

3a Upper Park Road London Borough of Camden

Energy & Sustainability

Prepared for:

Malik Vorderwuelbecke

3a Upper Park Road,

Belsize Park,

London

NW3 2UN

Prepared by:

Ross Standaloft Director Green Tiger Sustainability

T: 020 7703 9944



Issue Status		
Prepared by:	Ross Standaloft	
Company Name:	Green Tiger Sustainability	
Signature:	RS	
Revision Number	Issue Date:	Issue by:
Revision 1	31.07.2024	Ross Standaloft

DISCLAIMER

This report is made on behalf of Green Tiger Sustainability. By receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

2



Contents

Issue Status1
Contents2
Executive Summary3
Energy Planning Requirement6
London Plan Methodology7
"Be Lean" Energy Efficiency measures8
"Be Clean" Use of heat networks9
"Be Green" renewable energy target10
Feasible Renewable Energy technologies11
Proposed Renewables12
Energy Strategy Summary13
Reuse and Resource Efficiency14
Overheating Analysis17
Water Requirement18
Waste Management & Circular Economy19
Appendix A – Energy Calculations21



Executive Summary	
INTRODUCTION	The proposed residential scheme is required to produce an Energy and Sustainability statement in support of the planning application for the refurbishment and extension at the address: '3a Upper Park Road' in Camden, London.
	Carbon emission reductions will be measured in accordance with Local Policy CC1: Climate Change Mitigation and the London Plan 2021's Policy SI 2 'Minimising Greenhouse Gas Emissions' – using the energy hierarchy and target a minimum 35% CO2 reduction over Part L for existing buildings baseline.
AIM OF THIS STUDY	This energy and sustainability statement should be used as a supporting document to the planning application to demonstrate that CO2 emissions, and the overall energy and sustainability strategy of the proposed development will meet and surpass requirements set out by London Borough of Camden Planning Policies: CC1, CC2, D1, CC3 and CC5 – namely in relation to Energy, Design, Water use and Waste Management. A This report also details the proposed high-performance fabric towards 'Passivhaus' fabric standard is targeted by the design team.
	The aim of the energy study specifically is to assess the feasible carbon emission reductions through building fabric, efficient services and low or zero carbon technologies AND target the London Plan 35% carbon reduction on-site target. If feasible, aiming for 10% from fabric and energy efficiency measures first before renewables or offsets are assessed. This report demonstrates how the site has followed the London Plan's energy hierarchy by reducing energy demand through passive design, energy efficiency measures, i.e. 'Be Lean' and utilizing low carbon technology to further reduce the overall carbon emissions of the development i.e. 'Be Green'.
ENERGY TARGETS	Camden Council requires all developments to reduce CO2 reduction over Part L as much as is feasible, or 35%, as per the London Plan Policy SI 2. The proposed extension and renovation property is under 500m ² and is a minor existing development. Therefore requirements are to demonstrate Energy hierarchy has been considered.
SITE DESCRIPTION	The proposed scheme is a refurbishment and extension in Camden with associated basement and garden area.
	The scheme is oriented South from the street facade. The scheme is in-keeping with aesthetic of the street.

3



ENERGY STRATEGY RECOMMENDATION	The energy strategy for the proposed scheme is to work towards 'Passivhaus' advanced energy efficiency fabric measures, utilising mechanical ventilation with heat recovery (MVHR) and a highly efficient Air Source Heat Pump as the main heating and DHW system.
	The proposal is to build surpassing Part L 2021 requirements. The thermal performance targets of the new areas of the dwelling are as follows: U-Values of 0.12 W/m2K for new ground floor, 0.10 W/m2K for the roof, 0.15 W/m2K for walls and high-performance triple-glazed standard windows of 0.85 W/m2K (average across site). A maximum air permeability of 1 ach/hr (approx. 2 m3/m2/hr at 50 pa) is targeted. Existing elements will be insulated to Part L standards or beyond, subject to detailed design.
	Full MVHR ventilation will surpass Part F requirements.
CO2 SAVINGS SUMMARY	The baseline carbon emissions for the scheme are 4,874 kgCO2/yr. Following implementation of measures within this report; a total saving of 2,514 kgCO2/yr will be made, a 80.4% overall carbon reduction over baseline . These measures include:
	- Be Lean (44.2% savings over baseline): Energy efficiency measures to improve the building fabric and services: U-Values 0.15 for new walls, 0.10 for roof, 0.12 for the ground floor and 0.85 for windows - in W/m2K, ultra-low air tightness (approx 2 m3/m2/hr at 50 Pa).
	- Be Clean (0% savings over Lean case); No further savings through the use of heat networks are planned.
	- Be Green (64.8% savings over clean case): Low carbon heating and hot water through an Air Source Heat Pump.
	The figures are summarised and represented in graphical form on the following page.
Part L 2021	The scheme will meet Building Regulations (Part L 2021) on both a carbon emission and fabric efficiency basis.



GLA's Energy Hierarchy				
	Baseline	Be Lean: Energy Efficiency Measures	Be Clean: Heat Networks	Be Green: Renewable
Carbon emissions in kgCO ₂ /yr	4,874	2,720	-	957
Carbon emission savings in kgCO ₂ /yr	-	2,154	-	1,762
Percentage reduction in carbon emissions over the previous stage	-	44.2%	0%	64.8%



5





Energy Planning Requirement

PLANNING REQUIREMENT	The latest London Plan 2021, Policy SI 2 'Greenhouse Gas Emissions' requires developments to achieve 35% minimum carbon reduction on site through fabric efficiency and implementations of renewables. The 2021 London Plan also requires a 10% reduction through fabric and energy efficiency enhancements only, and then a further 25% carbon reduction through the use of local heat networks 'Be Clean' or on-site renewable energy technologies 'be Green.
REQUIREMENTS FOR AN ENERGY STATEMENT	The Greater London Authority defines in the London Plan Supplementary Planning Guidance that applications for major developments should be accompanied by an energy statement, which provides information as set out below:
	 Calculation of baseline energy demand and carbon dioxide emissions showing the contribution of emissions from building regulations Proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services; Proposals to further reduce carbon dioxide emissions through the use of decentralized energy where feasible, such as district heating and cooling; Proposals to further reduce carbon dioxide emissions through the use of on-site low or zero carbon technologies, and; Major developments should propose to Offset the remaining emissions to reduce the site to Zero Carbon. In addition, major developments (over 1000m²) should report their building performance to the GLA.
	An assessment of the feasibility of different renewable technologies on the site and the potential contribution to CO_2 reduction from each option, explaining which technologies have been investigated and why any technologies have been ruled out, (i.e. technical and practical limitations etc.).
	We will also assess the likelihood of overheating in the project and measures to reduce, where necessary.



London Plan Methodology		
METHODOLOGY	The methodology followed in this report follows the guidance set out in GLA Energy Team Guidance on Planning Energy Assessments, 2020, as set out below.	
	Energy consumption figures are based on SAP modeling data produced under Building Regulations Part L compliant software (SAP 10), as per the GLA guidance.	
	The analysis of the house has been undertaken to show the compliance with the Building Regulations Part L 2021.	
LONDON PLAN ENERGY HIERARCHY	The London Plan's energy hierarchy takes a 'whole energy' approach and addresses energy efficiency use, energy supply efficiency and use of low or zero carbon technologies. The purpose	
Taken from GLA Energy Assessment Guidance , 2020	is to demonstrate that climate change mitigation measures are integral to the scheme's design and evolution, and that they are appropriate to the context of the development. The below summarises the guidance for each stage.	
BASELINE CALCULATIONS	Baseline calculations for existing buildings are in line with Part L for existing buildings in the London Plan.	
BE LEAN	Demand reduction (Be Lean) measures specific to the scheme are encouraged at the earliest design stage of a development and aim to reduce to demand for energy. Measures typically include passive design: both architectural and building fabric measures, and active design: energy efficient services. Building Regulations (Part L 2021) should be exceeded by 10% through demand reduction (Be Lean) measures alone.	
BE CLEAN	A 'clean' energy supply refers to utilising the energy efficiency of heating infrastructure networks. Planning applications should demonstrate how the their energy systems will exploit local energy resources and secondary heat to minimize CO ₂ emissions in accordance with the order of preference in Policy SI 3 – Heating Infrastructure, using the Heat Network Priority Areas (HNPA).	
BE GREEN	Use of Low Zero Carbon technologies in developments is encouraged at the 'Be Green' third stage. Each low or zero carbon technologies in the London Plan should be deemed to be technically feasible or not and considered in the Energy Assessment.	
OFFSET	After carbon emissions are reduced through 'Be Lean, Be Clean and Be Green' – the residual carbon emissions on site are to be calculated and offset through an off site scheme OR via the Local Borough's Offset scheme at a recommended cost of £95/tonne/year. For major development only.	



"Be Lean" Energy Efficiency measures

ENERGY EFFICIENCYEnergy efficiency measures for the building fabric will be
incorporated to reduce the energy demand and carbon footprint of
the proposed scheme. The below measures surpass the minimum
10% carbon saving from this step of the London Plan guidance, giving
a total of 44.2% through fabric alone.

All new u-values have been pushed far beyond Part L minimum standards.

