
**Norcot Community Centre,
Lyndhurst Road,
Reading**

**Building Regulations Part L1A
Design Stage Compliance Document**

Prepared by:

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Issue: 1

Date: 26th August 2020

Project: C1530

Revision	Date	Description	Revised	Checked
1	26/08/20	Design stage compliance issue		AJW

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- 2.0 DEMONSTRATING COMPLIANCE**
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1.0 INTRODUCTION

The purpose of this document is to demonstrate compliance with the following criteria for the the Residential Block only, the Community Centre falls under Building regulations part L2A and are subject to an SBEM calculation;

- Compliance with Criterion 1, 2, 3, 4 and 5 of the Building Regulations Approved Document L1A 2013 edition with 2016 amendments at “Design” stage for the As Designed scheme at Norcot Community Centre, Lyndhurst Road, Reading, in line with current building regulations.
- A further requirement is compliance with Reading Borough Council Planning Policy CS1 that states “*the development is to achieve an energy efficiency standard of a minimum of 35% CO2 improvement over Building Regulations requirements Part L2013 edition with 2016 Amendments (Target Emission Rate Baseline)*”

Further SAP calculations will be produced, self-assessed and submitted at practical completion stage to demonstrate “As built” compliance.

A building user guide will also be produced by the contractor and will be provided to the occupier upon handover of the project at practical completion.

2.0 DEMONSTRATING COMPLIANCE

L1A compliance;

To satisfy Criterion 1: the CO2 Building Emission Rate (**DER**) for the dwelling ‘As Designed’ must not be greater than the Target Emission Rate (**TER**) calculated as set out in the Approved Document. Additionally the calculated Dwelling Fabric Energy Efficiency (DFEE) rate must not be greater than the Target Fabric Energy Efficiency (TFEE) rate.

To satisfy Criterion 2: the performance of the individual fabric elements and the fixed building services of the building should achieve reasonable overall standards of energy efficiency set out in the Approved Document.

To satisfy Criterion 3: the dwelling should have appropriate passive control measures to limit the effect of heat gains on indoor temperatures in summer, irrespective of whether the dwelling has mechanical cooling.

To satisfy Criterion 4: the performance of the building ‘As Built’ should be consistent with the DER and DFEE calculated for Criterion 1.

To satisfy Criterion 5: the performance of the building ‘As Built’ should be consistent with the DER and DFEE calculated for Criterion 1

3.0 DESIGN STAGE INFORMATION

SAP Design Stage Assumptions V2

HWM

26/08/2020

By: C.D

Reviewed: A.W.

Notes

Text in **RED** to be completed by the project team. All information needs to be completed to allow the final Building Regulations SAP models to be run.
 Text in red will be used in lieu of design information where data is not provided to SCS. Text in red based on previous project experience but should be checked by project team to verify its applicability to this project.

Build Elements	Proposed Input	Evidence References (for SCS use)
Walls with heat loss		
External Wall (W/m ² .K)	0.23	SCS Assumption
External Wall -Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, partially filled cavity (75mm PIR), 50mm cavity, facing brickwork	SCS Assumption
Corridor Walls to Apartments (e.g. unheated corridors) (W/m ² .K)	0.25	As per E-WM-21 party wall construction - SCS assumption
Corridor Walls to Apartments - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, filled cavity ($\lambda = 0.036$)	
Stairwell Walls to Apartments (e.g. unheated stairwells) (W/m ² .K)	0.25	As per E-WM-21 party wall construction - SCS assumption
Stairwell Walls to Apartments - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, filled cavity ($\lambda = 0.036$)	
Walls to Non-Domestic UNHEATED Areas (e.g. bin stores) (W/m ² .K)	0.25	As per E-WM-21 party wall construction - SCS assumption
Walls to Non-Domestic UNHEATED Areas - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, filled cavity ($\lambda = 0.036$)	
Party Walls - Between Apartments		
Party Wall Type and Build-Up	Fully filled cavity with effective sealing at all exposed edges and in line with insulation layers in abutting elements.	As per Employers requirements document (page 85)
Party Wall Type and Build-Up	e.g. Plasterboard on dabs, dense block - E-WM-21	As per drawings
Party Wall (W/m ² .K)	Based on above so SAP model assumes zero heat loss between two equally heated domestic spaces.	SAP default
Internal Walls within Apartments		
Internal Walls within Apartments - Build-Up	Plasterboard on traditional solid blockwork	As per Employers requirements document (Page 91)

Build Elements	Proposed Input	Evidence References (for SCS use)
Roofs		
Flat Roof (W/m ² .K)	e.g. 0.15	SCS Assumption as no information within Employers requirements
Flat Roof - Build-Up	e.g. Flat roof, concrete plank, plasterboard, insulated at ceiling level	SCS Assumption
Balcony Terrace Roof (W/m ² .K)	e.g. 0.15	SCS Assumption
Balcony / Terrace Roof - Build-Up	e.g. Flat roof, concrete plank, plasterboard, insulated at ceiling level	SCS Assumption
Floors		
Ground Floor (W/m ² .K)	0.13-0.14	SCS Assumption/ rough calculation from build ups - to be targeted
Ground Floor - Build-Up	Slab on ground solid floor. 75mm Ecotherm, 75mm EPS.	As per drawings
Floor above UNHEATED Communal Areas (e.g. corridors) (W/m ² .K)	0.25	SCS Assumption
Floor above UNHEATED Communal Areas - Build-Up	Precast concrete plank floor (screed laid on isorubber), carpeted. - E-FC-14 with insulation below to achieve U-value	As per Drawings
Party Floors		
Party Floors - Build-Up	Precast concrete plank floor (screed laid on isorubber), carpeted. - E-FC-14	As per Employers requirements document (page 95) and drawings
Windows, Doors and Rooflights		
Window, whole pane (W/m ² .K)	0.8	As per Employers requirements document (page 87)
Window - Build-Up	e.g. Argon filled, triple glazed, air gap 16mm, low E coating on both sides	SCS Assumption based on information provided in drawings and Employers Requirements
Window - Frame Factor	0.39	As per Employers requirements document (page 87)
Window - Thermal Transmission	0.7	SAP Default based on BFRC Data
Window - Material	PVC	

Build Elements	Proposed Input	Evidence References (for SCS use)
Doors		
Glass Door, whole pane (W/m ² .K)	e.g. As per window	As per Employers Requirements
Glass Door - Build-Up	e.g. As per window	
Glass Door - Frame Factor	e.g. As per window	
Glass Door - Thermal Transmission	e.g. As per window	
Glass Door - Material	e.g. As per window	
Unit Corridor Door (W/m ² .K)	e.g. 1.0	SCS Assumption (taking into account shelter factor for elements to a corridor/stairwell)
Unit Corridor Door - Frame Factor	e.g. 0.7 (default)	SAP Default
Unit Corridor Door - Glass Thermal	e.g. zero (if door is solid)	N/A
Unit Corridor Door - Material	Solid PVC door	
Other Fabric Elements		
Thermal Bridging	ACDs where applicable	SCS Assumption/ required for SAP compliance.
Thermal Bridging - External Ψ Values Accredited values	Accredited E2 Other lintels (including other steel lintels) Ψ=0.30 W/m.K E3 Sill Ψ=0.04 W/m.K E4 Jamb Ψ=0.05 W/m.K E5 Ground floor Ψ=0.16 W/m.K* E7 Party floor between dwellings (Flats) Ψ=0.07 W/m.K* E16 Corner (normal) Ψ=0.09 W/m.K E17 Corner (inverted) Ψ= -0.09 W/m.K E18 Party Wall between dwelling Ψ=0.06 W/m.K P4 Roof (insulation at ceiling level) Ψ =0.12 W/m.K Default E20 Exposed floor Ψ=0.32 W/m.K* E21 Exposed floor (inverted) Ψ=0.32 W/m.K* E14 Flat roof Ψ=0.08 W/m.K* E15 Flat roof with parapet Ψ=0.56 W/m.K E23 Balcony, penetrates insulation Ψ=1.00 W/m.K (*0.5 to each apartment) E24 Eaves (insulation at ceiling level, inverted) Ψ=0.24 W/m.K* P1 Ground Floor Ψ =0.16 W/m.K P3 Intermediate floor between dwellings Ψ =0.00 W/m.K	* = where applicable, shelter factors have been added to these values in line with BRE SAP Conventions v8.1 Accredited junctions have only been applied at homogenous junctions - i.e. where more than one construction type is involved default values have been used. (Balcony junctions have been assumed to penetrate the external wall insulation (E23) - if this is not the case, and at As Built stage details will be provided showing the detail matches the requirements of an E9 Balcony junction (external wall insulation continuous), this would result in a SAP performance benefit due to the lower Psi value associated with this junction.)
Air Pressure Target@50Pa (m ³ /hr/m ₂)	3	As per email 18/08/2020
Thermal Mass	Indicative Value - High - based on Build-Ups noted above	as noted

Build Elements	Proposed Input	Evidence References (for SCS use)
Building Services		
Water Fittings	e.g. Water fittings to current Building Regulations (i.e. less than 125 litres per day)	SAP default requirement
Lighting	e.g. 100% Low Energy 12 no. fittings per unit	SAP default - number of fittings SCS assumption
Primary Heating Type	Gas Combi Boiler: Worcester Bosch Greenstar 1 Bed: 25i ErP 2 Bed: 30i ErP	SCS Assumption
Primary Heating Type Efficiency	e.g. 88-89%	
Primary Heating Controls	TRVs, programmer and thermostat	As per Employers requirements document (page 110)
Primary Heating Fuel	Natural gas	As per Employers requirements document
Electricity Tariff	Standard	SAP Default
Hot Water Heating	From main heating system, no cylinders within dwellings	
Ventilation	balanced, heat recovery	As per Employers requirements document (page 102)
Mech Vent from Approved Installation Scheme?	yes	
Mech Vent Equipment Details	e.g. Nuaire MRXBOX95 (wall mounted)	SCS Assumption
Number of Local Extract Fans	One cooker hood, one in each bathroom	
Ducting type	e.g. Rigid, insulated	SCS Assumption
Solar PV	13.58 kWp (Based on an assumption of 850 kWh/kWp) - this is the minimum value required to achieve the 35% reduction.	Calculated from results
Other Renewable Technology	None	
Building Measurements		
Drawings Data	190502_Norcot_FurtherRevisedPlanning.dwg	
Build-Up between floors	465mm	
Block Compliance		
Block Performance	Averaged performance across all apartments when formal submission of all units made to Building Control	Part L1A Building Regulations 2013 (2016)

Build Elements	Proposed Input	Evidence References (for SCS use)
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General Notes

Where unknown, overshadowing assumed to be average or unknown

Latitude assumed to be 55 degrees

Only use U-values that are not default where both the U-value and Km values are provided. These must either be provided to us either via calculations by a suitably qualified and accredited person\organisation or provided in an as built architectural / building specification document. Suitable qualification\accreditation is through membership of a recognised U-value calculation competency scheme (BBA/TIMSA [UK]), OCDEA membership (England & Wales, Northern Ireland) or any other scheme formally agreed between Accreditation Schemes/Approved Organisations and Government.

