Machines and Dishwashers

Washing Machine A++ under EU Energy Efficiency Labelling Scheme AND Dishwasher A+ uner EU Energy Efficiency Labelling Scheme

Second credit not achieved

Washer-Dryers and Tumble Dryers

Appliances specified with A Rating under EU Energy Efficiency Labelling Scheme

EU Energy Efficiency Labelling Scheme Information Leaflet provided to all dwellings

Comments

Ene 06 Drying Space				
No. of BREEAM credits available	1	Available contribution to overall score	1.48%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	
Assessment Criteria			⇒	Indicative Credits
Where adequate, secure internal or external space with posts and footings or fixings is provided with the following:				0
		1 Credit		
		Number of bedrooms	Drying line required	
		1-2	4m+	
		3+	6m+	
Comments				
Ene 07 Lighting				
No. of BREEAM credits available	2	Available contribution to overall score	2.97%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	
Assessment Criteria			⇒	Indicative Credits
Where energy efficient internal and external lighting is provided as follows:				2
		External Lighting - 1		
		Energy Efficient Space Lighting of more than 45 lumens per circuit watt and Energy Efficient Security Lighting OR		
		Where Energy Efficient Space Lighting is provided ONLY		
		Internal Lighting - 1		
		Maximum average wattage across the total floor area of the dwelling of 9 watts/m2		
Comments				
Ene 08 Display Energy Devices				
No. of BREEAM credits available	2	Available contribution to overall score	2.97%	
No. of BREEAM innovation credits	1		Minimum Standards applicable	
Assessment Criteria			⇒	Indicative Credits
Where consumption data is displayed to occupants by a compliant energy display device				2
		Electricity usage data displayed	Primary Heating Fuel	
		Electricity usage data displayed	Electricity	Other
		Electricity usage data displayed	2 credits awarded	1 credit awarded
		Primary Heating Fuel usage data displayed	N/A	1 credit awarded
		Electricity & Primary Heating Fuel usage displayed	N/A	2 credits awarded
		Exemplary Credits		
		One credit	Where the first two credits are achieved	
		Recording consumption data	Where any compliant Energy Display Device is capable of recording consumption data	
			⇒	Indicative Innovation Credits Achieved
				1
Comments				
Ene 09 Cycle Storage				
No. of BREEAM credits available	2	Available contribution to overall score	2.97%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	
Assessment Criteria			⇒	Indicative Credits
Where individual or communal compliant cycle storage is provided as follows:				2
		Dwelling Size	One Credit	Two Credits
		Studios/ 1 bedroom	1 per two dwellings	1 per dwelling
		2-3 bedrooms	1 per dwelling	2 per dwelling
		4 bedrooms	2 per dwelling	4 per dwelling
Comments				
Ene 10 Home Office				
No. of BREEAM credits available	1	Available contribution to overall score	1.48%	
No. of BREEAM innovation credits	0		Minimum Standards applicable	
Assessment Criteria			⇒	Indicative Credits
Where sufficient space and services will be provided to allow occupants to set up a home office in a suitable room with adequate ventilation				0
Comments				

WATER

Section Weighting: 11%

Indicative Section Score 7.70%

Wat 01 Internal Water Use

No. of BREEAM credits available

3

Available contribution to overall score

6.60%

No. of BREEAM innovation credits

1

Minimum Standards applicable

Yes

Assessment Criteria

Where the dwellings water consumption meets the following consumption benchmarks, or where terminal fittings meet the following water consumption standards:

Indicative Credits

2.5

Calculated Water Consumption (litres/person/day)	Equivalent terminal fitting standards	Minimum Standard	Credits
>150	Typical baseline performance	N/A	0
from 140 to ≤ 150	All showers specified to 'Good' OR All taps and WC's to 'Good' OR Kitchen fittings specified to 'Excellent'	N/A	0.5
from 129 to < 140	All showers specified to 'Excellent' OR All showers and bathroom taps to 'Good'	BREEAM Very Good	1
from 118 to < 129	All bathroom and WC room fittings specified to 'Good' OR All bathroom fittings specified to 'Excellent'	N/A	1.5
from 107 to < 118	All Bathroom and WC room fittings specified to 'Excellent' OR All Bathroom fittings Specified to 'Excellent' and WC room fitting specified to 'Good' OR All Bathroom fittings, kitchen and utility sittings specified to 'Good'	BREEAM Excellent	2
from 96 to < 107	All kitchen, bathroom, utility room and WC room fittings specified to 'Good' OR All bathrooms, kitchens and utility rooms specified to 'Excellent'	N/A	2.5
< 96	All bathroom fittings specified to 'Excellent' and WC room, kitchen and utility room fittings specified to 'Good'	BREEAM Outstanding	3

NOTE: 'Good' fittings are equivalent to good practice fittings with "Excellent" fittings equivalent to best practice fittings (see the technical manual for full details).