U-VALUES TARGETED ACROSS SITE	Element	Building Regulations Part L 2021 U-Value (W/m ² K)	Proposed U-Value (W/m ² K) (new / existing)
	Roof	0.16	0.10 / 0.16
	Floor	0.18	0.12 / 0.25
	Walls	0.18	0.15 / 0.30
	Window/Doors	1.6	0.85 (Average)
AIR-TIGHTNESS	In addition to excellent u-values, Passivhaus philosophy requires outstanding air tightness levels. The target here will be slightly relaxed at 1 ach/hour, approx. 2 m ³ /hr/m ² at 50pa. This will be achieved through ensuring that sensitive areas are accounted for in the design and construction phases to make certain that a fully sealed building is constructed and all punctures through the seal are airtight. In particular, attention will be paid to openings such as services and down lighters at roof level.		
ENERGY EFFICIENCY	In this scenario, a highly efficient gas boiler (SEDBUK 90%) is specified, for this scenario with interlock and weather compensator included. Heating will be delivered via efficient under floor heating and radiator mix.		
VENTILATION	MVHR ventilation will be requirements of Part F.	supplied in the house	and to meet the full

8



"Be Clean" Use of heat networks

USE OF DECENTRALIZED	Inline with London Plan Policy SI 3, Heat Infrastructure, major
POWER & HEAT NETWORKS	development should aim to use waste heat or secondary heat, exploit existing heat / cooling networks where possible or future proof utility infrastructure to minimize the impact from roadworks.
	There are various heating networks already established in London and the mayor has identified Heat Network Priority areas (HNPA) – these will be assessed to determine of the site should be considered, alongside combined heat and power (CHP) on site also:
	Connection to existing CCHP/CHP/Heat networks This option is deemed infeasible in this instance due to the lack of an existing CCHP/CHP/Heat networks in the vicinity of the proposed development.
	Site wide CCHP/CHP/Heat generation powered by renewables CCHP/CHP/Heat generation powered through renewables such as biomass is considered infeasible in this instance due to issues relating to air quality. The site is also not communal and too small for this.
•	Heat Network Priority Area (HNPA) The site is in a HNPA and has the potential to connect to future heat networks.
FRAMEWORK TO ANALYSE	A micro CHP on site has been analysed along the following points:
MICRO CHP ON SITE	• The technical feasibility of CHP on a site-wide basis and for portions of the scheme.
	 The viability of the CHP in terms of capital expenditure per unit. The carbon emissions reductions from the CHP as compared to an alternative system.
CHP ANALYSIS	Micro combined heat and power (CHP) has been assessed in terms of feasibility. It is considered that CHP unit is inappropriate for this development, as there is not a sufficient heat load and DHW requirements to make this a better option than an Air Source Heat Pump. This is primarily due to the fabric first approach to energy saving, pushing the heating demand down and gas becoming an obsolete energy source.



"Be Green" renewable energy target

INTRODUCTION	The predicted carbon emission savings of the proposed scheme following energy efficiency measures and fabric values will be 2,720 kgCO2/yr or 44.2% saving.
	Technically no further CO_2 emissions reductions are required to meet 35% on-site minimum emission savings. However, the site will use on- site renewable technologies. ASHP has been identified as the ideal renewable energy sources for the following reasons:
	 The ASHP supplies electricity-only heat and hot water Gas is banned from 2026 and gas price will rise The development needs will be easily met with ASHP
RENEWABLES & OVERALL EMISSIONS REDUCTION	This renewable solution gives a 1,762 kg/CO₂/yr saving or 64.8% - over the 20% London Plan renewables only target. This gives a total project saving of 3,917 kgCO₂/yr carbon saving over baseline building regulations or 80.4% .





Feasible Renewable Energy technologies

FEASIBLE LOW OR ZERO CARBON TECHNOLOGIES	A reduction in carbon emissions through the use of on-site low or zero carbon technologies can be achieved through several technologies to generate either heat or power. Following the analysis of the carbon emissions related to the scheme, the objective of this section is to determine the feasible low or zero carbon technologies options that provide cost-effective and practical emissions reductions. The low or zero carbon technologies options for the proposed scheme are provided in the table below. Each technology is also assessed as either feasible or rejected based on its implications for the scheme in terms of their implementation, cost-effectiveness, site-related constraints, planning issues or others. The following sections will explore the feasible technologies in depth and explain why certain technologies have been rejected.
Technology and feasibility	Rationale
BIOMASS / REJECTED	Biomass would be able to provide a 35% overall reduction in carbon emissions. However, this technology would have a significant impact on local air quality in the Borough and development access restraints preclude the possibility of biomass pellet delivery.
LIQUID BIOFUEL/ REJECTED	Although biofuel has the capability to heat the house, as with solid biomass, liquid biofuel has air quality implications in addition to delivery and sourcing issues in a city/town location.
AIR SOURCE HEAT PUMP	An air source heat pump can supply heating and hot water to the
(ASHP) / FEASIBLE –	proposed scheme. There is space available for the condenser and
ACCEPTED	cylinder required for the Air Source Heat Pump (ASHP) and for the external unit also. The high efficiency and electrical source of ASHP makes this a good choice to lower carbon emissions and meet the targets.
GROUND SOURCE HEAT	A ground source heat pump would be capable of heating the house
PUMP / MAYBE FEASIBLE –	and providing hot water; however capital cost and disruption of
NOT ACCEPTED	drilling vertical boreholes make this technology potentially undesirable on the site until further investigation.
PHOTOVOLTAIC (PV) /	There is very limited roof area available for PV, as the main roof is
REJECTED	used for a balcony / patio area for the adjoined property – the limited space available is also considerably overshaded. Therefore the solution is not a highly feasible option on this property.
SOLAR HOT WATER (SHW) /	There is very limited roof area available for Solar Thermal, as the main
REJECTED	roof is used for a balcony / patio area for the adjoined property – the limited space available is also considerably overshaded. Therefore the solution is not a highly feasible option on this property.
WIND TURBINE / REJECTED	Turbulence created from surrounding buildings makes this an inefficient solution and it would make a large visible impact.



Proposed Renewables

INTRODUCTION	It is proposed that in order to meet the London Plan requirements on production of clean 'Green' energy, an Air Source Heat Pump (ASHP) is deemed feasible and viable.
AIR SOURCE HEAT PUMPS	An air source heat pump (ASHP) absorbs heat from outside a building and release it inside using the vapor-compression refrigeration process, in the opposite direction. The heat usually goes to a buffer tank before radiators or UFH distribution. ASHP's are around 250-400% efficient (meaning 2.5-4KW of power for every 1KW put in) and are best suited to modern, well insulated properties.
POTENTIAL SPECIFICATION	A suggested specification for the Air Source Heat Pump (ASHP) would consist of a 6-8KW Mitsubishi Ecodan heat pump and underfloor heating. A 250 litre water tank would be installed alongside the Heat Pump to supply consistent hot water and heating in winter months.

DISCLAIMER

Note that ASHP installation requires full design and installation from the electric sub-contractor and/or a renewables installer.



Energy Strategy Summary

RECOMMENDATION	The energy strategy for the proposed scheme is to work towards 'Passivhaus' advanced energy efficiency fabric measures, utilising mechanical ventilation with heat recovery (MVHR) and a highly efficient Air Source Heat Pump as the main heating and DHW system. The proposal is to build surpassing Part L 2021 requirements. The thermal performance targets of the new areas of the dwelling are as follows: U-Values of 0.12 W/m2K for new ground floor, 0.10 W/m2K					
	for the roof, 0.15 W/m2K for walls and high-performance triple-glazed standard windows of 0.85 W/m2K (average across site). A maximum air permeability of 1 ach/hr (approx. 2 m3/m2/hr at 50 pa) is targeted. Existing elements will be insulated to Part L standards or beyond, subject to detailed design.					
	Full MVHR ventilation will surpass Part F requirements.					
CO ₂ SAVINGS SUMMARY	The baseline carbon emissions for the scheme are 4,874 kgCO2/yr. Following implementation of measures within this report; a total saving of 2,514 kgCO2/yr will be made, a 80.4% overall carbon reduction over baseline . These measures include:					
	- Be Lean (44.2% savings over baseline): Energy efficiency measures to improve the building fabric and services: U-Values 0.15 for new walls, 0.10 for roof, 0.12 for the ground floor and 0.85 for windows - in W/m2K, ultra-low air tightness (approx 2 m3/m2/hr at 50 Pa).					
	 Be Clean (0% savings over Lean case); No further savings through the use of heat networks are planned. 					
	- Be Green (64.8% savings over clean case): Low carbon heating and hot water through an Air Source Heat Pump.					
Part L 2021	The scheme will meet Building Regulations (Part L 2021) and subsequent revisions.					



Reuse and Resource Efficiency

INTRODUCTION	The proposed development aims to optimise resource efficiency and use circular economy principles. The Camden Council Section 9 of Energy efficiency CPG (Jan 2021) will be addressed in this section to investigate if the existing property can be successfully retained. The guidance notes that a condition / feasibility assessment and the potential development options assessment be undertaken.					
ORIENTATION AND	The aim of the proposed development is to:					
BUILDING FORM	 Create a larger dwelling Deliver an low-carbon dwelling 					
	The following development types will be assessed and with regards to the above:					
	Refit					
	With a refit, none of the above development aims can be met.					
	<u>Refurbish</u>					
	A highly sustainable refurbishment would allow the property to become low carbon, however, further floorspace would be lost insulating the existing dwelling to levels required. Furthermore, a refurbishment would not remodel or add any additional space.					
	Substantial refurbishment and extension					
	A substantial refurbishment and extension would allow the development to become low carbon AND create a better and larger useable family space. Windows would be replaced, existing elements insulated and new servicing installed. This option is also inline with Camden policy on lowering carbon emissions AND keeping existing building stock.					
	Reclaim and recycle					
	The option of demolition and rebuilding is considered excessive and wasteful to the development needs, which can be achieved through refurbishing and extending.					
	The refurbish and extension option is the preferable route to meet development goals and is inline with Camden policy on retaining existing building stock.					