Signed by:	Signature:
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4.0 FLAT REPORTS

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:15

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 50.35m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 01

Address : Flat 1, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 21.92 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 14.84 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 56.4 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 52.5 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.24 (max. 0.30)

0.25 (max. 0.70)

OK

Party wall 0.00 (max. 0.20)

-

OK

Floor 0.14 (max. 0.25)

0.14 (max. 0.70)

OK

Roof (no roof)

Openings 0.86 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North West	2.64m ²	
Windows facing: North West	2.04m ²	
Ventilation rate:	2.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

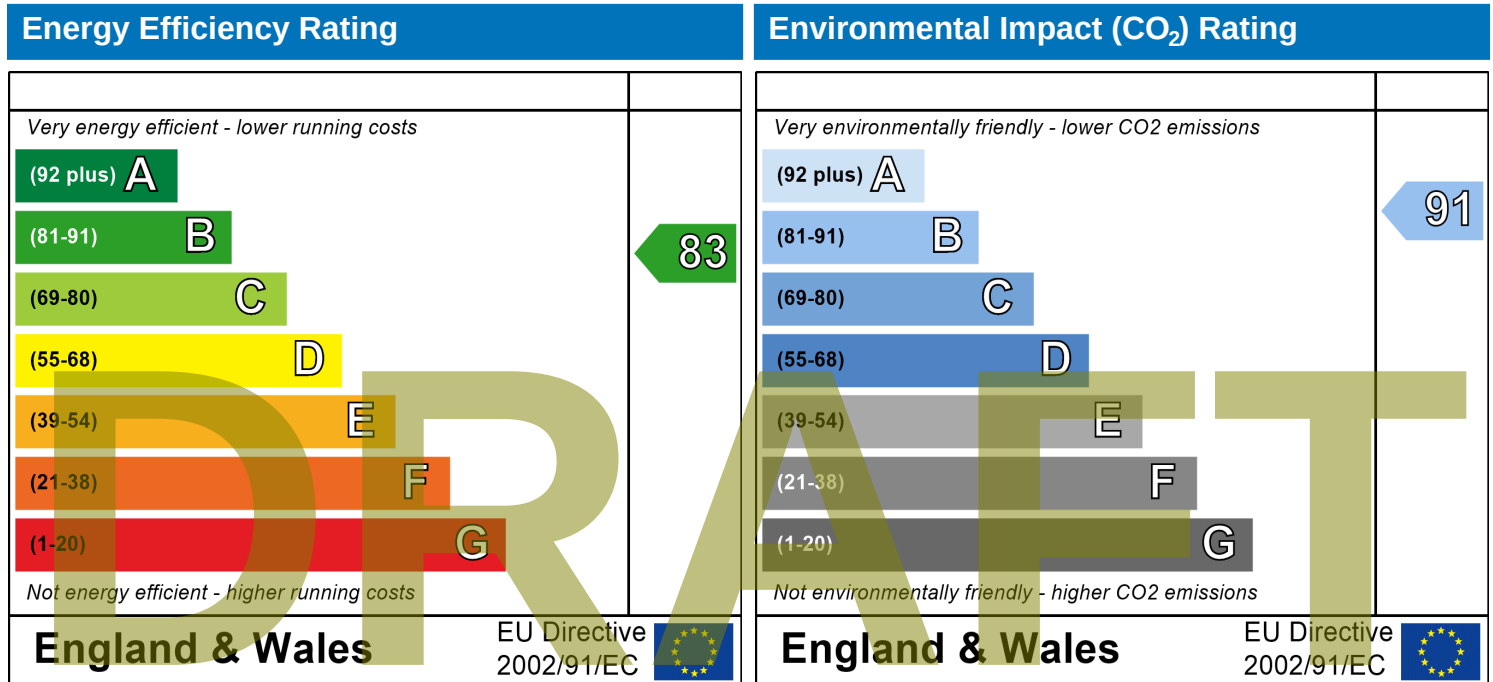
Flat 1
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Ground floor Flat
15 August 2020
Stroma Certification
50.35 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 01

Address: Flat 1, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 15 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 50.35 m² Storey height: 2.37 m

Living area: 21.61 m² (fraction 0.429)
Front of dwelling faces: South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	2.64	1
Rear Window 2	16mm or more	0.7	0.39	0.8	2.04	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	South East	0.91	2.1
Rear Window 1		External Wall	North West	1.76	1.5
Rear Window 2		External Wall	North West	1.36	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	27.57	4.68	22.89	0.23	0	False	N/A
E-WM-21 to Corridor	15.46	1.91	13.55	0.25	0.43	False	N/A
E-WM-21 to Bin Store	16.69	0	16.69	0.25	0	False	N/A
Ground Floor	50.35			0.14			N/A
Internal Elements							
Blockwork Partitions	78.11						N/A
Party Elements							
E-WM-21	13.24						N/A
E-FC-14	50.35						N/A

Thermal bridges:

SAP Input

Thermal bridges:

User-defined (individual PSI-values) Y-Value = 0.0905

	Length	Psi-value		
[Approved]	4.03	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.12	0.04	E3	Sill
[Approved]	10.2	0.05	E4	Jamb
[Approved]	10.76	0.16	E5	Ground floor (normal)
[Approved]	6.52	0.16	E5	Ground floor (normal)
	6.04	0.125	E5	Ground floor (normal)
	6.52	0.16	E21	Exposed floor (inverted)
[Approved]	10.76	0.07	E7	Party floor between dwellings (in blocks of flats)
	5.12	0.18	E16	Corner (normal)
[Approved]	2.56	0.09	E16	Corner (normal)
[Approved]	2.56	0.06	E18	Party wall between dwellings
	2.56	0.12	E25	Staggered party wall between dwellings
	6.52	0.055	E7	Party floor between dwellings (in blocks of flats)
	5.17	0.16	P1	Ground floor
	5.17	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test: Yes (As designed)
 Ventilation: Balanced with heat recovery
 Number of wet rooms: Kitchen + 1
 Ductwork: Insulation, rigid
 Approved Installation Scheme: True

Number of chimneys: 0
 Number of open flues: 0
 Number of fans: 0
 Number of passive stacks: 0
 Number of sides sheltered: 2
 Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating
 Gas boilers and oil boilers
 Fuel: mains gas
 Info Source: Boiler Database
 Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
 Brand name: Worcester
 Model: Greenstar
 Model qualifier: 25i ErP
 (Combi boiler)
 Systems with radiators
 Central heating pump : 2013 or later
 Design flow temperature: Design flow temperature >45°C
 Boiler interlock: Yes
 Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
 Control code: 2106

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
 Water code: 901
 Fuel :mains gas
 No hot water cylinder
 Solar panel: False

SAP Input

Others:

Electricity tariff:	Standard Tariff
In Smoke Control Area:	No
Conservatory:	No conservatory
Low energy lights:	100%
Terrain type:	Low rise urban / suburban
EPC language:	English
Wind turbine:	No
Photovoltaics:	<u>Photovoltaic 1</u> Installed Peak power: 0.6 Tilt of collector: 30° Overshading: None or very little Collector Orientation: South West
Assess Zero Carbon Home:	No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 01

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	No
Number of storeys:	1
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	2 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	78.76	(P1)
Transmission heat loss coefficient:	35	
Summer heat loss coefficient:	113.8	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North West (Rear Window 1)	1	1
North West (Rear Window 2)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North West (Rear Window 1)	0.9	1	0.9	0.9	(P8)
North West (Rear Window 2)	0.9	1	0.9	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North West (Rear Window 1)	2.64	98.85	0.39	0.7	0.9	57.7
North West (Rear Window 2)	2.04	98.85	0.39	0.7	0.9	44.59
Total						102.29 (P3/P4)

Internal gains:

	June	July	August
Internal gains	317.44	305	312
Total summer gains	427.87	407.3	395.69 (P5)
Summer gain/loss ratio	3.76	3.58	3.48 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.76	21.48	21.28 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

Assessment of likelihood of high internal temperature: Slight

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:12

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 71m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 02

Address : Flat 2, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 19.33 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 12.57 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 53.2 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 50.5 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall 0.00 (max. 0.20)

-

OK

Floor 0.14 (max. 0.25)

0.14 (max. 0.70)

OK

Roof (no roof)

Openings 0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
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Based on:

Overshading:	Average or unknown
Windows facing: South West	0.89m ²
Windows facing: South East	3.8m ²
Windows facing: South East	1.03m ²
Windows facing: North West	4.08m ²
Windows facing: North West	0.89m ²
Ventilation rate:	3.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

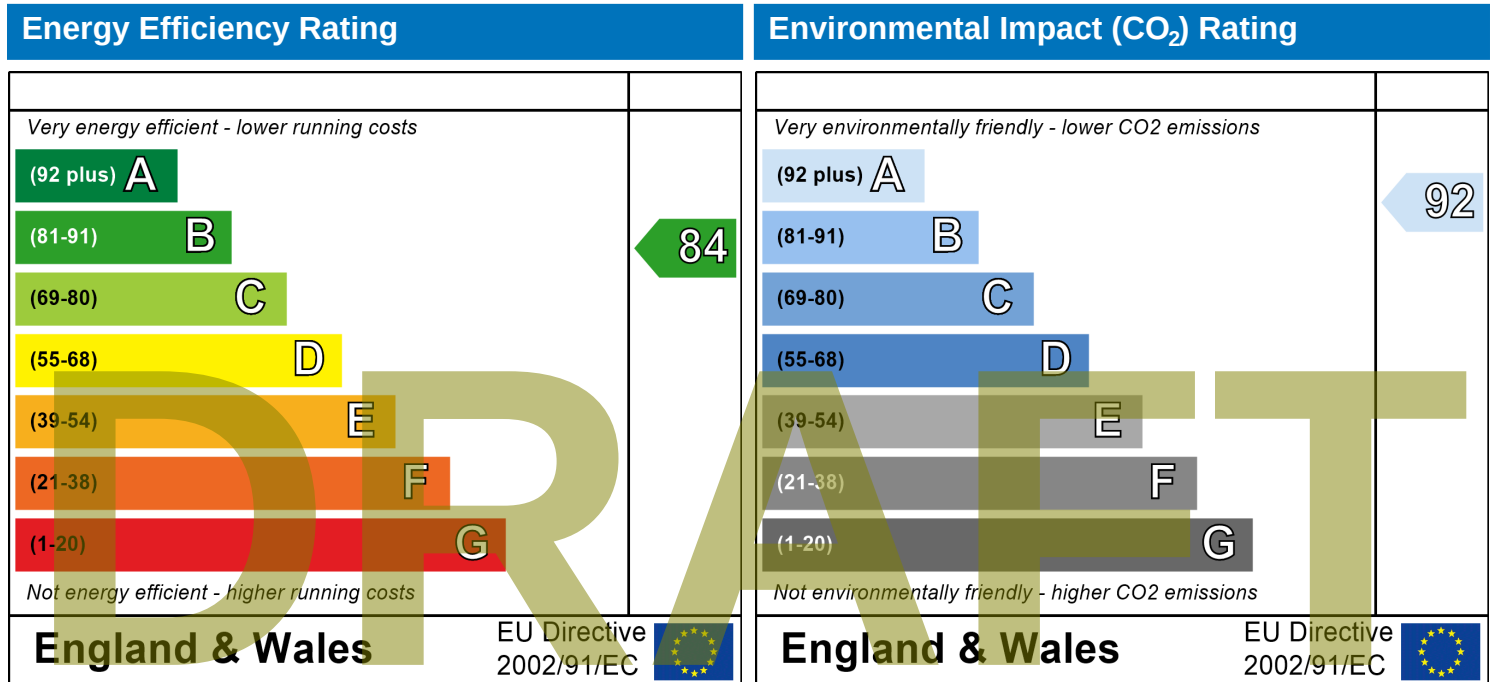
Flat 2
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Ground floor Flat
15 August 2020
Stroma Certification
71 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 02

Address: Flat 2, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 15 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 71 m² Storey height: 2.37 m

Living area: 25.8 m² (fraction 0.363)
Front of dwelling faces: North East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 1+2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	0.89	1
Left French	16mm or more	0.7	0.39	0.8	3.8	1
Left Window	16mm or more	0.7	0.39	0.8	1.03	1
Right Window 1+2	16mm or more	0.7	0.39	0.8	2.04	2
Right Window 3	16mm or more	0.7	0.39	0.8	0.89	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North East	0.91	2.1
Rear Window 1		External Wall	South West	0.91	0.975
Left French		External Wall	South East	1.81	2.1
Left Window		External Wall	South East	0.685	1.5
Right Window 1+2		External Wall	North West	1.36	1.5
Right Window 3		External Wall	North West	0.91	0.975

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	65.07	10.69	54.38	0.23	0	False	N/A
E-WM-21 to Corridor	14.18	1.91	12.27	0.25	0.43	False	N/A

SAP Input

Ground Floor	71	0.14	N/A
<u>Internal Elements</u>			
Blockwork Partitions	86.32		N/A
<u>Party Elements</u>			
E-WM-21	13.24		N/A
E-FC-14	71		N/A

Thermal bridges:

Thermal bridges:	User-defined (individual PSI-values) Y-Value = 0.0942			
	Length	Psi-value		
[Approved]	7.945	0.3	E2	Other lintels (including other steel lintels)
[Approved]	5.225	0.04	E3	Sill
[Approved]	21.3	0.05	E4	Jamb
[Approved]	25.41	0.16	E5	Ground floor (normal)
	5.55	0.125	E5	Ground floor (normal)
	3.63	0.16	E21	Exposed floor (inverted)
[Approved]	22.41	0.07	E7	Party floor between dwellings (in blocks of flats)
[Approved]	5.12	0.09	E16	Corner (normal)
[Approved]	2.56	0.06	E18	Party wall between dwellings
	2.56	0.12	E25	Staggered party wall between dwellings
	1.92	0.055	E7	Party floor between dwellings (in blocks of flats)
	2.56	0.18	E16	Corner (normal)
[Approved]	2.56	-0.09	E17	Corner (inverted internal area greater than external area)
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	5.17	0.16	P1	Ground floor
	5.17	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	1
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 30i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
-----------------------	--------------------------------------

SAP Input

Control code: 2106

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system

Water code: 901

Fuel :mains gas

No hot water cylinder

Solar panel: False

Others:

Electricity tariff: Standard Tariff

In Smoke Control Area: No

Conservatory: No conservatory

Low energy lights: 100%

Terrain type: Low rise urban / suburban

EPC language: English

Wind turbine: No

Photovoltaics: Photovoltaic 1

Installed Peak power: 0.85

Tilt of collector: 30°

Overshading: None or very little

Collector Orientation: South West

Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 02

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	166.59	(P1)
Transmission heat loss coefficient:	49.6	
Summer heat loss coefficient:	216.15	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South West (Rear Window 1)	1	1
South East (Left French) 0	1	1
South East (Left Window) 0	1	1
North West (Right Window 1+2)	1	1
North West (Right Window 3)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South West (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Left French) 1	0.9	1	0.9	(P8)	
South East (Left Window) 1	0.9	1	0.9	(P8)	
North West (Right Window 1+2)	0.9	1	0.9	(P8)	
North West (Right Window 3)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South West (Rear Window 1) 0.9 x	0.89	119.92	0.39	0.7	0.9	23.6
South East (Left French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
South East (Left Window) 0.9 x	1.03	119.92	0.39	0.7	0.9	27.31
North West (Right Window 1+2) 0.9 x	4.08	98.85	0.39	0.7	0.9	89.18
North West (Right Window 3) 0.9 x	0.89	98.85	0.39	0.7	0.9	19.45
Total						260.32 (P3/P4)

Internal gains:

	June	July	August
Internal gains	404.47	388.2	396.24
Total summer gains	680.98	648.52	626.62 (P5)
Summer gain/loss ratio	3.15	3	2.9 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8

SAP 2012 Overheating Assessment

Thermal mass temperature increment	0	0	0	
Threshold temperature	19.15	20.9	20.7	(P7)
Likelihood of high internal temperature	Not significant	Slight	Slight	
Assessment of likelihood of high internal temperature:	<u>Slight</u>			

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:10

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 51.1m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 03

Address : Flat 3, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 19.99 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 13.00 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 49.4 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 46.4 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.22 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall 0.00 (max. 0.20)

-

OK

Floor 0.13 (max. 0.25)

0.13 (max. 0.70)

OK

Roof (no roof)

Openings 0.84 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North East	1.03m ²	
Windows facing: North East	2.72m ²	
Windows facing: South West	3.8m ²	
Windows facing: South West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

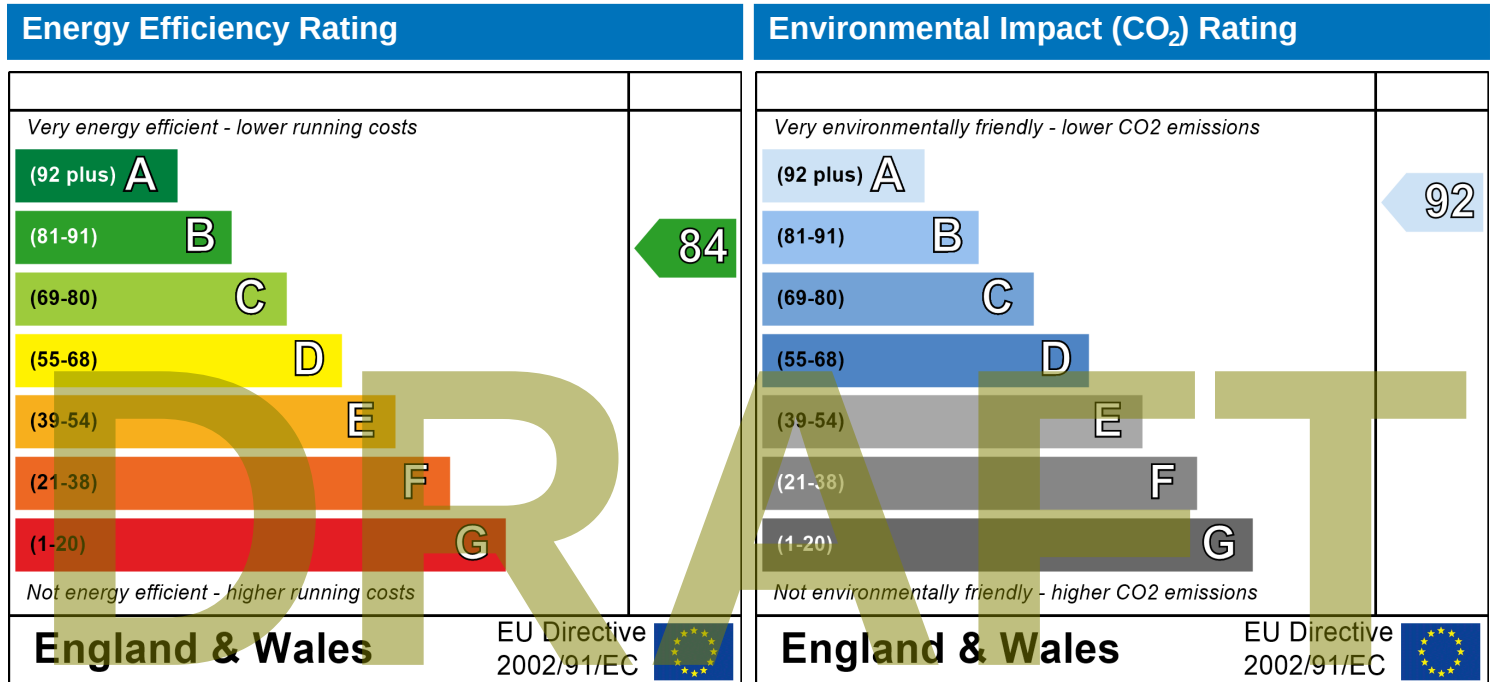
Flat 3
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Ground floor Flat
15 August 2020
Stroma Certification
51.1 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 03

Address: Flat 3, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 15 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 51.1 m² Storey height: 2.37 m

Living area: 19.19 m² (fraction 0.376)
Front of dwelling faces: North West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Left Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North West	0.91	2.1
Left Window 1		External Wall	North East	0.685	1.5
Left Window 2		External Wall	North East	1.81	1.5
Right French		External Wall	South West	1.81	2.1
Right Window		External Wall	South West	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	32.1	8.58	23.52	0.23	0	False	N/A
E-WM-21 to Corridor	5.43	1.91	3.52	0.25	0.43	False	N/A
E-WM-21 to Stairs	14.95	0	14.95	0.25	0.9	False	N/A
Ground Floor	51.1			0.13			N/A

SAP Input

Internal Elements

Blockwork Partitions 46.55 N/A

Party Elements

E-WM-21 21.81 N/A

E-FC-14 51.1 N/A

Thermal bridges:

Thermal bridges:

User-defined (individual PSI-values) Y-Value = 0.1028

	Length	Psi-value		
[Approved]	5.9	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.18	0.04	E3	Sill
[Approved]	17.4	0.05	E4	Jamb
[Approved]	12.54	0.16	E5	Ground floor (normal)
	5.84	0.114	E5	Ground floor (normal)
	2.12	0.125	E5	Ground floor (normal)
[Approved]	9.55	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.56	0.18	E16	Corner (normal)
[Approved]	2.56	0.09	E16	Corner (normal)
[Approved]	5.12	0.06	E18	Party wall between dwellings
	5.84	0.05	E7	Party floor between dwellings (in blocks of flats)
	2.12	0.055	E7	Party floor between dwellings (in blocks of flats)
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	8.52	0.16	P1	Ground floor
	8.52	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test: Yes (As designed)
 Ventilation: Balanced with heat recovery
 Number of wet rooms: Kitchen + 1
 Ductwork: Insulation, rigid
 Approved Installation Scheme: True
 Number of chimneys: 0
 Number of open flues: 0
 Number of fans: 0
 Number of passive stacks: 0
 Number of sides sheltered: 2
 Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating
 Gas boilers and oil boilers
 Fuel: mains gas
 Info Source: Boiler Database
 Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
 Brand name: Worcester
 Model: Greenstar
 Model qualifier: 25i ErP
 (Combi boiler)
 Systems with radiators
 Central heating pump : 2013 or later
 Design flow temperature: Design flow temperature >45°C
 Boiler interlock: Yes
 Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
 Control code: 2106

Secondary heating system:

Secondary heating system: None

SAP Input

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.61
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West

Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 03

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	119.9	(P1)
Transmission heat loss coefficient:	35.1	
Summer heat loss coefficient:	155	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North East (Left Window 1)	1	
North East (Left Window 2)	1	
South West (Right French 1)	1	
South West (Right Window 1)	1	

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North East (Left Window 1)		0.9	1	0.9	(P8)
North East (Left Window 2)		0.9	1	0.9	(P8)
South West (Right French 1)		0.9	1	0.9	(P8)
South West (Right Window 1)		0.9	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North East (Left Window 1) x	1.03	98.85	0.39	0.7	0.9	22.51
North East (Left Window 2) x	2.72	98.85	0.39	0.7	0.9	59.45
South West (Right French 1) x	3.8	119.92	0.39	0.7	0.9	100.77
South West (Right Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
Total						210.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	319.14	306.43	312.96
Total summer gains	542.08	516.48	499.51 (P5)
Summer gain/loss ratio	3.5	3.33	3.22 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.5	21.23	21.02 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:08

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 51.1m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 04

Address : Flat 4, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 19.99 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 13.00 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 49.4 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 46.4 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.22 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall 0.00 (max. 0.20)

-

OK

Floor 0.13 (max. 0.25)

0.13 (max. 0.70)

OK

Roof (no roof)

Openings 0.84 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North East	1.03m ²	
Windows facing: North East	2.72m ²	
Windows facing: South West	3.8m ²	
Windows facing: South West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

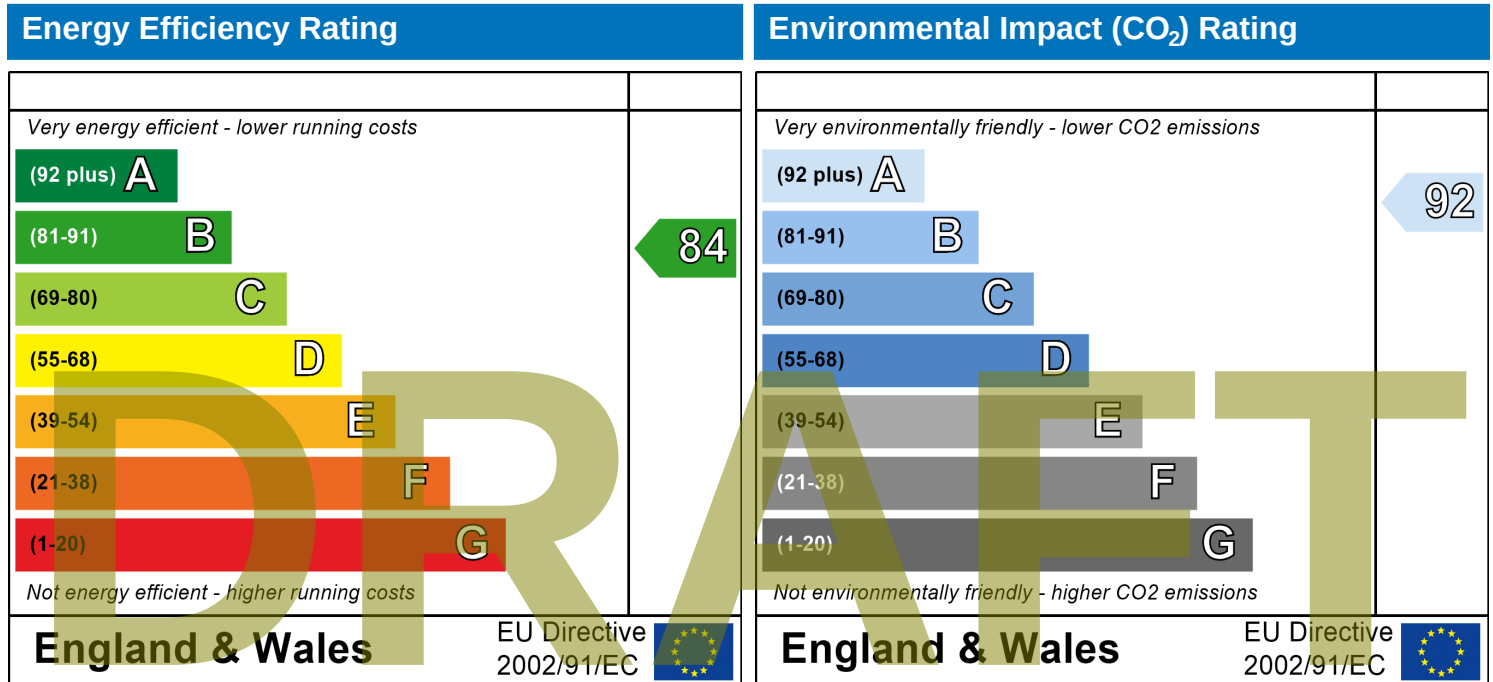
Flat 4
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Ground floor Flat
15 August 2020
Stroma Certification
51.1 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 04