Exemplary Credit

If the water consumption is less than 80l/person/day

Indicative Innovation Credits Achieved

0

Comments

Wat 02 External Water Use

No. of BREEAM credits available

1

Available contribution to overall score

2.20%

No. of BREEAM innovation credits

0

Minimum Standards applicable

No

Assessment Criteria

Where the following requirements will be met:

Indicative Credits

0

Requirements:

One Credit

Where a compliant rainwater collection system for external/internal irrigation use has been provided to dwellings.
OR
Where dwellings have no individual or communal garden space.

Comments

Wat 03 Water Meter

No. of BREEAM credits available

1

Available contribution to overall score

2.20%

No. of BREEAM innovation credits

0

Minimum Standards applicable

No

Assessment Criteria

Where an appropriate water meter for measuring usage of mains potable water meter has been provided to dwelling(s), one credit may be awarded

Indicative Credits

1

Comments

MATERIALS

Section Weighting: 8%

Indicative Section Score 4.67%

Mat 01 Environmental Impact of Materials

No. of BREEAM credits available

25

Available contribution to overall score

4.16%

No. of BREEAM innovation credits

0

Minimum Standards applicable

No

Assessment Criteria

Up to 25 credits can be awarded, with credits calculated using the Mat 01 calculator tool. The table below shows the maximum number of credits available for each element:

Indicative Credits

10

Elements	Green Guide Rating credits available	Thermal performance credits
Roof	5	3
External walls	5	3.8
Internal walls (including separating walls)	5	-
Upper and Ground Floor	5	1.2
Windows	5	2

The full 25 credits represents all of the elements containing refurbished or existing materials that meet the Green Guide Rating of A+(6)

GG Rating	Points for existing / refurbished elements	Points for new elements
A+ (6)	5	
A+ (5)	4.6	
A+ (4)	4.2	
A+ (3)	3.8	
A+ (2)	3.4	
A+	3	3
A	2	2
B	1	1
C	0.5	0.5
D	0.25	0.25
E	0	0

Where the full 25 credits cannot be achieved the score can be 'topped up' with thermal performance credits. The full number of thermal performance credits for each element can be achieved when achieving the minimum U-values shown below.

Elements	Minimum U-Value
----------	-----------------

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	Roof	0.11
	External walls	0.15
	Internal walls (including separating walls)	-
	Upper and Ground Floor	0.15
	Windows	1.4
Comments		