Reuse and Resource Efficiency

CONDITION AND FEASIBILITY ASSESSMENT	Existing Building uses	 The current property operates as an average size 2 bedroom dwelling built in 1985. The properties layout is tight and inefficient in terms of useable floorspace and circulation. There is no current building survey, but there are no immediate signs of structural iscuer. 						
		or damp form the design team. - The property is poorly insulated.						
	Servicing	 Standard Gas boiler and radiator distribution network. In need of upgrading. No renewables or alternative energy sources. Mains water at standard pressure. 						
	Technical Review	 Upgrades – Full insulation to floors, walls, roof and replacement windows/doors required to reach Part L for existing building. Material audit and estimate of embodied carbon – Property in decent condition for age. Embodied carbon is considered average for 1980's traditional build, no large amounts of steel or concrete. Energy performance of facade - extremely poor – poorly OR uninsulated brick. Roof insulation – unsure. Poor boiler. SBEM - N/A as this is a residential building Air Tightness / thermal bridging – poor - assumed to be default worst possible as unknown. Condensation Analysis – med/high – the property will potentially have condensation and moisture issues when insulating existing brick. This will need to be designed out. 						
	Site Capacity	 The site is capable to have add the side extension proposed - and new basement within the guidelines set out in Camden CPG on Basements. 						





Reuse and Resource Efficiency

Design	Measures	Comment					
	Energy efficiency building design	The proposal aims to design highly energy efficient building by incorporation passive design measures and renewables (Air source heat pump). Refer to page 12 of this report					
	Material efficiency	The reuse of existing materials from the demolition of westerly wall (brickwork) - Crushed and used as aggregate in new development. Low impact insulation throughout (EPS, Rockwool or Cellulose).					
		At least 20% of the total value of materials used should derive from recycled and reused content (i.e. brick façades and crushed aggregate in the substructure) in the products and materials selected (and divert the remainder from landfill).					
		Any new steel and concrete will have a high recycled content (50% concrete)					
Construction	Minimise the use of resources (energy, water, land)	Monitor the water and energy consumption and report the equivalent carbon emissions.					
	Resource efficiency	Pre-demolition audit to be carried out and target benchmark of \leq 11.1 tonnes of construction waste per 100m2.					
	Minimise waste generation	Reusable packing solutions with key product manufacturers will be explored at the earliest opportunity. Solutions may include flat pallets, bulk bags, steel stillages and returnable cable drums;					
		Pre-fabrication of new materials/elements wherever possible.					
	Diversion of waste from landfill	Construction waste – minimum 80% diversion from landfill rate;					
		Demolition waste – 90% diversion from landfill rate.					
	Sustainable Sourcing	All timber used in the development will come from a legal Source (FSC Scheme).					
		At least 80% of the new building materials will be responsibly sourced and will use suppliers who can provide an EMS certificate or equivalent.					
		New materials rated with an A or B in the BRE Green Guide to Specification will be preferred.					
Operations	Maintenance	Implement a good maintenance/ repair strategy to maximise life of materials. Always consider repair before replacement.					
		When replacements required select high durability materials with low maintenance requirements.					
End of Life	Deconstruction	Design for deconstruction and reuse of materials. Divert waste from landfill (via reuse, recycling or recovery) Demolition and construction waste - 90% to reuse recycling recovery					



Overheating Analysis INTRODUCTION Climate change and the heat-island effect is increasing overheating in the UK - and makes a much larger problem in London in recent years and a potential huge problem in decades to come. Under London Plan policy SI 2 'Minimising greenhouse gas emissions' & SI 4 'Managing Heat Risk', it is noted that the GHA overheating risk tool and the 'overheating hierarchy' should be followed in design to reduce unneeded overheating. Overheating Hierarchy: The below measures have been taken into **ANALYSIS** account in the design: reduce the amount of heat entering a building through 1) orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure _ The property is has excellent U-values that help keep it cool. The partial south-facing rear facade will have green roofs, low G-value glass to limit heat radiation and sufficient overhang for summer sun. 2) minimise internal overheating through efficient design The property has excellent building fabric control. 3) manage the heat within the building through exposed internal thermal mass and high ceilings The property has exposed thermal mass in rear floors 4) provide passive ventilation Openable windows throughout for summer. 5) provide mechanical ventilation MVHR throughout the property keeping constant air flow 6) provide active cooling systems. Cooling will not be provided. Taking into account the above, the GHA overheating risk tool, the site is at LOW/MED risk from overheating, and is managed on site.



Water Requirement							
INTRODUCTION	In excess of 20% of the UK's water is used domestically with over 50% of this used for flushing WCs and washing (source: Environment Agency). The majority of this comes from drinking quality standard or potable water.						
	The water efficiency measures included in the house will ensure that the water use target of 110 litres per person per day is achieved using the measures described below. Part G will be surpassed.						
RECOMMENDATION	The following water fittings will be provided for the dwelling:						
	• 4/2.5 litre dual flush WC 's						
	• Kitchen taps flow aerated taps with flow rate of 4 litres						
	• Flow aerated taps with flow rate of 3.5 litres						
	 Showers are average max flow rate mix of max. 6 and 9 litres/minute at supplied pressure. 						
	Bath 180 litres to overflow						
	 A/A+ rated washing machines (5kg per litre) and dishwashers (0.68 litre / place). 						
	The above specification will equate to 100 litres per person per day. Alternatively, rainwater recycling may be implemented to allow higher water use figures whilst maintaining the same target.						
FLOW RESTRICTORS	Simple flow restrictors will be used to ensure any high spec appliances are water efficient.						



Waste Management & Circular Economy

INTRODUCTION	Local Campen and London Plan planning policy states that both construction waste and operational waste should be minimized. Furthermore 'The Circular Economy' method of pre-planning how materials will be re-used so to reduce waste and in-turn the need for virgin building materials. Therefore the site aims to practice both the Waste Hierarchy and the principles of the circular economy, within both the design and construction of the development. In addition a site waste management plan will be implemented to ensure minimal waste on site.								
PREVENTION/ REDUCTION	 Pre-fabricated construction elements minimizes waste and time spent on site, further reducing waste Natural insulation derived from re-used card, cellulose or cork will be used where possible The project will use standard sizes and quantities of materials, and plan ahead to reduce off cuts. Over-ordering will be kept to a minimum through detailed quantity surveying as part of the SWMP requirements. Deliveries will be arranged to match work stages, to avoid materials being stored on site longer than necessary. All storage areas on site will be safe, secure and weatherproof. A site induction will aim to brief the construction team on minimising rework from errors and poor workmanship. 								

REUSE OF MATERIALS.

The following items will be considered in design for circular use:

Layer	Constituent elements	Strategies
Site	The geographical setting, urban location and external works	Retain and reuse
Substructure	Excavations, foundations, basements and ground floors	Longevity - durable and resilient; readiness for alternative technologies
Superstructure	Load-bearing elements above plinth including roof supporting structure	Adaptability - how the current needs might change in the future
Shell/Skin	The layer keeping out water, wind, heat, cold, direct sunlight and noise	Flexibility - potential for reconfiguration/future refurbishment of non-structural parts
Services	Installations to ensure comfort, practicality, accessibility and safety	Reusability - designed to be redeployed of reused as kit of parts
Space	The layout internal walls, ceilings, floors, finishes, doors, fitted furniture	Recoverability - designed to be deconstructed and reused/recycled
Stuff	Anything that could fall if the building was turned upside down	Not applicable
Construction Stuff	Any temporary installations/works/ materials, packaging and equipment	Reusability – Use of re-usable hoardings and scaffolding Waste minimisation, material optimisation



RECYCLING / FACILITIES	The site will provide appropriate facilities for the storage of separate waste streams – black (landfiull waste) and grouped recycling – metal, plastics, paper and glass. These will be safe and convenient to access for deposit and collection, with sufficient capacity for current and projected future use.						
SITE TARGETS	 The design team and construction team will procure: a Sustainable Procurement Plan, a bespoke Site Waste Management Plan, a target to divert 90% of construction waste and 90% of the demolition/excavation waste from going into the landfill. a benchmark target for a resource efficiency of 13.3m3 (or 11.1 tonnes) of waste per 100m2 of GIA 						
WASTE HIERACHY	The Waste hierarchy will be followed in design and construction.						





Appendix A – Energy Calculations

Energy calculations and SAP results on following pages.