Address: Flat 4, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 15 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Storey height:
Floor 0 51.1 m² 2.37 m

Living area: 19.19 m² (fraction 0.376)
Front of dwelling faces: South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Right Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Right Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Right Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Left French	16mm or more	0.7	0.39	0.8	3.8	1
Left Window	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	South East	0.91	2.1
Right Window 1		External Wall	North East	0.685	1.5
Right Window 2		External Wall	North East	1.81	1.5
Left French		External Wall	South West	1.81	2.1
Left Window		External Wall	South West	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	32.1	8.58	23.52	0.23	0	False	N/A
E-WM-21 to Corridor	5.43	1.91	3.52	0.25	0.43	False	N/A
E-WM-21 to Stairs	14.95	0	14.95	0.25	0.9	False	N/A
Ground Floor	51.1			0.13			N/A

SAP Input

Internal Elements

Blockwork Partitions 46.55 N/A

Party Elements

E-WM-21 21.81 N/A

E-FC-14 51.1 N/A

Thermal bridges:

Thermal bridges:

User-defined (individual PSI-values) Y-Value = 0.1028

	Length	Psi-value		
[Approved]	5.9	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.18	0.04	E3	Sill
[Approved]	17.4	0.05	E4	Jamb
[Approved]	12.54	0.16	E5	Ground floor (normal)
	5.84	0.114	E5	Ground floor (normal)
	2.12	0.125	E5	Ground floor (normal)
[Approved]	9.55	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.56	0.18	E16	Corner (normal)
[Approved]	2.56	0.09	E16	Corner (normal)
[Approved]	5.12	0.06	E18	Party wall between dwellings
	5.84	0.05	E7	Party floor between dwellings (in blocks of flats)
	2.12	0.055	E7	Party floor between dwellings (in blocks of flats)
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	8.52	0.16	P1	Ground floor
	8.52	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test: Yes (As designed)
 Ventilation: Balanced with heat recovery
 Number of wet rooms: Kitchen + 1
 Ductwork: Insulation, rigid
 Approved Installation Scheme: True
 Number of chimneys: 0
 Number of open flues: 0
 Number of fans: 0
 Number of passive stacks: 0
 Number of sides sheltered: 2
 Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating
 Gas boilers and oil boilers
 Fuel: mains gas
 Info Source: Boiler Database
 Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
 Brand name: Worcester
 Model: Greenstar
 Model qualifier: 25i ErP
 (Combi boiler)
 Systems with radiators
 Central heating pump : 2013 or later
 Design flow temperature: Design flow temperature >45°C
 Boiler interlock: Yes
 Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
 Control code: 2106

Secondary heating system:

Secondary heating system: None

SAP Input

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.61
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 04

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	119.9	(P1)
Transmission heat loss coefficient:	35.1	
Summer heat loss coefficient:	155	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North East (Right Window 1)	0	1
North East (Right Window 2)	0	1
South West (Left French)	0	1
South West (Left Window)	0	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North East (Right Window 1)	0.9	1	1	0.9	(P8)
North East (Right Window 2)	0.9	1	1	0.9	(P8)
South West (Left French)	1	0.9	1	0.9	(P8)
South West (Left Window)	1	0.9	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North East (Right Window 1) x	1.03	98.85	0.39	0.7	0.9	22.51
North East (Right Window 2) x	2.72	98.85	0.39	0.7	0.9	59.45
South West (Left French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
South West (Left Window) 0.9 x	1.03	119.92	0.39	0.7	0.9	27.31
Total						210.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	319.14	306.43	312.96
Total summer gains	542.08	516.48	499.51 (P5)
Summer gain/loss ratio	3.5	3.33	3.22 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.5	21.23	21.02 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:06

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 50.39m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 05

Address : Flat 5, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 22.33 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 15.39 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 61.9 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 56.9 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.24 (max. 0.30)

0.25 (max. 0.70)

OK

Floor 0.14 (max. 0.25)

0.14 (max. 0.70)

OK

Roof 0.15 (max. 0.20)

0.15 (max. 0.35)

OK

Openings 0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system: None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Medium	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: South East	2.72m ²	
Windows facing: South East	4.67m ²	
Windows facing: North East	2.21m ²	
Windows facing: North East	1.03m ²	
Ventilation rate:	2.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

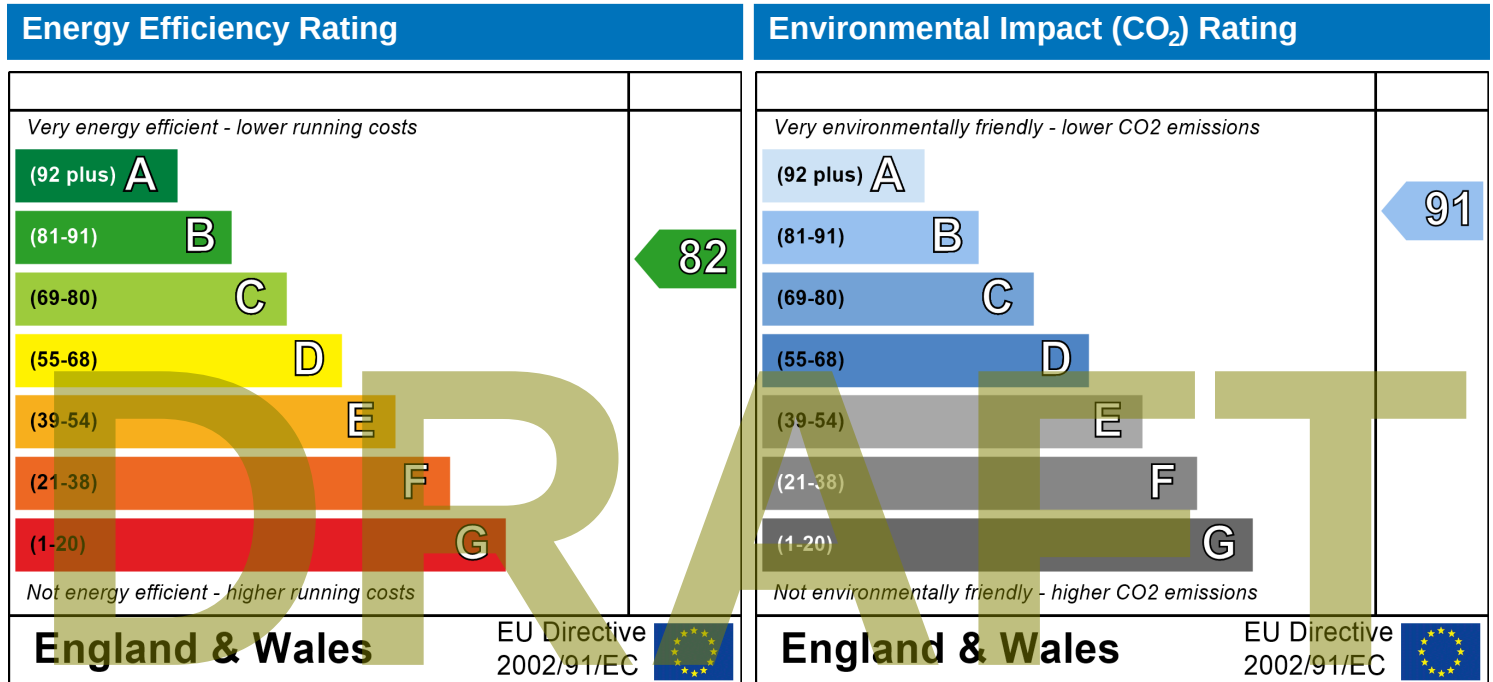
Flat 5
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Ground floor Flat
15 August 2020
Stroma Certification
50.39 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 05

Address: Flat 5, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 15 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 50.39 m² Storey height: 2.37 m

Living area: 21.61 m² (fraction 0.429)
Front of dwelling faces: North West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	2.72	1
Rear Window 2	16mm or more	0.7	0.39	0.8	4.67	1
Left Window 1	16mm or more	0.7	0.39	0.8	2.21	1
Left Window 2	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North West	0.91	2.1
Rear Window 1		External Wall	South East	1.81	1.5
Rear Window 2		External Wall	South East	2.222	2.1
Left Window 1		External Wall	North East	1.05	2.1
Left Window 2		External Wall	North East	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	40.52	10.63	29.89	0.23	0	False	N/A
E-WM-21 to Corridor	15.74	1.91	13.83	0.25	0.43	False	N/A
E-WM-21 to Bin Store	16.69	0	16.69	0.25	0	False	N/A
Terrace Roof	2.82	0	2.82	0.15	0		N/A

SAP Input

Ground Floor	50.39	0.14	N/A
<u>Internal Elements</u>			
Blockwork Partitions	78.11		N/A
<u>Party Elements</u>			
E-FC-14	47.57		N/A

Thermal bridges:

Thermal bridges:		User-defined (individual PSI-values) Y-Value = 0.1047		
		Length	Psi-value	
[Approved]	6.677	0.3	E2	Other lintels (including other steel lintels)
[Approved]	2.5	0.04	E3	Sill
[Approved]	14.4	0.05	E4	Jamb
[Approved]	15.83	0.16	E5	Ground floor (normal)
[Approved]	6.52	0.16	E5	Ground floor (normal)
	6.15	0.125	E5	Ground floor (normal)
[Approved]	12.28	0.07	E7	Party floor between dwellings (in blocks of flats)
	5.12	0.18	E16	Corner (normal)
[Approved]	5.12	0.09	E16	Corner (normal)
	6.15	0.055	E7	Party floor between dwellings (in blocks of flats)
	3.55	0.12	E24	Eaves (insulation at ceiling level - inverted)
	3.55	0.56	E15	Flat roof with parapet
	6.52	0.16	E21	Exposed floor (inverted)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	2
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 25i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

Secondary heating system:

Secondary heating system:	None
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SAP Input

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.61
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 05

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	No
Number of storeys:	1
Front of dwelling faces:	North West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	2 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	78.82	(P1)
Transmission heat loss coefficient:	45	
Summer heat loss coefficient:	123.82	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South East (Rear Window 01)	1	1
South East (Rear Window 02)	1	1
North East (Left Window 1)	1	1
North East (Left Window 2)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South East (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Rear Window 2)	0.9	1	0.9	(P8)	
North East (Left Window 1)	0.9	1	0.9	(P8)	
North East (Left Window 2)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South East (Rear Window 01) x	2.72	119.92	0.39	0.7	0.9	72.13
South East (Rear Window 02) x	4.67	119.92	0.39	0.7	0.9	123.84
North East (Left Window 1) x	2.21	98.85	0.39	0.7	0.9	48.31
North East (Left Window 2) x	1.03	98.85	0.39	0.7	0.9	22.51
Total						266.79 (P3/P4)

Internal gains:

	June	July	August
Internal gains	315.49	302.88	309.19
Total summer gains	597.67	569.67	549.95 (P5)
Summer gain/loss ratio	4.83	4.6	4.44 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	20.83	22.5	22.24 (P7)
Likelihood of high internal temperature	Slight	Medium	Medium

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Medium

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:03

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 70m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 06

Address : Flat 6, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 19.54 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 13.28 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 54.6 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 52.4 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.23 (max. 0.30)

0.25 (max. 0.70)

OK

Floor 0.14 (max. 0.25)

0.14 (max. 0.70)

OK

Roof (no roof)

1.00 (max. 3.30)

OK

Openings 0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system: None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: South West	1.03m ²	
Windows facing: South East	0.89m ²	
Windows facing: South East	2.72m ²	
Windows facing: South East	2.04m ²	
Windows facing: North West	3.8m ²	
Windows facing: North West	0.65m ²	
Windows facing: North West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