Mat 02 Responsible Sourcing of Materials																															
No. of BREEAM credits available	15	Available contribution to overall score	2.50%																												
No. of BREEAM innovation credits	0	Minimum Standards applicable	Yes																												
Assessment Criteria			Indicative Credits																												
Where new materials are responsibly sourced, up to 12 credits may be awarded where 80% of new materials for an element are responsibly sourced. The credits achieved are dependent on % of point achieved which is based upon the responsible sourcing tier level of each material sourced as detailed below:			10																												
		Sustainable Procurement Plan (3 BREEAM credits) The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan OR Where the principal contractor is a Small Company (up to 3 BREEAM credits) Checklist A-9 is filled in with supporting evidence	Will all new timber used in the project be sourced in accordance with the UK Government's Timber Procurement Yes																												
Table 1	<table><tr><th>BREEAM credits</th><th>% of available points achieved</th></tr><tr><td>12</td><td>≥54%</td></tr><tr><td>10</td><td>≥45%</td></tr><tr><td>8</td><td>≥36%</td></tr><tr><td>6</td><td>≥ 27%</td></tr><tr><td>4</td><td>≥ 18%</td></tr><tr><td>2</td><td>≥ 9%</td></tr></table>		BREEAM credits	% of available points achieved	12	≥54%	10	≥45%	8	≥36%	6	≥ 27%	4	≥ 18%	2	≥ 9%															
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6	≥ 27%																														
4	≥ 18%																														
2	≥ 9%																														
Comments																															
Mat 03 Insulation																															
No. of BREEAM credits available	8	Available contribution to overall score	1.33%																												
No. of BREEAM innovation credits	0	Minimum Standards applicable	No																												
Assessment Criteria			Indicative Credits																												
Where any new insulation specified for use within external walls, ground floor, roof and buildings services meet the following requirements:			8																												
		Requirements 4 Credits Where the Insulation Index for new insulation used in the buildings is ≥2 Where Green Guide ratings are determined using the Green Guide to specification tool Requirements 4 Credits Where ≥ 80% of the new thermal insulation used in the building elements is responsibly sourced.																													
Comments																															
WASTE Section Weighting: 3% Indicative Section Score 1.20%																															
Was 01 Household Waste																															
No. of BREEAM credits available	2	Available contribution to overall score	1.20%																												
No. of BREEAM innovation credits	0	Minimum Standards applicable	No																												
Assessment Criteria			Indicative Credits																												
Where compliant recycling and composting facilities are provided, up to two credits may be awarded as follows			1																												
<table><tr><th colspan="2">First Credit - Recycling Facilities</th></tr><tr><th>Scenario</th><th>Internal recycling storage requirements</th></tr><tr><td rowspan="4">Compliant collection scheme in place</td><td>3 internal recycling containers provided where recycling is not sorted post collection</td></tr><tr><td>1 internal recycling container provided where recycling is sorted post collection</td></tr><tr><td>Minimum 30 litre total capacity, no single container less than 7 litre capacity</td></tr><tr><td>Dedicated position in accordance with compliance note 1</td></tr><tr><td rowspan="3">No compliant collection scheme in place No adequate external storage</td><td>3 internal recycling containers provided</td></tr><tr><td>Minimum 60 litre total capacity</td></tr><tr><td>Dedicated position in accordance with compliance note 1</td></tr><tr><td rowspan="3">No compliant collection scheme in place Adequate external storage provided</td><td>3 internal recycling containers provided</td></tr><tr><td>Minimum 30 litre total capacity, no single container smaller than 7 litre</td></tr><tr><td>Dedicated position in accordance with compliance note 1</td></tr></table>		First Credit - Recycling Facilities		Scenario	Internal recycling storage requirements	Compliant collection scheme in place	3 internal recycling containers provided where recycling is not sorted post collection	1 internal recycling container provided where recycling is sorted post collection	Minimum 30 litre total capacity, no single container less than 7 litre capacity	Dedicated position in accordance with compliance note 1	No compliant collection scheme in place No adequate external storage	3 internal recycling containers provided	Minimum 60 litre total capacity	Dedicated position in accordance with compliance note 1	No compliant collection scheme in place Adequate external storage provided	3 internal recycling containers provided	Minimum 30 litre total capacity, no single container smaller than 7 litre	Dedicated position in accordance with compliance note 1	<table><tr><th colspan="2">Second credit - Composting facilities</th></tr><tr><th>With external space</th><th>Without external space</th></tr><tr><td>Where a composting service or facility is provided for green/garden waste</td><td>Where a composting service or facility is provided for kitchen waste</td></tr><tr><td>Where a composting service or facility is provided for kitchen waste</td><td>Where an interior container is provided for kitchen composting waste of at least 7 litres</td></tr><tr><td>Where an interior container is provided for kitchen composting waste of at least 7 litres</td><td></td></tr></table>			Second credit - Composting facilities		With external space	Without external space	Where a composting service or facility is provided for green/garden waste	Where a composting service or facility is provided for kitchen waste	Where a composting service or facility is provided for kitchen waste	Where an interior container is provided for kitchen composting waste of at least 7 litres	Where an interior container is provided for kitchen composting waste of at least 7 litres	
First Credit - Recycling Facilities																															
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Comments																															
Was 02 Refurbishment Site Waste Management																															
No. of BREEAM credits available	3	Available contribution to overall score	1.80%																												
No. of BREEAM innovation credits	1	Minimum Standards applicable	No																												
Assessment Criteria			Indicative Credits																												
Up to three credits are available depending on the site waste management plan to be implemented as follows			1																												
Projects up to £100k		Three Credits Where waste generated through the refurbishment process is managed in accordance with Checklist A-9 Exemplary Credit Where a compliant Level 1; Site Waste Management Plan (SWMP) is in place	Indicative Innovation Credits Achieved																												
Projects up to £300k		Three Credits Where a compliant Level 1; Site Waste Management Plan (SWMP) is in place Where a compliant Level 2; Site Waste Management Plan (SWMP) is in place Non-hazardous construction waste generated by the dwellings	0																												