TER/DER

SAP Area	TER CO2	Lean CO2	Clean CO2	Green CO2
208.56	23.37	13.04	13.04	4.59

OVERALL EMISSION SCENARIOS

Area	TER CO2	Lean CO2	Clean CO2	Green CO2
208.56	4,874.05	2,719.62	2,719.62	957.29



Duon outer Defenses								laava			00/07/0			
Property Reference	Uppe	er Park						1550ed on Date 29/07/202						
Assessment Reference	Part	L			Pro	op Type I	Ref							
Property	3a, L	lpper Park Road, Lo	ndon, NW3 2UN	ndon, NW3 2UN										
SAP Rating			77 C	DER	DER 23.37				TER		10.8	0		
Environmental			74 C	% DE	% DER < TER						-116	-116.39		
CO ₂ Emissions (t/year)			4.19	DFEE	DFEE 75.15						45.3	45.32		
Compliance Check			See BREL	% DFE	E < TFI	E					-65.8	-65.83		
% DPER < TPER			-124.14	DPER		127	22		TPER		56.7	6		
Assessor Details	Mr. Nicho	las Bowen							Assess	or ID	D719	9-000	1	
Client	Client Green Tiger, Ross Standaloft													
SUMMARY FOR INPL	JT DATA FC	R: New Build (A	As Designed)											
Orientation			Southeast											
Property Tenture			1											
Transaction Type			6											
Terrain Type			Suburban											
1.0 Property Type			House, End-Terrace											
2.0 Number of Storeys			3											
3.0 Date Built			2024											
4.0 Sheltered Sides			2											
5.0 Sunlight/Shade			Average or unknown	Average or unknown										
6.0 Thermal Mass Parameter			Precise calculation											
7.0 Electricity Tariff			Standard											
Smart electricity meter	fitted		No											
Smart gas meter fitted			No											
7.0 Measurements														
			Basemer Ground floo 1st Store	Hea nt: or: y:	t Loss F 32.60 31.10 29.00	Perimete) m) m) m	r Int	ernal Fl 58.88 83.50 66.18	oor Area 6 m² 6 m² 6 m²	A 1	verage S 2.3 3. 3.3	torey 50 m 10 m 50 m	Height	
8.0 Living Area			22.20						m²					
9.0 External Walls														
Description	Туре	Construction		U-Value (W/m ² K	 Kappa (kJ/m²K 	Gross) Area(m ²)	Nett Area (m²)	Shelter Res	Shelte	er C	penings /	Area Ca	alculation ype	
Basement	Solid Wall	Solid wall : plasterboa outside structure	ard on dabs, insulation, any	0.18	9.00	81.50	71.00	0.00	None	•	10.50	Enter G	iross Area	
Existing walls	Solid Wall	filled cavity, any outsi Solid wall : plasterboa	de structure ard on dabs, insulation, any	0.30	9.00	85.86	69.76	0.00	None	•	16.10	Enter G	Fross Area	
0.4 Dorty Wallo		outside structure												
Description	Туре	Construc	tion				U-Value	Kappa	Area	She	lter	She	lter	
Party Wall 1	Solid Wa	ll Other					(W/m ² K) 0.00	(kJ/m ² K 0.00	(m ²) 47.20	Re	es	No	ne	
9.2 Internal Walls														
Description		Constructi	on								Kappa (k l/m²l	a A	rea (m²)	
Basement GF B GF T UGF B UGF		Plasterboai Dense bloc Plasterboai Dense bloc Plasterboai	rd on timber frame k, plasterboard on dal rd on timber frame k, plasterboard on dal rd on timber frame	bs bs							9.00 75.00 9.00 75.00 9.00	`)	111.50 61.60 108.08 46.20 30.00	
10.0 External Roofs Description	Туре	Construction		L (1	J-Value <i>N</i> /m²K)(Kappa kJ/m²K)/	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	r Calcula Type	itionC 9)penings	
Existing	External Fla	t Plasterboard,	insulated flat roof		0.16	9.00	66.18	64.68	None	0.00	Enter G	ross	1.50	
New	External Fla Roof	t Plasterboard,	insulated flat roof		0.15	9.00	24.70	22.60	None	0.00	Enter G Area	ross a	2.10	



10.1 Party Ceilings Description		Const	ructio	on						Ka	рра	Area (m²)
Base GF		Precas Precas	st con st con	crete planks floor, s crete planks floor, s	screed, carpeted screed, carpeted					(kJ / 30 30	m²K) .00 .00	58.88 66.18
11.0 Heat Loss Floors												
Description	Туре	Storey Index	¢	Construction		U-Val (W/m	ue K)	Shelter Code		Shelter Factor	Kapp (kJ/m ²	a Area (m²) K)
Basement GF	Ground Floor - Solid Ground Floor - Solid	I Basement I Lowest occup	pied	Slab on ground, scree Slab on ground, scree	ed over insulation ed over insulation	0.15	5	None None		0.00 0.00	110.0 110.0	0 58.88 0 24.62
11.2 Internal Floors Description		Storey	Con	struction						K	appa	Area (m²)
GF		IIIUEX	Plas	terboard ceiling, ca	rpeted chipboard	floor				(10	9.00	58.88
			Plas	terboard ceiling, ca	arpeted chipboard	floor				í	J.00	66.18
12.0 Opening Types Description	Data Source	Туре		Glazing		Glazing Gap	Filling Type	G-value	Frame	e Fi Fi	rame actor	U Value (W/m²K)
Existing Windows New windows Door Roof lights Existing RL	Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Window Window Solid Doo Roof Ligh Roof Ligh	r t t	Single glaze Double Low Double Low Single glaze	d -E Soft 0.05 -E Soft 0.05 d	- - P	.)Po	0.85 0.63 0.00 0.63 0.85	.,,,,,	().70).70	1.40 1.40 1.00 1.40 1.40
13.0 Openings												
Name Front door Front new Existing front Rear existing New rear Base front Base rear Side new New RI Existing RL	Opening Ty Door New window Existing Win Existing Win New window New window New window Roof lights Existing RL	pe /s /dows /dows /s /s /s		Location New walls Existing walls Existing walls Existing walls New walls Basement Basement New walls New Existing		Orienta South South North North South North South Horizo Horizo	ation East East East West West West West whtal whtal	Area (2.2 2.2 8.4 7.7 5.8 5.2 5.2 4.2 2.1 1.5	(m²) 0 0 0 0 0 5 5 5 0 0 0 0		Pit (ch
14.0 Conservatory				None								
15.0 Draught Proofing				100				%				
16.0 Draught Lobby			No									
17.0 Thermal Bridging				Default								
Y-value				0.20				W/m²K				
18.0 Pressure Testing				No								
Test Method				Blower Door								
19.0 Mechanical Ventilati Mechanical Ventilatio	on n											
Mechanical Venti	lation System Pres	ent		No								
20.0 Fans, Open Fireplac	es, Flues											
21.0 Fixed Cooling Syste	m			No								
22.0 Lighting												
No Fixed Lighting				No Name Lighting 1	Efficacy 81.00	Po 10	wer .00	 Capa 810	acity .00		Co 2	unt 10
24.0 Main Heating 1				SAP table								
Description				boiler								
Percentage of Heat				100.00				%				
Fuel Type				Mains gas								
SAP Code				104				=				
In Winter				79.00				=				
In Summer				75.00				=				
Controls SAP Code				2106				=				
Delayed Start Stat				No				=				
2 stay ou olart olar												



Jan Feb Mar Apr	May Jun Jul Aug Sep	Oct	Nov	Dec
34.0 Small-scale Hydro	None]		
In Airing Cupboard	No]		
29.0 Hot Water Cylinder	None]		
	[1		
28 3 Waste Water Heat Recovery System	L			
Bath Count	1]		
Cold Water Source	From mains	1		
Water use <= 125 litres/person/dav	LNo	1		
Solar Panel	LNo	1		
Waste Water Heat Recovery Storage System	No]		
Waste Water Heat Recovery Instantaneous System	2 No]		
Waste Water Heat Recovery Instantaneous System	No	ן 1		
Flue Gas Heat Recovery System	No]]		
SAP Code]]		
28.0 Water Heating	Main Heating 1	1		
26.0 Heat Networks	None			
		 1		
25.0 Main Heating 2	None]		
Combi keep hot type	None]		
Combi boiler type	Standard Combi]		
Boiler Interlock	No]		
Flow Temperature	Unknown]		
Heat Emitter	Radiators]		
Heating Pump Age	2013 or later]		
Is MHS Pumped	Pump in heated space]		
Fan Assisted Flue	No]		

Turnianal Const	Tunical covings per vest	Ratings after improvement					
Typical Cost	Typical savings per year	SAP rating	Environmental Impact				
		C 78	C 75				
£3,500 - £5,500	£237	B 81	C 75				
		0	0				



Property Poference	Linner	Dork						leeuo	d on Da	to	20/07/	2024		
	- Opper	Fair			Due		26	15500				0/07/2024		
Assessment Reference	Lean				Pro	ртурет	Ker							
Property	3a, Up	per Park Road, Lo	ndon, NW3 2UN											
SAP Rating			83 B	DER		13.0	4		TER		10.8	30		
Environmental			86 B	% DEF	R < TER						-20.	.74		
CO ₂ Emissions (t/year)			2.38	DFEE		57.4	1		TFEE		45.3	32		
Compliance Check			See BREL	% DFE	E < TFE	E					-26.	.68		
% DPER < TPER			-32.75	DPER		75.3	5		TPER		56.7	76		
Assessor Details	r. Nichola	s Bowen							Assess	or ID	D71	9-000)1	
Client	reen Tige	r, Ross Standaloft												
SUMMARY FOR INPUT DA	ATA FOF	R: New Build (A	As Designed)											
Orientation			Southeast											
Property Tenture			1											
Transaction Type			6											
Terrain Type			Suburban											
1.0 Property Type			House, End-Terrace											
2.0 Number of Storeys			3											
3.0 Date Built			2024											
4.0 Sheltered Sides			2											
5.0 Sunlight/Shade			Average or unknowr	1										
6.0 Thermal Mass Parameter			Precise calculation											
7.0 Electricity Tariff			Standard											
Smart electricity meter fitted			No											
Smart gas meter fitted			No											
7.0 Measurements			Baseme Ground floo 1st Store	Hea nt: or: ey:	t Loss P 32.60 31.10 29.00	erimete m m m	r Int	t ernal FI 58.88 83.50 66.18	oor Area 6 m² 0 m² 6 m²	a A	verage 2 3 3	Storey .50 m .10 m .50 m	y Height	
8.0 Living Area			22.20						m²					
9.0 External Walls Description Type		Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelt	er C	Openings	Area C	Calculation	
Basement Solid V	Vall	Solid wall : plasterboa outside structure	ard on dabs, insulation, any	0.15	9.00	81.50	71.00	0.00	None	е	10.50	Enter (Gross Area	
New walls Cavity	Wall	Cavity wall : plasterbo filled cavity, any outsid	bard on dabs, AAC block, de structure	0.14	60.00	85.86	71.46	0.00	None	e	14.40	Enter (Gross Area	
Existing walls Solid V	Vall	Solid wall : plasterboa outside structure	ard on dabs, insulation, any	0.30	9.00	85.86	69.76	0.00	None	e	16.10	Enter (Gross Area	
9.1 Party Walls Description	уре	Construc	tion				U-Value	Kappa	Area	n She	lter	She	elter	
Party Wall 1	Solid Wall	Other					(W/m²K) 0.00	(kJ/m²k 0.00	(m²) (m²) 47.20) R	es	No	one	
9.2 Internal Walls														
Description		Constructi	on								Kapp		Area (m²)	
Basement GF B GF T UGF B UGF		Plasterboar Dense bloc Plasterboar Dense bloc Plasterboar	rd on timber frame k, plasterboard on da rd on timber frame k, plasterboard on da rd on timber frame	bs bs							9.00 75.0 9.00 75.0 75.0 9.00	(k) () () () ()	111.50 61.60 108.08 46.20 30.00	
10.0 External Roofs Description Typ	e	Construction		U (\	-Value I V/m²K)(k	Kappa (J/m²K)/	Gross Area(m²)	Nett Area	Shelter Code	Shelte Factor	r Calcul · Typ	ation(be	Openings	
Existing Ext	ernal Flat	Plasterboard. i	insulated flat roof		0.16	9.00	66.18	(m²) 64.68	None	0.00	Enter C	Gross	1.50	
Roc New Ext Roc	of ernal Flat of	Plasterboard, i	insulated flat roof		0.10	9.00	24.70	22.60	None	0.00	Are Enter (Are	ea Gross ea	2.10	