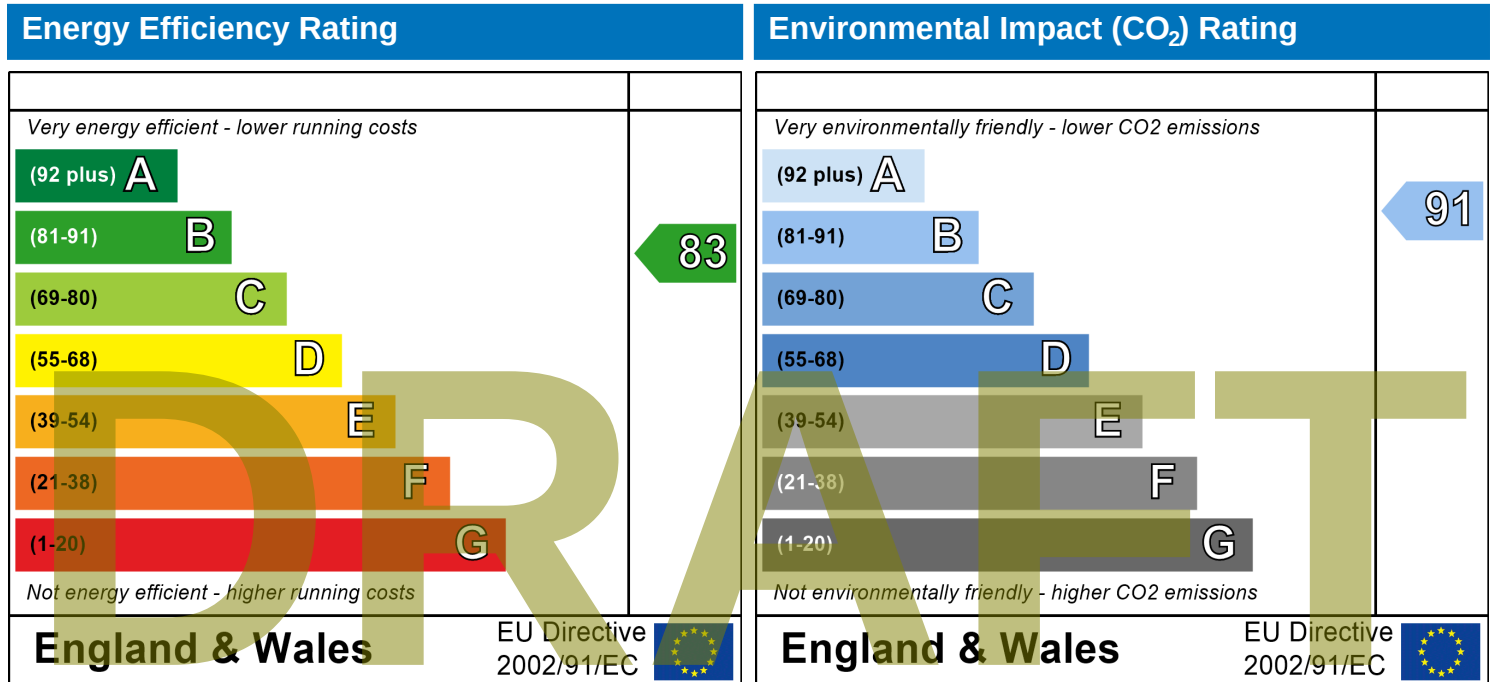
Flat 6
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Ground floor Flat
15 August 2020
Stroma Certification
70 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 06

Address: Flat 6, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 15 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 70 m² Storey height: 2.37 m

Living area: 24.27 m² (fraction 0.347)
Front of dwelling faces: North East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 1	16mm or more	0.7	0.39	0.8	0.89	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Left Window 3	16mm or more	0.7	0.39	0.8	2.04	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window 2	16mm or more	0.7	0.39	0.8	0.65	1
Right Window 3	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		W-WM-21 to Corridor	North East	0.91	2.1
Rear Window 1		External Wall	South West	0.685	1.5
Left Window 1		External Wall	South East	0.91	0.975
Left Window 2		External Wall	South East	1.81	1.5
Left Window 3		External Wall	South East	1.36	1.5
Right French		External Wall	North West	1.81	2.1
Right Window 2		External Wall	North West	0.685	0.95
Right Window 3		External Wall	North West	0.685	1.5

SAP Input

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
<u>External Elements</u>							
External Wall	70.24	12.16	58.08	0.23	0	False	N/A
E-WM-21 to Bin Store	14.9	0	14.9	0.25	0	False	N/A
W-WM-21 to Corridor	3.22	1.91	1.31	0.25	0.43	False	N/A
Ground Floor	70			0.14			N/A
<u>Internal Elements</u>							
Blockwork Partitions	124.71						N/A
<u>Party Elements</u>							
E-FC-14	70						N/A

Thermal bridges:

Thermal bridges: User-defined (individual PSI-values) Y-Value = 0.0953

	Length	Psi-value		
[Approved]	8.855	0.3	E2	Other lintels (including other steel lintels)
[Approved]	6.15	0.04	E3	Sill
[Approved]	24.25	0.05	E4	Jamb
[Approved]	27.47	0.16	E5	Ground floor (normal)
[Approved]	5.82	0.16	E5	Ground floor (normal)
	1.23	0.125	E5	Ground floor (normal)
[Approved]	21.47	0.07	E7	Party floor between dwellings (in blocks of flats)
	5.12	0.18	E16	Corner (normal)
[Approved]	5.12	0.09	E16	Corner (normal)
	1.23	0.16	E21	Exposed floor (inverted)
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	5.82	0.158	P8	Exposed floor (inverted)

Ventilation:

Pressure test: Yes (As designed)

Ventilation: Balanced with heat recovery

Number of wet rooms: Kitchen + 1

Ductwork: Insulation, rigid

Approved Installation Scheme: True

Number of chimneys: 0

Number of open flues: 0

Number of fans: 0

Number of passive stacks: 0

Number of sides sheltered: 1

Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating

Gas boilers and oil boilers

Fuel: mains gas

Info Source: Boiler Database

Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi boiler)

Systems with radiators

Central heating pump : 2013 or later

Design flow temperature: Design flow temperature >45°C

Boiler interlock: Yes

SAP Input

Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
Control code: 2106

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.84
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 06

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	164.24	(P1)
Transmission heat loss coefficient:	53.6	
Summer heat loss coefficient:	217.85	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South West (Rear Window 1)	1	1
South East (Left Window 1)	1	1
South East (Left Window 2)	1	1
South East (Left Window 3)	1	1
North West (Right French 1)	1	1
North West (Right Window 2)	1	1
North West (Right Window 3)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South West (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Left Window 1)	0.9	1	0.9	(P8)	
South East (Left Window 2)	0.9	1	0.9	(P8)	
South East (Left Window 3)	0.9	1	0.9	(P8)	
North West (Right French 1)	0.9	1	0.9	(P8)	
North West (Right Window 2)	0.9	1	0.9	(P8)	
North West (Right Window 3)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South West (Rear Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
South East (Left Window 1) x	0.89	119.92	0.39	0.7	0.9	23.6
South East (Left Window 2) x	2.72	119.92	0.39	0.7	0.9	72.13
South East (Left Window 3) x	2.04	119.92	0.39	0.7	0.9	54.1
North West (Right French 1) x	3.8	98.85	0.39	0.7	0.9	83.06
North West (Right Window 2) x	0.65	98.85	0.39	0.7	0.9	14.21
North West (Right Window 3) x	1.03	98.85	0.39	0.7	0.9	22.51
Total						296.92 (P3/P4)

Internal gains:

	June	July	August
Internal gains	400.1	383.95	391.77
Total summer gains	715.36	680.88	655.02 (P5)

SAP 2012 Overheating Assessment

Summer gain/loss ratio	3.28	3.13	3.01	(P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	0	0	0	
Threshold temperature	19.28	21.03	20.81	(P7)
Likelihood of high internal temperature	Not significant	Slight	Slight	

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:06:01

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 73.93m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 07

Address : Flat 7, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 18.72 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 12.15 kg/m² OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 49.0 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 48.5 kWh/m² OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.23 (max. 0.30)	0.23 (max. 0.70)	OK
Party wall	0.00 (max. 0.20)	-	OK
Floor	0.25 (max. 0.25)	0.25 (max. 0.70)	OK
Roof	(no roof)		
Openings	0.84 (max. 2.00)	1.00 (max. 3.30)	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0 OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: North West	2.64m ²
Windows facing: North West	2.04m ²
Windows facing: North West	0.89m ²
Windows facing: North East	1.37m ²
Ventilation rate:	4.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

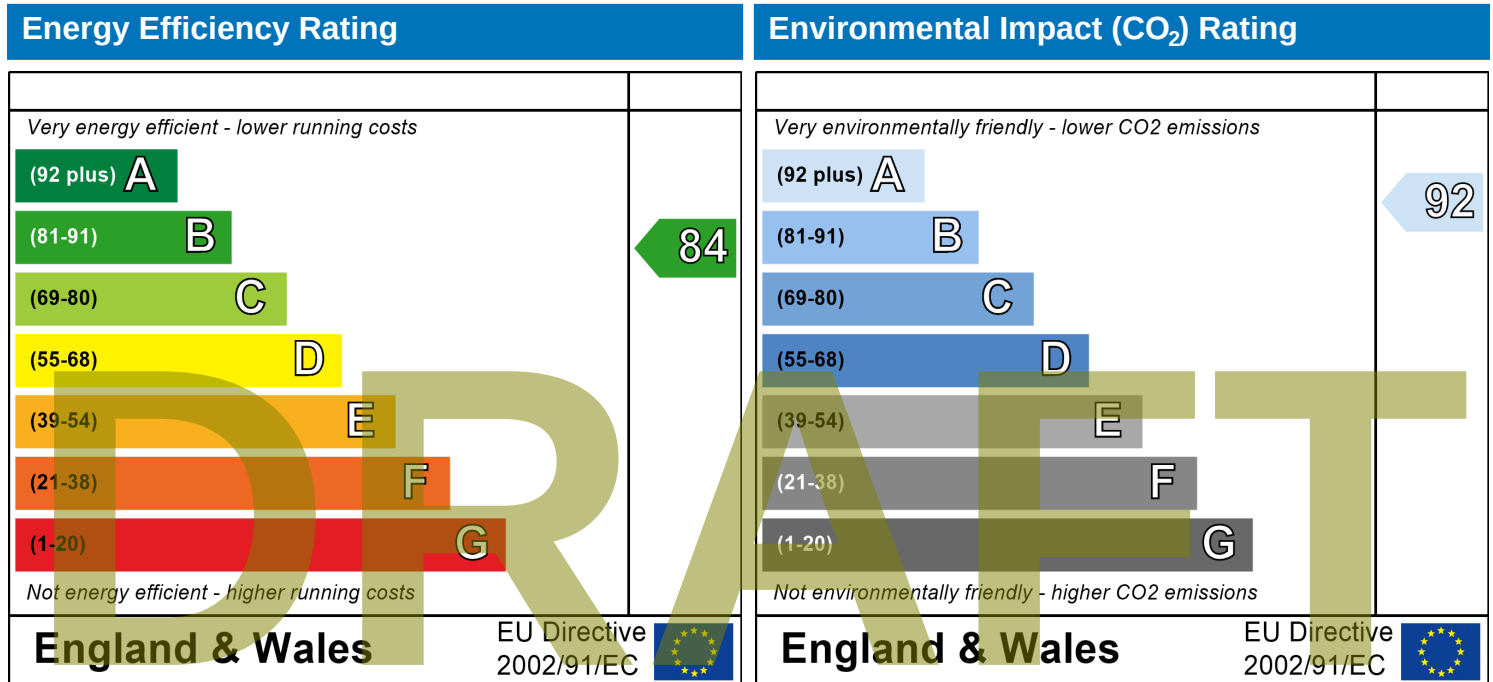
Flat 7
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Mid floor Flat
17 August 2020
Stroma Certification
73.93 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 07

Address: Flat 7, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 73.93 m² Storey height: 2.38 m

Living area: 25.24 m² (fraction 0.341)
Front of dwelling faces: South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	2.64	1
Rear Window 2	16mm or more	0.7	0.39	0.8	2.04	1
Rear Window 3	16mm or more	0.7	0.39	0.8	0.89	1
Right Window	16mm or more	0.7	0.39	0.8	1.37	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	South East	0.91	2.1
Rear Window 1		External Wall	North West	1.76	1.5
Rear Window 2		External Wall	North West	1.36	1.5
Rear Window 3		External Wall	North West	0.91	0.975
Right Window		External Wall	North East	0.915	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	63	6.94	56.06	0.23	0	False	N/A
E-WM-21 to Corridor	15.52	1.91	13.61	0.25	0.43	False	N/A
E-FC-14 to Bin Store	23.57			0.25			N/A
Internal Elements							
Blockwork Partitions	105.8						N/A

SAP Input

Party Elements

E-WM-21	13.27	N/A
E-FC-14	73.93	N/A
E-FC 14	50.36	N/A

Thermal bridges:

Thermal bridges:	User-defined (individual PSI-values) Y-Value = 0.1472			
	Length	Psi-value		
[Approved]	5.855	0.3	E2	Other lintels (including other steel lintels)
[Approved]	4.945	0.04	E3	Sill
[Approved]	15.15	0.05	E4	Jamb
	6.52	0.16	E21	Exposed floor (inverted)
[Approved]	29.28	0.07	E7	Party floor between dwellings (in blocks of flats)
[Approved]	7.71	0.09	E16	Corner (normal)
[Approved]	2.57	0.06	E18	Party wall between dwellings
	2.57	0.12	E25	Staggered party wall between dwellings
	12.08	0.055	E7	Party floor between dwellings (in blocks of flats)
	13.75	0.32	E20	Exposed floor (normal)
	6	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	10.34	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	1
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 30i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