Exemplary Credit	refurbishment meets or exceeds the resource efficiency benchmark
	The percentage of non-hazardous construction waste and demolition waste generated by the project has been diverted from landfill and meets or exceeds the refurbishment & demolition waste diversion benchmarks
Projects over £300k	
First Credit Management Plan	Where a compliant Level 2; Site Waste Management Plan (SWMP) is in place
Second Credit Good Practice Waste Benchmarks	First credit achieved
	Non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the resource efficiency benchmark
	Amount of waste generated against £100,000 of project value is recorded in the SWMP
	Pre-refurbishment audit of the existing building is completed
	If demolition is included as part of the refurbishment programme, then the audit should also cover demolition materials
Third Credit Best Practice Waste Benchmarks	Where the first two credits have been achieved achieved
	Where Non-hazardous demolition waste generated by the dwellings refurbishment meets or exceeds the refurbishment & demolition waste diversion benchmarks
Exemplary Credit	Where non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the <i>exemplary level resource efficiency benchmark</i>
	Where Non-hazardous demolition waste generated by the dwellings refurbishment meets or exceeds the exemplary level diversion benchmarks
Comments	

POLLUTION		Section Weighting: 6%		Indicative Section Score 4.50%	
Pol 01 NOx Emissions					
No. of BREEAM credits available	3	Available contribution to overall score	2.25%		
No. of BREEAM innovation credits	0		Minimum Standards applicable		
Assessment Criteria				Indicative Credits	
Credits are awarded on the basis of NOx emissions arising from the operation of space heating and hot water systems for each refurbished dwelling as follows:				3	
		Dry NOx Emissions			
		One Credit	≤100 mg/kWh (NOx class 4 boiler)		
		Two Credits	≤70 mg/kWh (NOx class 5 boiler)		
		Three Credits	≤40 mg/kWh		
Comments					
Pol 02 Surface Water Runoff					
No. of BREEAM credits available	3	Available contribution to overall score	2.25%		
No. of BREEAM innovation credits	1		Minimum Standards applicable		
Assessment Criteria				Indicative Credits	
Where impacts of the refurbishment on surface water runoff are neutralised or where runoff is reduced as a result of refurbishment, up to three credits can be awarded as follows:				1	
Requirements					
One Credit Neutral Impact on Surface Water	New hard standing areas must be permeable				
	If building on to previously permeable area additional run-off must be managed on site				
	Calculations should be carried out by an appropriately qualified professional				
Requirements					
OR Second Credits Reducing Run-Off From Site: Basic	Where the criteria needed for One Credit has been achieved				
	Where all run-off from the roof for rainfall depths up to 5 mm, have been managed on site using source control methods				
	Include runoff from all existing and new parts of the roof.				
	An appropriately qualified professional should be used to design an appropriate drainage strategy for the site				
Requirements					
OR Three Credits Reducing Run-Off From Site: Advanced	Where run-off as a result of the refurbishment is managed on site using source control				
	An appropriately qualified professional should be used to design an appropriate drainage strategy for the site.				
	The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event has been reduced by 75% from the existing site.				
	The total volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration has been reduced by 75%.				
	An allowance for climate change must be included for all of the above calculations, in accordance with current best practice (PPS25, 2010).				
Requirements					
Exemplary Credit	Where all run-off from the developed site is managed on site using source control				
	The peak rate of run-off as a result of the refurbishment for the 1 in 1 year event is reduced to zero.				
	The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event is reduced to zero.				
	There is no volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration.				
	An allowance for climate change must be included for all of the above calculations, in accordance with current best practice (PPS25, 2010).				
Indicative Innovation Credits Achieved		0			
Comments					
Pol 03 Flooding					
No. of BREEAM credits available	2	Available contribution to overall score	1.50%		
No. of BREEAM innovation credits	0		Minimum Standards applicable		
Assessment Criteria				Indicative Credits	
Where the dwelling is located in a low flood risk zone, or where in a medium to high flood risk zone and a flood resilience/resistance strategy has been implemented, up to two credits can be awarded as follows:				2	
Minimum Standards		A minimum of two credits must be achieved for this issue at the Excellent and Outstanding levels			
Option 1 - Low Flood Risk					
Two Credits	Where a Flood Risk Assessment (FRA) has been carried out and the assessed dwellings are defined as having a low annual probability of flooding.				
Option 2 - Medium / High Flood Risk					
Two Credits	Where a Flood Risk Assessment (FRA) has been carried out and the assessed dwellings are defined as having a medium or high annual probability of flooding.				
	Two credits are awarded where as a result of the dwellings floor level or measures to keep water away the dwelling is defined as achieving avoidance from flooding by following Checklist A-10; Decision Strategy Flow Chart.				
	Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the dwellings in accordance with recommendations made by a Suitably Qualified Building Professional				
Comments					