10.1 Party Ceilings Description		Consti	ructi	ion					Kaj	ppa A	vrea (m²)
Base GF		Precas Precas	st con st con	ncrete planks floor, screed, carpeted ncrete planks floor, screed, carpeted				(KJ/m²K) 30.00 58.8 30.00 66.1			58.88 66.18
11.0 Heat Loss Floors Description	Туре	Storey Index	¢	Construction	U-Valı (W/m²	ie K)	Shelter Code		Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Basement GF	Ground Floor - Solic Ground Floor - Solic	I Basement I Lowest occup	pied	Slab on ground, screed over insulation Slab on ground, screed over insulation	0.12 0.25		None None		0.00 0.00	110.00 110.00	58.88 24.62
11.2 Internal Floors Description		Storey	Со	nstruction					Ka (k.l	appa A /m²K)	Area (m²)
GF UGF		maox	Pla Pla	sterboard ceiling, carpeted chipboard fl sterboard ceiling, carpeted chipboard fl	oor oor				g).00).00	58.88 66.18
12.0 Opening Types											
Description	Data Source	Туре		Glazing	Glazing	Filling	G-value	Frame	e Fr	ame	U Value
Existing Windows New windows Door Roof lights Existing RL	Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Window Window Solid Doo Roof Light Roof Light	r t	Single glazed Triple Low-E Soft 0.05 Triple Low-E Soft 0.05 Single glazed	Gap	туре	0.85 0.57 0.00 0.57 0.85	туре).70).70	1.40 0.85 1.00 0.85 1.40
13.0 Openings Name Front door Front new Existing front Rear existing New rear Base front Base front Base rear Side new New RI Existing RL 14.0 Conservatory 15.0 Draught Proofing 16.0 Draught Lobby 17.0 Thermal Bridging Y-value 18.0 Pressure Testing Designed AP ₅₀	Opening Ty Door New windov Existing Wir Existing Wir New windov New windov New windov Roof lights Existing RL	pe /s kdows /s /s /s		Location New walls New walls Existing walls Existing walls Basement Basement New walls New Existing None 100 No Default 0.20 Yes 2.00	Orienta South I South I South I North V South I North V South I Horizo Horizo	tion East East Vest East Vest Vest ntal	Area (2.2 2.2 8.4 7.7 5.8 5.2 5.2 4.2 2.1 1.5 %	(m²) 0 0 0 5 5 0 0 0 0 2) @ 50	Pa	Pitc 0 0	h
Test Method				Blower Door							
19.0 Mechanical Ventilat	ion										
Mechanical Ventilation	on										
Mechanical Vent	ilation System Pres	ent		Yes							
Approved Installa	ation			Yes							
Mechanical Vent	ilation data Type			Database							
Туре				Balanced mechanical ventilation with	heat recover	Ŋ					
MV Reference N	lumber			500167							
Configuration				6							
Manufacturer SF	P			0.99							

Duct Type

MVHR Efficiency

Wet Rooms

SFP from Installer Commissioning Certificate

MVHR System Location

Duct Installation Specification

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

Rigid

88.00

6

No

Level 1

Inside heated envelope (installed exclusively)



22.0 Lighting

No Fixed Lighting	No							
	Name Lighting 1	E	fficacy 81.00	Pow 10.0	/er 00	Capacity 810.00		20 Count
24.0 Main Heating 1	Database							
Description	gas							
Percentage of Heat	100.00					%		
Database Ref. No.	17929							
Fuel Type	Mains gas							
In Winter	84.00							
In Summer	87.30							
Model Name	LOGIC COM	MBI						
Manufacturer	Ideal Boilers	6						
System Type	Combi boile	r						
Controls SAP Code	2110							
Delayed Start Stat	No							
Flue Type	Balanced							
Fan Assisted Flue	Yes							
Is MHS Pumped	Pump in hea	ated space						
Heating Pump Age	2013 or late	r						
Heat Emitter	Radiators							
Flow Temperature	Enter value							
Flow Temperature Value	55.00							
Boiler Interlock	No							
Combi boiler type	Standard Co	ombi						
Combi keep hot type	None							
25.0 Main Heating 2	None							
26.0 Heat Networks	None							
28.0 Water Heating								
Water Heating	Main Heatin	ıg 1						
SAP Code	901							
Flue Gas Heat Recovery System	No							
Waste Water Heat Recovery Instantaneous System 1	No							
Waste Water Heat Recovery Instantaneous System 2	No							
Waste Water Heat Recovery Storage System	No							
Solar Panel	No							
Water use <= 125 litres/person/day	No							
Cold Water Source	From mains	;						
Bath Count	1							
Immersion Only Heating Hot Water	No							
28.3 Waste Water Heat Recovery System								
29.0 Hot Water Cylinder	None							
In Airing Cupboard	No							
34.0 Small-scale Hydro	None							
Jan Feb Mar Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Recommendations								

Lower cost measures None



Further measures to achieve even higher standards

Typical Cost	
£3,500 - £5,500	

Typical savings per year

£252

Ratings after improvement											
SAP rating	Environmental Impact										
B 83	B 87										
B 86	B 87										
0	0										