Secondary heating system:

Secondary heating system:	None
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Water heating:

Water heating:	From main heating system
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SAP Input

Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff:	Standard Tariff
In Smoke Control Area:	No
Conservatory:	No conservatory
Low energy lights:	100%
Terrain type:	Low rise urban / suburban
EPC language:	English
Wind turbine:	No
Photovoltaics:	<u>Photovoltaic 1</u> Installed Peak power: 0.89 Tilt of collector: 30° Overshading: None or very little Collector Orientation: South West
Assess Zero Carbon Home:	No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 07

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	No
Number of storeys:	1
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	4 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	232.26	(P1)
Transmission heat loss coefficient:	44.2	
Summer heat loss coefficient:	276.43	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North West (Rear Window 1)	1	1
North West (Rear Window 2)	1	1
North West (Rear Window 3)	1	1
North East (Right Window 1)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North West (Rear Window 1)	0.9	1	0.9	(P8)	
North West (Rear Window 2)	0.9	1	0.9	(P8)	
North West (Rear Window 3)	0.9	1	0.9	(P8)	
North East (Right Window)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North West (Rear Window 1)x	2.64	98.85	0.39	0.7	0.9	57.7
North West (Rear Window 2)x	2.04	98.85	0.39	0.7	0.9	44.59
North West (Rear Window 3)x	0.89	98.85	0.39	0.7	0.9	19.45
North East (Right Window 1) x	1.37	98.85	0.39	0.7	0.9	29.94
Total						151.69 (P3/P4)

Internal gains:

	June	July	August
Internal gains	417.33	400.73	409.54
Total summer gains	581.09	552.42	533.64 (P5)
Summer gain/loss ratio	2.1	2	1.93 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	18.1	19.9	19.73 (P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Not significant

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:59

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 74.27m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 08

Address : Flat 8, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 16.82 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 9.24 kg/m² OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 41.7 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 37.4 kWh/m² OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.23 (max. 0.30)	0.23 (max. 0.70)	OK
Party wall	0.00 (max. 0.20)	-	OK
Floor	0.23 (max. 0.25)	0.23 (max. 0.70)	OK
Roof	(no roof)		
Openings	0.83 (max. 2.00)	1.00 (max. 3.30)	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)
Maximum 10.0 OK

4 Heating efficiency

Main Heating system: Database: (rev 463, product index 017507):
Boiler systems with radiators or underfloor heating - mains gas
Brand name: Worcester
Model: Greenstar
Model qualifier: 30i ErP
(Combi)
Efficiency 89.6 % SEDBUK2009
Minimum 88.0 % OK

Secondary heating system: None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: South West	0.89m ²
Windows facing: South East	3.8m ²
Windows facing: South East	2.06m ²
Windows facing: North West	4.08m ²
Windows facing: North West	0.89m ²
Ventilation rate:	6.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

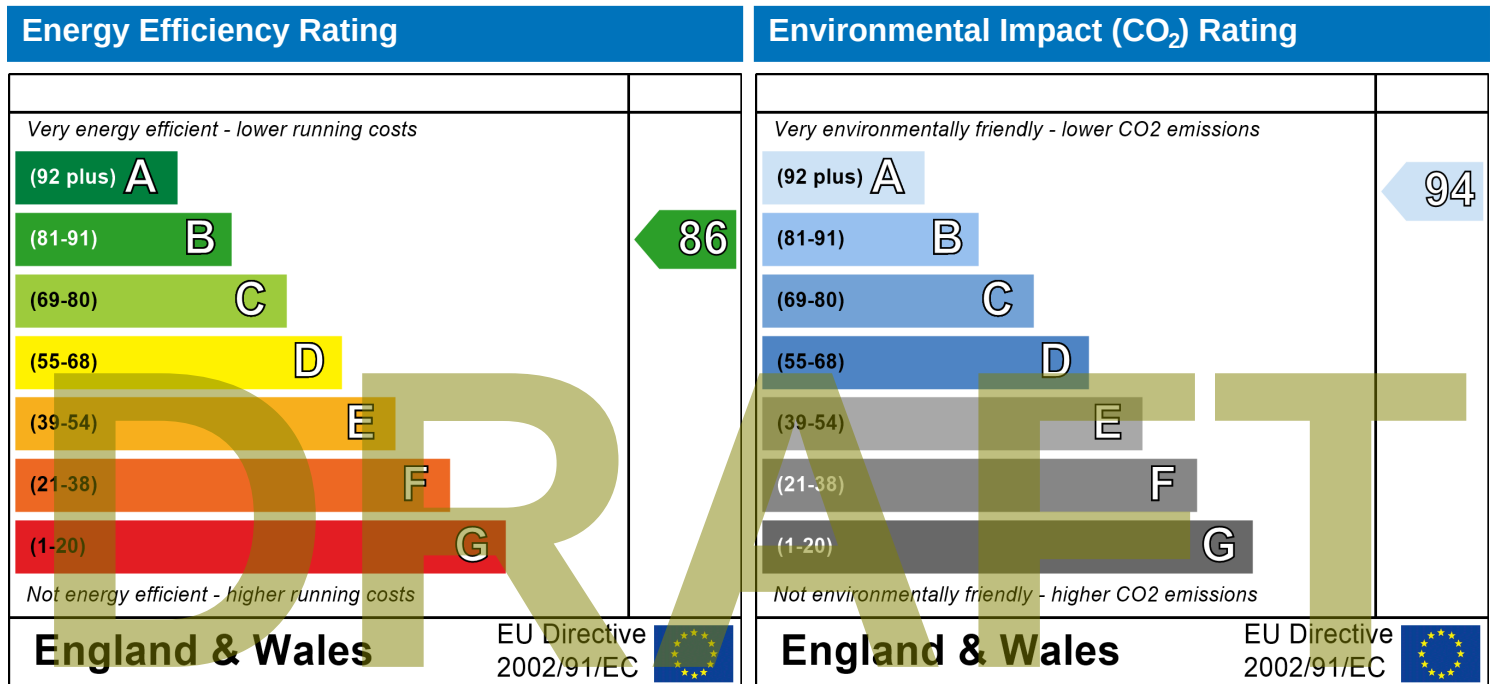
Flat 8
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Mid floor Flat
17 August 2020
Stroma Certification
74.27 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 08

Address: Flat 8, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 74.27 m² Storey height: 2.38 m

Living area: 21.53 m² (fraction 0.29)
Front of dwelling faces: North East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 1+2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 1+2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	0.89	1
Left French	16mm or more	0.7	0.39	0.8	3.8	1
Left Window 1+2	16mm or more	0.7	0.39	0.8	1.03	2
Right Window 1+2	16mm or more	0.7	0.39	0.8	2.04	2
Right Window 3	16mm or more	0.7	0.39	0.8	0.89	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North East	0.91	2.1
Rear Window 1		External Wall	South West	0.91	0.975
Left French		External Wall	South East	1.81	2.1
Left Window 1+2		External Wall	South East	0.685	1.5
Right Window 1+2		External Wall	North West	1.36	1.5
Right Window 3		External Wall	North West	0.91	0.975

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	69.52	11.72	57.8	0.23	0	False	N/A
E-WM-21 to Corridor	10.04	1.91	8.13	0.25	0.43	False	N/A

SAP Input

Floor to Corridor	3.26	0.23	N/A
<u>Internal Elements</u>			
Blockwork Partitions	94.32		N/A
<u>Party Elements</u>			
E-WM-21	13.27		N/A
E-FC-14	74.27		N/A
E-FC-14	71.01		N/A

Thermal bridges:

Thermal bridges:		User-defined (individual PSI-values) Y-Value = 0.1259		
		Length	Psi-value	
[Approved]		8.63	0.3	E2 Other lintels (including other steel lintels)
[Approved]		5.92	0.04	E3 Sill
[Approved]		24.3	0.05	E4 Jamb
		3.63	0.16	E21 Exposed floor (inverted)
[Approved]		46.46	0.07	E7 Party floor between dwellings (in blocks of flats)
[Approved]		5.14	0.09	E16 Corner (normal)
[Approved]		2.57	0.06	E18 Party wall between dwellings
		2.57	0.12	E25 Staggered party wall between dwellings
		5.8	0.055	E7 Party floor between dwellings (in blocks of flats)
		2.57	0.18	E16 Corner (normal)
[Approved]		2.57	-0.09	E17 Corner (inverted internal area greater than external area)
		3.63	0.23	E20 Exposed floor (normal)
		6	0.04	E9 Balcony between dwellings, wall insulation continuous
		10.34	0	P3 Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	1
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 30i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

SAP Input

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.89
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 08

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	6 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	349.99	(P1)
Transmission heat loss coefficient:	37.3	
Summer heat loss coefficient:	387.29	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South West (Rear Window 1)	1	1
South East (Left French 0	1	1
South East (Left Window 1+2)	1	1
North West (Right Window 1+2)	1	1
North West (Right Window 3)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South West (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Left French 1	0.9	1	0.9	(P8)	
South East (Left Window 1+2)	0.9	1	0.9	(P8)	
North West (Right Window 1+2)	0.9	1	0.9	(P8)	
North West (Right Window 3)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South West (Rear Window 0.9 x	0.89	119.92	0.39	0.7	0.9	23.6
South East (Left French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
South East (Left Window 1.9 x	2.06	119.92	0.39	0.7	0.9	54.63
North West (Right Window 0.9 x 2)	4.08	98.85	0.39	0.7	0.9	89.18
North West (Right Window 0.9 x	0.89	98.85	0.39	0.7	0.9	19.45
Total						287.63 (P3/P4)

Internal gains:

	June	July	August
Internal gains	416.6	399.79	407.97
Total summer gains	721.78	687.42	663.83 (P5)
Summer gain/loss ratio	1.86	1.77	1.71 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8

SAP 2012 Overheating Assessment

Thermal mass temperature increment	0	0	0
Threshold temperature	17.86	19.67	19.51 (P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant
Assessment of likelihood of high internal temperature:	<u>Not significant</u>		

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:57

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 51.1m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 09

Address : Flat 9, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 17.68 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 10.59 kg/m² OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 37.6 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 36.2 kWh/m² OK

2 Fabric U-values

Element

Average

Highest

External wall 0.22 (max. 0.30)

0.23 (max. 0.70)

Party wall 0.00 (max. 0.20)

-

Floor (no floor)

Roof (no roof)

Openings 0.84 (max. 2.00)

1.00 (max. 3.30)

OK

OK

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0 OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North East	1.03m ²	
Windows facing: North East	2.72m ²	
Windows facing: South West	3.8m ²	
Windows facing: South West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

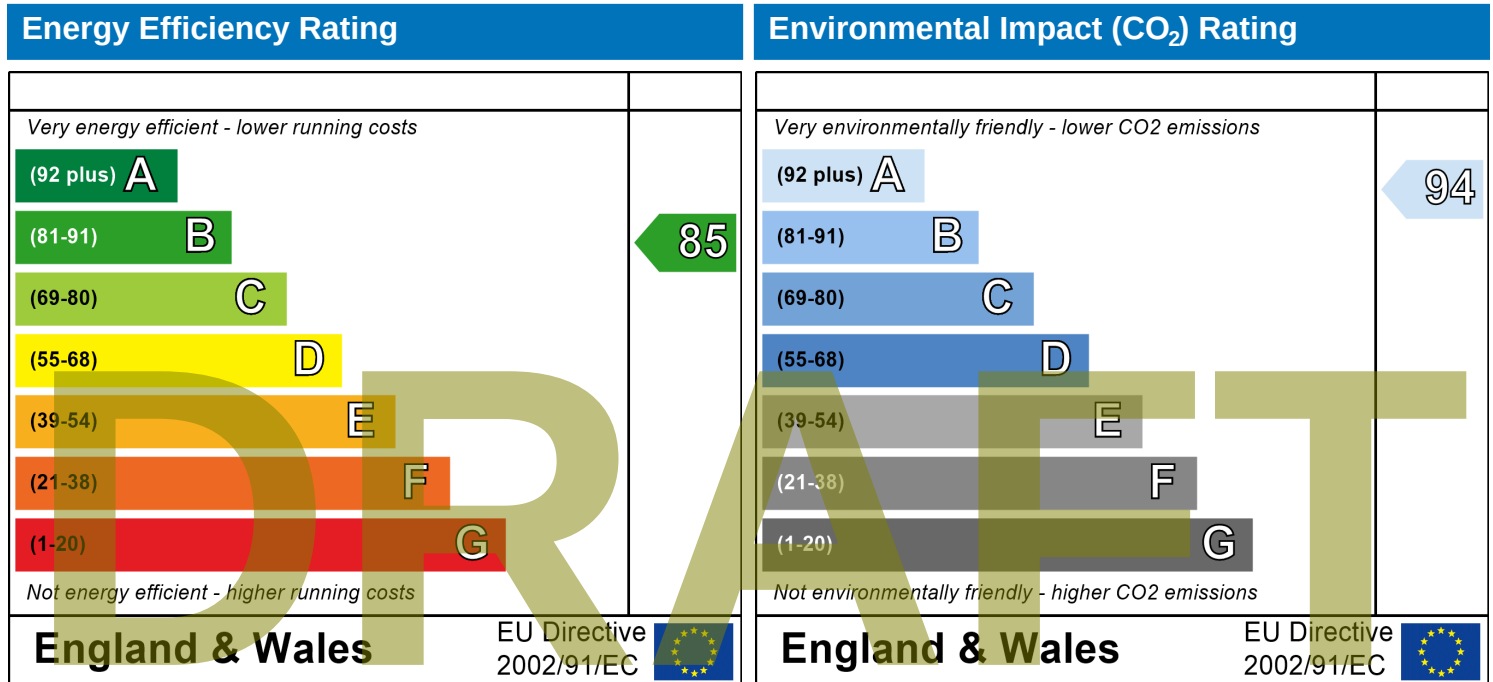
Flat 9
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Mid floor Flat
17 August 2020
Stroma Certification
51.1 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 09