Assessment Reference Proposed Prop Type Ref Propriy 3 Upper Park Road, Landon, NW3 2UN 10.0.3 SAF Reting 276 C DER 4.50 TER 10.0.3 SAF Reting 56.7 OER * TER 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.2 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.8.3 0.0.3 56.9.3 56.9.3 57.9.3 <th>Property Reference</th> <th>Upper</th> <th>Park</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Issue</th> <th>d on Da</th> <th>ite</th> <th>29/07/2</th> <th>2024</th> <th></th>	Property Reference	Upper	Park						Issue	d on Da	ite	29/07/2	2024		
Property Disk	Assessment Reference	Propos	sed			Pro	p Type	Ref					-		
Data Status Construction Description File Income Cold Processing 05 A V/ DER < TER	Property	3a Un	ner Park Road I o	ndon NW3 2UN											
SAP Raing 70 C DER 4.50 TER 10.83 Environmental 65 A 3/0 DEE 57.41 TFEE 45.2 Compliance Check See BRL 7/0 DEE 57.41 TFEE 45.2 Compliance Check See BRL 7/0 DEE 57.41 TFEE 45.2 Compliance Check See BRL 7/0 DEE 57.81 TFEE 45.2 Assessor Details Mr. Nicholas Brown Assessor Details See BRL 7/0 DEE 57.83 Client Clemen Tiger, Rose Standald Southeast Property Trutre 1 - Client Southeast Property Trutre 1 - - 10 Property Type Boutheast - - - 20 Number of Storeys 3 3.0 Date Built - - - 2.0 Internal Meas Parameter Precise asticulation - - - - 7.0 Electricity Trait Standard No - - - - -															
Environmental BSA * UBE A TER EE6.82 COLEMINATIONS (LightAr) 0.88 0.75E 1774 17EE 52.82 COLEMINATIONS (LightAr) See BYEL 20.07E 1772 17EE 52.88 A DEEX TPER 13.73 0.PER 49.21 TPER 55.88 Assessor Details Mr. Noholas Bowen Assessor Details 0.719-0001 1.719-0001 Crient Coles Bowen Southeast	SAP Rating			76 C	DER		4.59)		TER		10.6	63		
COLONDINANCE Check D88 DFEE [57:4] TEE 45.32 Compliance Check See BREL Ys DFEE<	Environmental			95 A	% DEF	R < TER						56.8	32		
Compliance Check See BREL % DPER < TPER -20.08 Xo DPER < TPER	CO ₂ Emissions (t/year)			0.88	DFEE		57.4	1		TFEE		45.3	32		
NO DEER < TPER 13.73 DPER 26.21 TPER 55.88 Assessor Details Mr. Nicholas Bowan Assessor Details Mr. Nicholas Bowan Assessor Details D719-0001 Client Green Tiger, Ross Standaldt Standaldt Assessor Details D719-0001 Client Green Tiger, Ross Standaldt Standaldt Assessor Details D719-0001 Client Green Tiger, Ross Standaldt Standaldt D719-0001 D719-0001 Client Standaldt Standaldt D719-0001 D719-0001 Client Standaldt D719-0001 D719-0001 D719-0001 Crientation 1 D10000 D10000 D10000 D10000 D100000 D100000 D100000 D100000 D100000 D100000 D1000000 D100000000 D1000000000000000000000000000000000000	Compliance Check			See BREL	% DFE	E < TFE	E					-26	.68		
Assessor Dutablis Mr. Nicholas Bowen Assessor ID D716-0001 Cleant Green Tiger, Ross Standaloft D716-0001 D716-0001 D716-0001 D716-0001 D716-0001 D716-0001 D716-0001 D716-0001 D716-0001 D716-00	% DPER < TPER			13.73	DPER		48.2	1		TPER		55.8	38		
Client Green Tiger, Ross Standalot SUMMARY FOR INPUT DATA FOR: New Build (As Designed) Orientation Southeast Property Ture 1 Transaction Type 6 Carbon Type 5 Operating Area Southeast Operating Area Average Storey Store Storey Southeast Store Storey Southeast No Store Storey Southeast No Store Storey Southeast Southeast Southeast Operating Area Southeast No Southeast Southeast Store Storey Southeast No Sout	Assessor Details	Mr. Nichola	s Bowen							Assess	or ID	D71	9-000)1	
SUMMARY FOR INPUT DATA FOR: New Build (As Designed) Orientation Property Trenture Inseaction Type B Suburban Inseaction Type B Suburban Inseaction Type B Suburban Inseaction Type B Suburban Internation Internat	Client	Green Tige	r, Ross Standaloft												
Orientation Southeast Property Tonture 1 Transaction Type 5 Transaction Type Suburban 1.0 Property Type House, End-Terrace 2.0 Number of Storeys 3 3.0 Date Built 20244 4.0 Shehred Sides 2 5.0 Stunlight/Shade Average or unknown 6.0 Thermal Mass Parameter Precise calculation 7.0 Electricity Tariff Standard Smart electricity meter filted No Smart space meter filted No 7.0 Measurements 22.00 7.0 Electricity Tariff Standard Smart electricity meter filted No Smart space meter filted No 9.0 External Filted No 9.0 External Walls Construction Description Type Construction Construction UNINE (Storege Construction Constr	SUMMARY FOR INPL	JT DATA FOF	R: New Build (A	As Designed)											
Property Tenture I Transaction Type 6 Transaction Type 5 Suburban Suburban 1.0 Property Type House, End-Terrace 2.0 Number of Storeys 3 3.0 Date Built 2024 4.0 Sheltered Stores 2 5.0 Sunlight/Shade Average or unknown 6.0 Thermal Mass Parameter Precise calculation 7.0 Electricity Tariff Standrad Smart gas meter fitted No Smart gas meter fitted No Of Messurements 22.02 8.0 Living Area 22.20 9.0 External Valis Construction Description Type Construction View walk Sold Vali Other 0.10 0.00 9.0 External Valis Description Description Type Construction View valis Description Type Construction View valis Description Type Construction	Orientation			Southeast											
Transaction Type 6 Terrain Type Suburban 1.0 Property Type House, End-Terrace House	Property Tenture			1											
Terrain Type Suburban 1.0 Property Type House, End-Torrace	Transaction Type			6											
1.0 Property Type House, End-Terrace 2.0 Number of Storeys 3 3.0 Date Built 2024 4.0 Sheltered Sides 2 5.0 Shulight/Shade Average or unknown 6.0 Thermal Mass Parameter Precise calculation 7.0 Electricity Tariff Standard Smart gas meter fitted No Smart gas meter fitted No 7.0 Measurements Basement: Ground floor: 131.10 m 3.0 Determal Wails Solet wait: pasterboard on dates, insulation, any context later date, finalition, any context later. More there date, finalition, any context later date. 9.0 External Walls Solet wait: pasterboard on dates, insulation, any context later. Solet wait: pasterboard on dates, finalition, any context later date. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. Solet wait: pasterboard on dates, finalition, any context later. <t< td=""><td>Terrain Type</td><td></td><td></td><td>Suburban</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Terrain Type			Suburban											
2.0 Number of Storeys 3	1.0 Property Type			House, End-Terrace	9										
3.0 Date Built 2024 4.0 Sheltered Sides 2 5.0 Suntight/Shade Average or unknown 6.0 Thermal Mass Parameter Precise calculation 7.0 Electricity Tariff Smart gas meler filted No Smart gas meler filted No Standard Standard Smart gas meler filted No Standard Standard Standard Standard Standard Standard Standard Standard Standard New valia Sold Wall Static wall "plateholication data, ACC block, None Uvalue Kappa Cross Netf Area Shelter (Non" (ALIN"K) Araalin) None Static wall "plateholication data, ACC block, None New wall Sold Wall Sold Wall Sold Wall <	2.0 Number of Storeys			3											
4.0 Sheltered Sides 2 5.0 Sunlight/Shade Average or unknown 6.0 Thermal Mass Parameter Precise calculation 7.0 Electricity Tariff Standard Smart electricity meter fitted No 7.0 Electricity Tariff Standard Smart leactricity meter fitted No 7.0 Electricity Tariff Standard Smart gas meter fitted No 7.0 Measurements Heat Loss Perimetric 7.0 External Kols 22.20 9.0 External Kols 22.20 9.0 External Kols Solid Vali Solid Vali Solid Vali Description Type Construction UValue Kappa Openings Area Calculation Type Openings Area Calculation None 10.20 External Walis Solid Vali Description Type Construction UValue Kappa Gross Area 0.00 0.00	3.0 Date Built			2024											
5.0 Sunlight/Shade Average or unknown 6.0 Thermal Mass Parameter Precise calculation 7.0 Electricity Tariff Standard Smart electricity meter fitted No Soft weil: plasterboard on date, insulation, any Soft weil: plasterboard on date, insulation, any Soft weil: plasterboard on date, insulated, any New weils Carvity Weil Soft weil: plasterboard on date, insulated, any Soft weil: plasterboard on date, insulated, any Soft weil: plasterboard on date, insulated fit roof Soft Weil No Soft weil: plasterboard on date, insulated fit roof Soft Weil No Soft weil: plasterboard on date, insulated fit roof Soft Weil No Soft weil: plasterboard on date, insulated fit roof Soft Weil No Soft weil: plasterboard on date, insulated fit roof Soft Weil No Soft Weil	4.0 Sheltered Sides			2											
Continuent of the second se	5.0 Sunlight/Shade			Average or unknow	า										
7.0 Electricity Tariff Standard Smart electricity meter fitted No Smart electricity meter fitted No 7.0 Measurements Heat Loss Perimeter Internal Floor Area Average Storey Height 7.0 Measurements Standard Stassement: Openings Area Calculation Party Walls Solid Wall Solid Wall Stassement deals, insulation, any outside structure 0.10 60.00 None 14.40 Enter Gross Area 9.1 Party Walls Solid Wall Other Construction U-Value Kappa Gross Shelter Shelter Shelter Shelter Shelter None 16.10 Enter Gross Area 9.1 Party Walls Description <td< td=""><td>6.0 Thermal Mass Parame</td><td>eter</td><td></td><td>Precise calculation</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	6.0 Thermal Mass Parame	eter		Precise calculation											
Contractor Usantation Smart electricity meter fitted No Smart electricity meter fitted No Smart electricity meter fitted No Smart electricity meter fitted Smart electricity meter fitted No Smart electricity meter fitted Smart electricity meter fitted No Statemeter Internal Floor Area Average Storey Height Statemeter Internal Floor Area Average Storey Height Statemeter Internal Floor Area Average Storey Height Statemeter Statemeter Internal Valls Description Type Construction Uvalue Kappa Gross Net Area Shelter None 10.0 None Shelter Gross Area None 10.14 60.00 85.86 69.76 0.00 <t< td=""><td>7 0 Electricity Tariff</td><td></td><td></td><td>Standard</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	7 0 Electricity Tariff			Standard											
Smart gas meter fitted No Smart gas meter fitted No Basement: Ground floor: 132.60 m 32.60 m 35.50 m² Average Storey Height 32.60 m 35.50 m² Side wall plasterboard on fabs, Arce or data, Kappa Area Average Storey Height 32.60 m 35.50 m² Basement: Solid Wall Solid wall plasterboard on data, Insulation, any outside structure UValue Kappa Gross Net Area Shelter Ward Carly Wall State Structure Operings Area Calculation Type Solid Wall Other U-Value Kappa Gross Net Area Shelter Ward Carly Wall Solid Wall Solid Wall Solid Wall Other Operings Area Calculation Type Party Wall 1 Solid Wall Other U-Value Kappa Area Met Area Shelter (m²) Res Shelter Kappa Area (m²) (KJ/m²K) (K	Smort electricity meter	fitted		No											
To Measurements Het Loss Perimeter Internal Floor Area S2.60 m Average Storey Height 2.50 m To Measurements Het Loss Perimeter Internal Floor Area S2.80 m Average Storey Height 2.50 m Soluting Area 22.20 m² Internal Flat Basement Sold Wall Sold Wall <t< td=""><td>Smart das meter fitted</td><td>nileu</td><td></td><td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Smart das meter fitted	nileu		No											
7.0 Measurements Heat Loss Perimeter Internal Floor Area S5.88 m² Average Storey Height 2.50 m Basement: Ground floor: 1st Storey: Internal Floor Area S5.88 m² Average Storey Height 2.50 m 8.0 Living Area 22.20 m² 9.0 External Walls Construction UValue Kappa Construction dabs, insulation, any WirrKl (kJ/mKl) Aras(m²) fm?) Average Storey Height 2.50 m 9.0 External Walls Construction UValue Kappa Construction dabs, insulation, any Outside structure Openings Area Calculation Type New walls Construction UValue Kappa Construction Construction Value Kappa Construction Value Kappa Construction <th co<="" td=""><td></td><td></td><td></td><td>NO</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th>	<td></td> <td></td> <td></td> <td>NO</td> <td></td>				NO										
8.0 Living Area m ² 9.0 External Walls Description Type Construction m ² Basement Solid Wall Solid Wall </td <td>7.0 Measurements</td> <td></td> <td></td> <td>Baseme Ground flo 1st Store</td> <td>Hea nt: or: əy:</td> <td>t Loss P 32.60 31.10 29.00</td> <td>erimete m m m</td> <td>r Int</td> <td>ernal Fl 58.88 83.50 66.18</td> <td>oor Area 5 m² 9 m² 5 m²</td> <td>a A</td> <td>verage 2 3 3</td> <td>Storey 50 m 10 m 50 m</td> <td>y Height</td>	7.0 Measurements			Baseme Ground flo 1st Store	Hea nt: or: əy:	t Loss P 32.60 31.10 29.00	erimete m m m	r Int	ernal Fl 58.88 83.50 66.18	oor Area 5 m² 9 m² 5 m²	a A	verage 2 3 3	Storey 50 m 10 m 50 m	y Height	
9.0 External Walls Description Type Construction U-Value outside structure Kappa cross Net Area Shelter (M/m*K) Area(m*) Shelter (m*) Openings Area Calculation Type Basement Solid Wall Solid wall: plasterboard on dabs, insulation, any outside structure 0.15 9.00 81.50 71.00 0.00 None 14.40 Enter Gross Area Calculation Type New walls Cavity Wall Solid Wall: plasterboard on dabs, insulation, any outside structure 0.14 60.00 85.86 97.46 0.00 None 14.40 Enter Gross Area Calculation Type 9.1 Party Walls Description Type Construction U-Value Kappa (W/m*K) (KJ/m*K) (M/m*K) Area Shelter (m*) Shelter Res None 16.10 Enter Gross Area Calculation Type (M/m*K) (KJ/m*K) (M/m*K) None 16.10 Enter Gross Area Calculation Type Construction U-Value Kappa Construction (M/m*K) (KJ/m*K) (M/m*K) (M/m*K) None 16.10 Enter Gross Area Calculation Type Construction (M/m*K) (KJ/m*K) (M/m*K)	8.0 Living Area			22.20						m²					
DescriptionTypeConstructionU-Value (W/m²K) (kJ/m²K) (k	9.0 External Walls														
Basement Solid Wall Solid Structure New walls Cavity Wall Cavity Wall Desterboard on dabs, insulation, any outside structure 0.14 60.00 85.86 71.46 0.00 None 14.40 Enter Gross Area Existing walls Solid Wall Solid wall : plasterboard on dabs, insulation, any outside structure 0.30 9.00 85.86 69.76 0.00 None 16.10 Enter Gross Area 9.1 Party Walls Description Type Construction U-Value Kappa (m ²) Area (m ²) Shelter Res None 9.2 Internal Walls Description Construction U-Value Kappa (M ²) Area (m ²) None None None None None 9.2 Internal Walls Description Construction Construction U-Value Kappa (M ²) Area (m ²) None None </td <td>Description</td> <td>Туре</td> <td>Construction</td> <td></td> <td>U-Value (W/m²K)</td> <td>Kappa (kJ/m²K)</td> <td>Gross Area(m²)</td> <td>Nett Area (m²)</td> <td>Shelter Res</td> <td>Shelt</td> <td>er C</td> <td>Openings</td> <td>Area C</td> <td>alculation Type</td>	Description	Туре	Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelt	er C	Openings	Area C	alculation Type	
New walls Cavity Wall Enter Gross Area Existing walls Solid Wall Solid Wall Solid Wall Insuface ant/s, any unside structure 0.30 9.00 85.86 69.76 0.00 None 16.10 Enter Gross Area 9.1 Party Walls Description Type Construction U-Value Kappa (Wim ² K) (KJ/m ² K) Area (m ²) (KJ/m ² K) Shelter Shelter Shelter None None 16.10 Enter Gross Area 9.1 Party Wall 1 Solid Wall Other 0.00 0.00 0.00 47.20 None N	Basement	Solid Wall	Solid wall : plasterboa outside structure	ard on dabs, insulation, any	0.15	9.00	81.50	71.00	0.00	Non	e	10.50	Enter (Gross Area	
Existing wails Solid wail Solid wail Description Type Construction U-Value Kappa (Min*K) (kJ/m²K) (kJ/m²K) (kJ/m²K) Area (m²) (kJ/m²K) 9.1 Party Walls Description Type Construction U-Value Kappa (Min*K) Area (m²) (kJ/m²K) None 9.2 Internal Walls Description Construction U-Value Kappa (Min*K) Area (m²) (kJ/m²K) None 9.2 Internal Walls Description Construction Kappa Area (m²) (kJ/m²K) Area (m²) (kJ/m²K) 9.2 Internal Walls Description Construction Kappa Area (m²) (kJ/m²K) Area (m²) (kJ/m²K) Basement Plasterboard on timber frame GF B Dense block, plasterboard on dabs 75.00 61.60 UGF Plasterboard on timber frame 9.00 108.08 75.00 46.20 UGF Plasterboard on timber frame 9.00 30.00 30.00 10.0 External Roofs Description U-Value Kappa Gross (M'm²K)(kJ/m²K)(kJ/m²K)/Area(m²) Nett Shelter Shelter CalculationOpenings (m²) Existing External Flat Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 Are	New walls	Cavity Wall	Cavity wall : plasterbo filled cavity, any outsi	oard on dabs, AAC block, ide structure	0.14	60.00	85.86	71.46	0.00	Non	e	14.40	Enter (Gross Area	
9.1 Party Walls Description Type Construction U-Value (W/m²K) 0.00 Kappa (kJ/m²K) Area (m²) Shelter Res Shelter Shelter Party Wall 1 Solid Wall Other 0.00 0.00 47.20 None 9.2 Internal Walls Description Construction Kappa (KJ/m²K) Area (m²) None 9.2 Internal Walls Plasterboard on timber frame GF B Plasterboard on dabs GF T Plasterboard on dabs Dense block, plasterboard on dabs 9.00 111.50 GF B Dense block, plasterboard on dabs GF T Plasterboard on timber frame Dense block, plasterboard on dabs 9.00 108.08 UGF B Dense block, plasterboard on dabs 75.00 46.20 9.00 30.00 10.0 External Roofs Description U-Value Kappa (m²) Gross (m²) Nett Area (m²) Shelter Shelter CalculationOpenings Existing External Flat Roof Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 <t< td=""><td>Existing waits</td><td>Solid Wall</td><td>outside structure</td><td>ard on dabs, insulation, any</td><td>/ 0.30</td><td>9.00</td><td>00.00</td><td>09.70</td><td>0.00</td><td>NON</td><td>e</td><td>10.10</td><td>Enter</td><td>JIOSS Area</td></t<>	Existing waits	Solid Wall	outside structure	ard on dabs, insulation, any	/ 0.30	9.00	00.00	09.70	0.00	NON	e	10.10	Enter	JIOSS Area	
Description type Construction U-Value Kappa (W/m²K) (kJ/m²K) (kJ/m²K) Area (m²) Res Shefter Shefter Shefter Shefter Shefter Shefter Shefter Shefter Res Party Wall 1 Solid Wall Other 0.00 0.00 47.20 None 9.2 Internal Walls Description Construction Kappa Area (m²) (kJ/m²K) Area (m²) (kJ/m²K) Basement Plasterboard on timber frame 9.00 111.50 9.00 111.50 GF B Dense block, plasterboard on dabs 75.00 61.60 9.00 108.08 UGF Dense block, plasterboard on dabs 75.00 46.20 9.00 30.00 10.0 External Roofs Description Type Construction U-Value Kappa Gross (W/m²K)(kJ/m²K)Area(m²) Nett Shelter Shelter CalculationOpenings Existing External Flat Roof Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Roof Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None <t< td=""><td>9.1 Party Walls</td><td>-</td><td>a .</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	9.1 Party Walls	-	a .												
Party Wall 1 Solid Wall Other 0.00 0.00 47.20 None 9.2 Internal Walls Description Construction Kappa (kJ/m²K) Area (m²) (kJ/m²K) Basement Plasterboard on timber frame 9.00 111.50 GF B Dense block, plasterboard on dabs 75.00 61.60 UGF B Dense block, plasterboard on dabs 75.00 46.20 UGF Plasterboard on timber frame 9.00 108.08 UGF Dense block, plasterboard on dabs 75.00 46.20 UGF Plasterboard on timber frame 9.00 30.00 10.0 External Roofs Description Type Construction U-Value Kappa (W/m²K)(kJ/m²K)Area(m²) Nett Shelter Shelter CalculationOpenings Existing External Flat Roof Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	Description	Type	Construc	tion				U-Value (W/m ² K)	Kappa (kJ/m ² K	Area (m²)	a She Re	elter es	Sne	eiter	
9.2 Internal Walls Description Construction Kappa (k//m²K) Area (m²) (k//m²K) Basement GF B Plasterboard on timber frame Dense block, plasterboard on dabs 9.00 111.50 GF T Plasterboard on timber frame UGF B 9.00 108.08 UGF B Dense block, plasterboard on dabs 75.00 46.20 UGF Plasterboard on timber frame 9.00 30.00 10.0 External Roofs U-Value Kappa Gross (W/m²K)(kJ/m²K)(Area(m²) Nett Area (m²) Shelter CalculationOpenings Existing External Flat Roof Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.16 9.00 24.70 22.60 None 0.00 Enter Gross 1.50	Party Wall 1	Solid Wall	Other					0.00	0.00	47.20)		No	one	
Description Construction Kappa Area (III-) Basement Plasterboard on timber frame 9.00 111.50 GF B Dense block, plasterboard on dabs 75.00 61.60 GF T Plasterboard on timber frame 9.00 108.08 UGF B Dense block, plasterboard on dabs 75.00 46.20 UGF P Plasterboard on timber frame 9.00 30.00 10.0 External Roofs U-Value Kappa Gross Nett Shelter Shelter CalculationOpenings Description Type Construction U-Value Kappa Gross Nett Shelter Shelter CalculationOpenings Existing External Flat Roof Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	9.2 Internal Walls		Constructi	ion.								Konn		(m2)	
Basement Plasterboard on timber frame 9.00 111.50 GF B Dense block, plasterboard on dabs 75.00 61.60 GF T Plasterboard on timber frame 9.00 108.08 UGF B Dense block, plasterboard on dabs 75.00 46.20 UGF Plasterboard on timber frame 9.00 30.00 10.0 External Roofs Plasterboard, insulated flat roof U-Value Kappa Gross Nett Shelter Shelter CalculationOpenings Existing External Flat Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	Description		Constructi									(kJ/m	²K)	Area (III-)	
GF T UGF B UGF B UGF Plasterboard on timber frame Dense block, plasterboard on dabs Plasterboard on timber frame 9.00 108.08 10.0 External Roofs 75.00 46.20 Description Type Construction U-Value Kappa (W/m²K)(kJ/m²K)Area(m²) Nett Area (m²) Shelter Shelter CalculationOpenings Existing External Flat Roof Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	Basement GF B		Plasterboar Dense bloc	rd on timber frame k, plasterboard on da	bs							9.00 75.0) 0	111.50 61.60	
UGF Plasterboard on timber frame 9.00 30.00 10.0 External Roofs Description Type Construction U-Value Kappa Gross (W/m²K)(kJ/m²K)Area(m²) Nett Area (m²) Shelter CalculationOpenings Code (m²) Existing External Flat Roof Plasterboard, insulated flat roof New 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50	GF T UGF B		Plasterboar Dense bloc	rd on timber frame k, plasterboard on da	bs							9.00 75.0) 0	108.08 46.20	
10.0 External Roofs Description Type Construction U-Value Kappa (W/m²K)(kJ/m²K)Area(m²) Nett Area (m²) Shelter CalculationOpenings (W/m²K)(kJ/m²K)Area(m²) Existing External Flat Plasterboard, insulated flat roof Roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	UGF		Plasterboa	rd on timber frame	-							9.00	Ĵ	30.00	
Description Type Construction U-Value Kappa Gross Nett Shelter Shelter CalculationOpenings (W/m²K)(kJ/m²K)Area(m²) Area Code Factor Type Existing External Flat Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	10.0 External Roofs	_	_		_			_				_			
(m²) Existing External Flat Plasterboard, insulated flat roof 0.16 9.00 66.18 64.68 None 0.00 Enter Gross 1.50 Roof Area New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	Description	Туре	Construction	I	U (\	-Value V/m²K)(I	Kappa (J/m²K)/	Gross Area(m²)	Nett Area	Shelter Code	Shelter Factor	r Calcul r Typ	ation(be	Openings	
Roof New External Flat Plasterboard, insulated flat roof 0.10 9.00 24.70 22.60 None 0.00 Enter Gross 2.10	Existina	External Flat	Plasterboard	insulated flat roof	ŗ	0.16	9.00	66.18	(m²) 64.68	None	0.00	Enter (Gross	1.50	
	New	Roof External Flat	Plasterboard,	insulated flat roof		0.10	9.00	24.70	22.60	None	0.00	Are Enter (ea Gross	2.10	



10.1 Party Ceilings Description		Consti	ructi	ion					Kaj	ppa A	vrea (m²)
Base GF		Precas Precas	st con st con	ncrete planks floor, screed, carpeted ncrete planks floor, screed, carpeted				(KJ/m²K) 30.00 58.8 30.00 66.1			58.88 66.18
11.0 Heat Loss Floors Description	Туре	Storey Index	¢	Construction	U-Valı (W/m²	ie K)	Shelter Code		Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Basement GF	Ground Floor - Solic Ground Floor - Solic	I Basement I Lowest occup	pied	Slab on ground, screed over insulation Slab on ground, screed over insulation	0.12 0.25		None None		0.00 0.00	110.00 110.00	58.88 24.62
11.2 Internal Floors Description		Storey	Со	nstruction					Ka (k.l	appa A /m²K)	Area (m²)
GF UGF		maox	Pla Pla	sterboard ceiling, carpeted chipboard fl sterboard ceiling, carpeted chipboard fl	oor oor				g).00).00	58.88 66.18
12.0 Opening Types											
Description	Data Source	Туре		Glazing	Glazing	Filling	G-value	Frame	e Fr	ame	U Value
Existing Windows New windows Door Roof lights Existing RL	Manufacturer Manufacturer Manufacturer Manufacturer Manufacturer	Window Window Solid Doo Roof Light Roof Light	r t	Single glazed Triple Low-E Soft 0.05 Triple Low-E Soft 0.05 Single glazed	Gap	туре	0.85 0.57 0.00 0.57 0.85	туре).70).70	1.40 0.85 1.00 0.85 1.40
13.0 Openings Name Front door Front new Existing front Rear existing New rear Base front Base front Base rear Side new New RI Existing RL 14.0 Conservatory 15.0 Draught Proofing 16.0 Draught Lobby 17.0 Thermal Bridging Y-value 18.0 Pressure Testing Designed AP ₅₀	Opening Ty Door New windov Existing Wir Existing Wir New windov New windov New windov Roof lights Existing RL	pe /s kdows /s /s /s		Location New walls New walls Existing walls Existing walls Basement Basement New walls New Existing None 100 No Default 0.20 Yes 2.00	Orienta South I South I South I North V South I North V South I Horizo Horizo	tion East East Vest East Vest Vest ntal	Area (2.2 2.2 8.4 7.7 5.8 5.2 5.2 4.2 2.1 1.5 %	(m²) 0 0 0 5 5 0 0 0 0 2) @ 50	Pa	Pitc 0 0	h
Test Method				Blower Door							
19.0 Mechanical Ventilat	ion										
Mechanical Ventilation	on										
Mechanical Vent	ilation System Pres	ent		Yes							
Approved Installa	ation			Yes							
Mechanical Vent	ilation data Type			Database							
Туре				Balanced mechanical ventilation with	heat recover	Ŋ					
MV Reference N	lumber			500167							
Configuration				6							
Manufacturer SF	P			0.99							