Address: Flat 9, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 51.1 m² Storey height: 2.38 m

Living area: 19.19 m² (fraction 0.376)
Front of dwelling faces: North West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Left Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North West	0.91	2.1
Left Window 1		External Wall	North East	0.685	1.5
Left Window 2		External Wall	North East	1.81	1.5
Right French		External Wall	South West	1.81	2.1
Right Window		External Wall	South West	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	32.23	8.58	23.65	0.23	0	False	N/A
E-WM-21 to Corridor	5.45	1.91	3.54	0.25	0.43	False	N/A
E-WM-21 to Stairs	15.01	0	15.01	0.25	0.9	False	N/A
Internal Elements							
Blockwork Partitions	46.55						N/A

SAP Input

Party Elements

E-WM-21	21.9	N/A
E-FC-14	51.1	N/A
E-FC-14	51.1	N/A

Thermal bridges:

Thermal bridges:	User-defined (individual PSI-values) Y-Value = 0.1693			
	Length	Psi-value		
[Approved]	5.9	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.18	0.04	E3	Sill
[Approved]	17.4	0.05	E4	Jamb
[Approved]	19.08	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.57	0.18	E16	Corner (normal)
[Approved]	2.57	0.09	E16	Corner (normal)
[Approved]	5.14	0.06	E18	Party wall between dwellings
	11.68	0.05	E7	Party floor between dwellings (in blocks of flats)
	4.24	0.055	E7	Party floor between dwellings (in blocks of flats)
	6	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	17.04	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	2
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 25i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

Secondary heating system:

Secondary heating system:	None
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Water heating:

Water heating:	From main heating system
	Water code: 901

SAP Input

Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff:	Standard Tariff
In Smoke Control Area:	No
Conservatory:	No conservatory
Low energy lights:	100%
Terrain type:	Low rise urban / suburban
EPC language:	English
Wind turbine:	No
Photovoltaics:	<u>Photovoltaic 1</u> Installed Peak power: 0.61 Tilt of collector: 30° Overshading: None or very little Collector Orientation: South West
Assess Zero Carbon Home:	No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 09

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	120.4	(P1)
Transmission heat loss coefficient:	26.8	
Summer heat loss coefficient:	147.19	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North East (Left Window 1)	1	
North East (Left Window 2)	1	
South West (Right French 1)	1	
South West (Right Window 1)	1	

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North East (Left Window 1)		0.9	1	0.9	(P8)
North East (Left Window 2)		0.9	1	0.9	(P8)
South West (Right French 1)		0.9	1	0.9	(P8)
South West (Right Window 1)		0.9	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North East (Left Window 1) x	1.03	98.85	0.39	0.7	0.9	22.51
North East (Left Window 2) x	2.72	98.85	0.39	0.7	0.9	59.45
South West (Right French 1) x	3.8	119.92	0.39	0.7	0.9	100.77
South West (Right Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
Total						210.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	319.14	306.43	312.96
Total summer gains	542.08	516.48	499.51 (P5)
Summer gain/loss ratio	3.68	3.51	3.39 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.68	21.41	21.19 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:55

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 51.1m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 10

Address : Flat 10, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 17.72 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 10.72 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 37.7 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 36.7 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.22 (max. 0.30)

0.23 (max. 0.70)

Party wall 0.00 (max. 0.20)

-

Floor (no floor)

Roof (no roof)

Openings 0.84 (max. 2.00)

1.00 (max. 3.30)

OK

OK

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North East	1.03m ²	
Windows facing: North East	2.72m ²	
Windows facing: South West	3.8m ²	
Windows facing: South West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

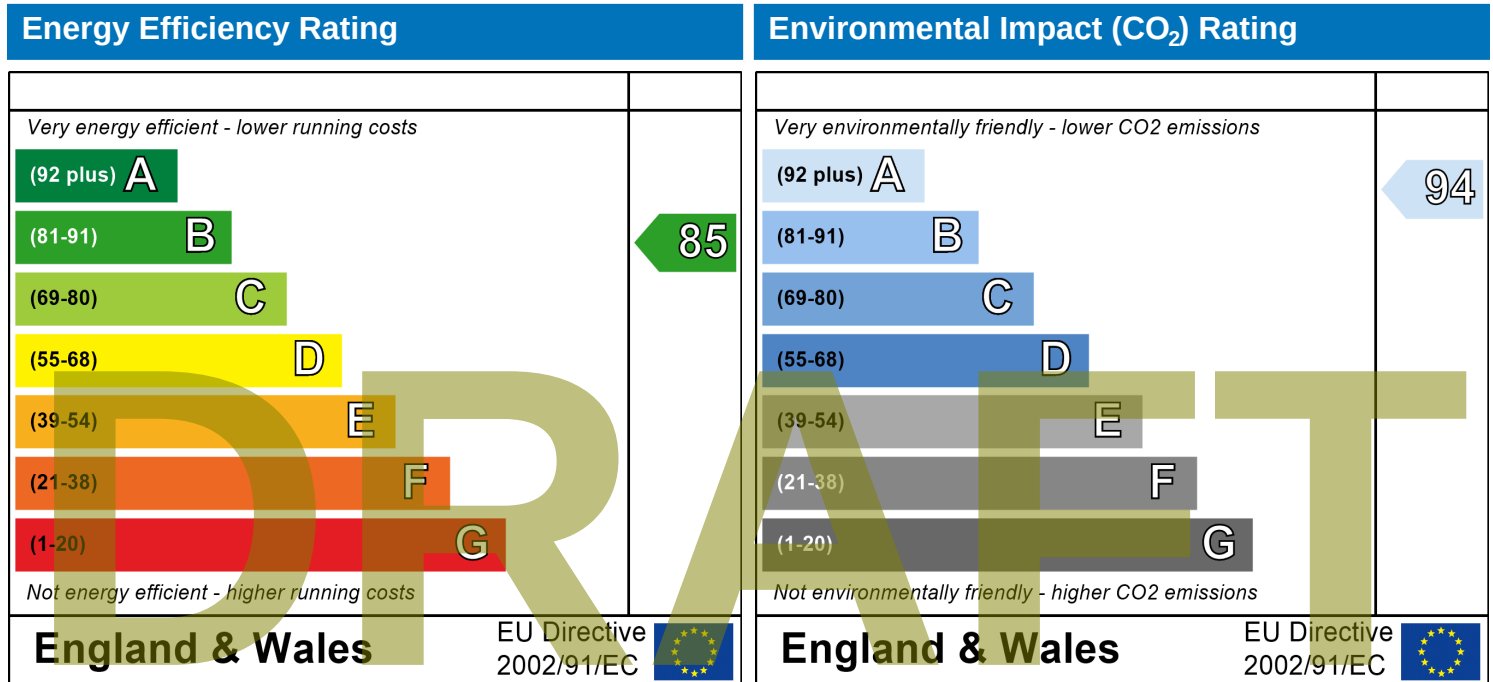
Flat 10
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Mid floor Flat
17 August 2020
Stroma Certification
51.1 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 10

Address: Flat 10, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 51.1 m² Storey height: 2.37 m

Living area: 19.19 m² (fraction 0.376)
Front of dwelling faces: South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Right Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Right Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Right Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Left French	16mm or more	0.7	0.39	0.8	3.8	1
Left Window	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	South East	0.91	2.1
Right Window 1		External Wall	North East	0.685	1.5
Right Window 2		External Wall	North East	1.81	1.5
Left French		External Wall	South West	1.81	2.1
Left Window		External Wall	South West	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	32.23	8.58	23.65	0.23	0	False	N/A
E-WM-21 to Corridor	5.45	1.91	3.54	0.25	0.43	False	N/A
E-WM-21 to Stairs	15.01	0	15.01	0.25	0.9	False	N/A
Internal Elements							
Blockwork Partitions	46.55						N/A

SAP Input

Party Elements

E-WM-21	21.9	N/A
E-FC-14	51.1	N/A
E-FC-14	51.1	N/A

Thermal bridges:

Thermal bridges:	User-defined (individual PSI-values) Y-Value = 0.1788			
	Length	Psi-value		
[Approved]	5.9	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.18	0.04	E3	Sill
[Approved]	17.4	0.05	E4	Jamb
[Approved]	19.08	0.07	E7	Party floor between dwellings (in blocks of flats)
	5.14	0.18	E16	Corner (normal)
[Approved]	2.57	0.09	E16	Corner (normal)
[Approved]	5.14	0.06	E18	Party wall between dwellings
	11.68	0.055	E7	Party floor between dwellings (in blocks of flats)
	4.24	0.05	E7	Party floor between dwellings (in blocks of flats)
	6	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	17.04	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	2
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 25i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

Secondary heating system:

Secondary heating system:	None
---------------------------	------

Water heating:

Water heating:	From main heating system
	Water code: 901

SAP Input

Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff:	Standard Tariff
In Smoke Control Area:	No
Conservatory:	No conservatory
Low energy lights:	100%
Terrain type:	Low rise urban / suburban
EPC language:	English
Wind turbine:	No
Photovoltaics:	<u>Photovoltaic 1</u> Installed Peak power: 0.61 Tilt of collector: 30° Overshading: None or very little Collector Orientation: South West
Assess Zero Carbon Home:	No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 10

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	119.9	(P1)
Transmission heat loss coefficient:	27.3	
Summer heat loss coefficient:	147.18	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North East (Right Window 1)	0	1
North East (Right Window 2)	0	1
South West (Left French)	0	1
South West (Left Window)	0	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North East (Right Window 1)	0.9	1	1	0.9	(P8)
North East (Right Window 2)	0.9	1	1	0.9	(P8)
South West (Left French)	1	0.9	1	0.9	(P8)
South West (Left Window)	1	0.9	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North East (Right Window 1) x	1.03	98.85	0.39	0.7	0.9	22.51
North East (Right Window 2) x	2.72	98.85	0.39	0.7	0.9	59.45
South West (Left French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
South West (Left Window) 0.9 x	1.03	119.92	0.39	0.7	0.9	27.31
Total						210.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	319.14	306.43	312.96
Total summer gains	542.08	516.48	499.51 (P5)
Summer gain/loss ratio	3.68	3.51	3.39 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.68	21.41	21.19 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:53

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 71.11m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 11

Address : Flat 11, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)

17.36 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

9.71 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

43.2 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

39.0 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall

0.00 (max. 0.20)

-

OK

Floor

(no floor)

Roof

(no roof)

Openings

0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: South East	2.7m ²
Windows facing: South East	2.04m ²
Windows facing: South East	3.8m ²
Windows facing: North East	1.79m ²
Windows facing: North East	0.89m ²
Ventilation rate:	4.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