Duct Type

MVHR Efficiency

Wet Rooms

SFP from Installer Commissioning Certificate

MVHR System Location

Duct Installation Specification

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

Rigid

88.00

6

No

Level 1

Inside heated envelope (installed exclusively)



22.0 Lighting

No Fixed Lightin	ng			No							
				Name Lighting 1		Efficacy 81.00	Pow 10.0	er)0	Capacity 810.00		20
24.0 Main Heating	1			Database]		
Description				ashp]		
Percentage of H	leat			100.00					%		
Database Ref. N	No.			100061]		
Fuel Type				Electricity]		
In Winter				341.54]		
In Summe	r			119.34]		
Model Name				ECODAN 8	.5kW]		
Manufacturer				Mitsubishi E	Electric Euro	pe B.V.]		
System Type				Heat Pump]		
Controls SAP Co	ode			2207]		
Is MHS Pumped	ł			Pump in he	ated space]		
Heating Pump A	ge			2013 or late	er]		
Heat Emitter				Radiators]		
Flow Temperatu	re			Enter value]		
Flow Temperatu	re Value			55.00]		
25.0 Main Heating	2			None]		
26.0 Heat Networks	S			None]		
28.0 Water Heating	I								_		
Water Heating				Main Heatir	ng 1						
SAP Code				901							
Flue Gas Heat F	Recovery S	System		No]		
Waste Water He	eat Recove	ery Instantanec	ous System 1	No]		
Waste Water He	eat Recove	ery Instantanec	ous System 2	No]		
Waste Water He	eat Recove	ery Storage Sys	stem	No]		
Solar Panel				No]		
Water use <= 12	25 litres/pe	rson/day		No]		
Cold Water Sou	rce			From mains	3]		
Bath Count				1]		
28.3 Waste Water H	leat Reco	very System									
29.0 Hot Water Cyl	inder			Hot Water (Cylinder]		
Cylinder Stat				Yes]		
Cylinder In Heat	ted Space			Yes]		
Independent Tin	ne Control			Yes]		
Insulation Type				Measured L	LOSS]		
Cylinder Volume	e			150.00] L		
Loss				1.90					kWh/day		
Pipes insulation				Fully insula	ted primary p	pipework]		
In Airing Cupboa	ard			No]		
31.0 Thermal Store)			None]		
34.0 Small-scale H	ydro			None					1		
Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Recommendations	6										



Lower cost measures

None Further measures to achieve even higher standards

> **Typical Cost** £4,000 - £6,000 £3,500 - £5,500

Typical savings per year £139 £275 Ratings after improvementSAP ratingEnvironmental ImpactC 78A 95B 81A 9600