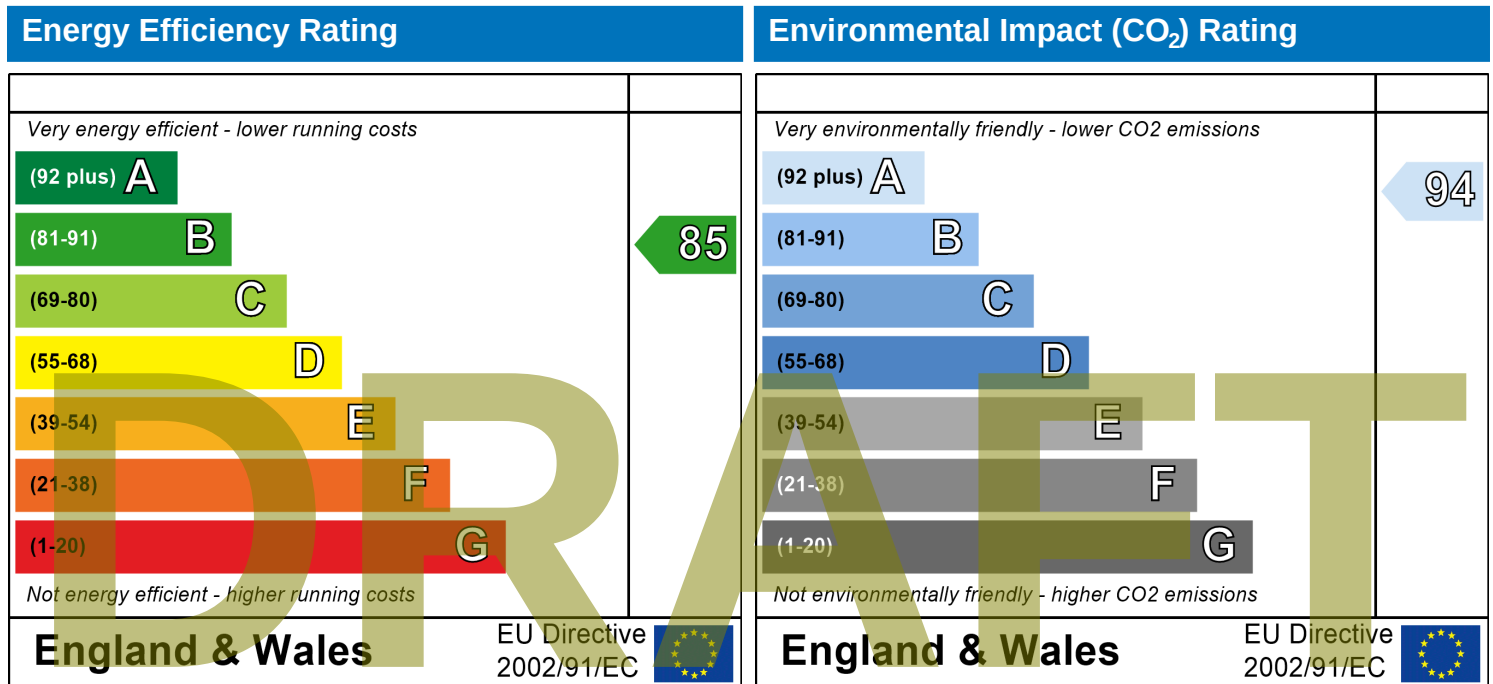
Flat 11
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Mid floor Flat
17 August 2020
Stroma Certification
71.11 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 11

Address: Flat 11, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 71.11 m² Storey height: 2.38 m

Living area: 31.13 m² (fraction 0.438)
Front of dwelling faces: North West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	2.7	1
Rear Window 2	16mm or more	0.7	0.39	0.8	2.04	1
Rear French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window	16mm or more	0.7	0.39	0.8	1.79	1
Right Window 2	16mm or more	0.7	0.39	0.8	0.89	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North West	0.91	2.1
Rear Window 1		External Wall	South East	1.8	1.5
Rear Window 2		External Wall	South East	1.36	1.5
Rear French		External Wall	South East	1.81	2.1
Right Window		External Wall	North East	0.85	2.1
Right Window 2		External Wall	North East	0.915	0.975

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	53.25	11.22	42.03	0.23	0	False	N/A
E-WM-21 to Corridor	21.33	1.91	19.42	0.25	0.43	False	N/A

SAP Input

Internal Elements

Blockwork Partitions 129.48 N/A

Party Elements

E-WM-21 17.27 N/A

E-FC-14 71.11 N/A

E-FC 14 71.11 N/A

Thermal bridges:

Thermal bridges:

User-defined (individual PSI-values) Y-Value = 0.1857

	Length	Psi-value		
[Approved]	7.645	0.3	E2	Other lintels (including other steel lintels)
[Approved]	4.14	0.04	E3	Sill
[Approved]	16.35	0.05	E4	Jamb
	6.52	0.16	E21	Exposed floor (inverted)
[Approved]	29.42	0.07	E7	Party floor between dwellings (in blocks of flats)
[Approved]	10.28	0.09	E16	Corner (normal)
	5.14	0.12	E25	Staggered party wall between dwellings
	14.45	0.055	E7	Party floor between dwellings (in blocks of flats)
	3.55	0.12	E24	Eaves (insulation at ceiling level - inverted)
	3.55	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	2.15	0.25	E20	Exposed floor (normal)
	4.88	0.32	E20	Exposed floor (normal)
[Approved]	2.57	-0.09	E17	Corner (inverted internal area greater than external area)
	6.72	0	P3	Intermediate floor between dwellings (in blocks of flats)
	6.72	0.158	P8	Exposed floor (inverted)

Ventilation:

Pressure test: Yes (As designed)

Ventilation: Balanced with heat recovery

Number of wet rooms: Kitchen + 1

Ductwork: Insulation, rigid

Approved Installation Scheme: True

Number of chimneys: 0

Number of open flues: 0

Number of fans: 0

Number of passive stacks: 0

Number of sides sheltered: 2

Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating

Gas boilers and oil boilers

Fuel: mains gas

Info Source: Boiler Database

Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi boiler)

Systems with radiators

Central heating pump : 2013 or later

Design flow temperature: Design flow temperature >45°C

Boiler interlock: Yes

Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs

Control code: 2106

SAP Input

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.85
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 11

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	No
Number of storeys:	1
Front of dwelling faces:	North West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	4 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	223.4	(P1)
Transmission heat loss coefficient:	38.5	
Summer heat loss coefficient:	261.9	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South East (Rear Window 01)	1	1
South East (Rear Window 02)	1	1
South East (Rear French)	0	1
North East (Right Window 0)	1	1
North East (Right Window 0 2)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South East (Rear Window 1)	0.9	1	0.9		(P8)
South East (Rear Window 2)	0.9	1	0.9		(P8)
South East (Rear French)	0.9	1	0.9		(P8)
North East (Right Window 1)	0.9	1	0.9		(P8)
North East (Right Window 2)	0.9	1	0.9		(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South East (Rear Window 01) x	2.7	119.92	0.39	0.7	0.9	71.6
South East (Rear Window 02) x	2.04	119.92	0.39	0.7	0.9	54.1
South East (Rear French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
North East (Right Window 0) x	1.79	98.85	0.39	0.7	0.9	39.13
North East (Right Window 0 2) x	0.89	98.85	0.39	0.7	0.9	19.45
Total						285.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	404.72	388.42	396.41
Total summer gains	705.69	673.46	655.6 (P5)
Summer gain/loss ratio	2.69	2.57	2.5 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8

SAP 2012 Overheating Assessment

Thermal mass temperature increment	0	0	0
Threshold temperature	18.69	20.47	20.3 (P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant

Assessment of likelihood of high internal temperature: Not significant

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:50

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 71.96m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 12

Address : Flat 12, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 17.24 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 10.24 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 43.4 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 41.2 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Floor 0.23 (max. 0.25)

0.23 (max. 0.70)

OK

Roof (no roof)

0.23 (max. 0.70)

Openings 0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system: None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: South West	1.03m ²	
Windows facing: South East	0.89m ²	
Windows facing: South East	2.72m ²	
Windows facing: South East	2.04m ²	
Windows facing: North West	3.8m ²	
Windows facing: North West	0.65m ²	
Windows facing: North West	1.03m ²	
Ventilation rate:	6.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

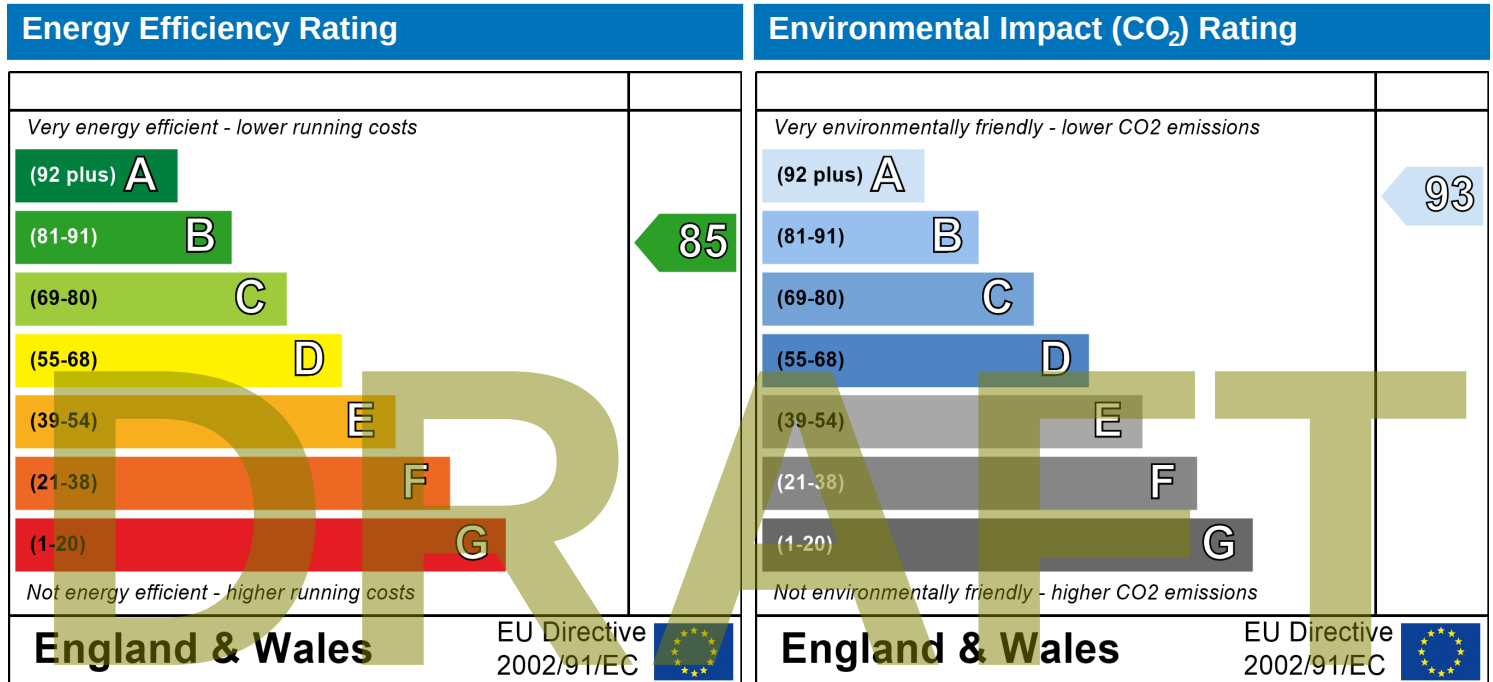
Flat 12
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Mid floor Flat
17 August 2020
Stroma Certification
71.96 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 12

Address: Flat 12, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 71.96 m² Storey height: 2.38 m

Living area: 24.27 m² (fraction 0.337)
Front of dwelling faces: North East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 1	16mm or more	0.7	0.39	0.8	0.89	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Left Window 3	16mm or more	0.7	0.39	0.8	2.04	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window 2	16mm or more	0.7	0.39	0.8	0.65	1
Right Window 3	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		W-WM-21 to Corridor	North East	0.91	2.1
Rear Window 1		External Wall	South West	0.685	1.5
Left Window 1		External Wall	South East	0.91	0.975
Left Window 2		External Wall	South East	1.81	1.5
Left Window 3		External Wall	South East	1.36	1.5
Right French		External Wall	North West	1.81	2.1
Right Window 2		External Wall	North West	0.685	0.95
Right Window 3		External Wall	North West	0.685	1.5

SAP Input

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
<u>External Elements</u>							
External Wall	74.74	12.16	62.58	0.23	0	False	N/A
W-WM-21 to Corridor	3.16	1.91	1.25	0.25	0.43	False	N/A
E-FC-14 to Corridor	1.96			0.23			N/A
<u>Internal Elements</u>							
Blockwork Partitions	124.71						N/A
<u>Party Elements</u>							
E-FC-14	71.96						N/A
E-FC-14	70						N/A

Thermal bridges:

Thermal bridges: User-defined (individual PSI-values) Y-Value = 0.1792

	Length	Psi-value		
[Approved]	8.855	0.3	E2	Other lintels (including other steel lintels)
[Approved]	6.15	0.04	E3	Sill
[Approved]	24.25	0.05	E4	Jamb
[Approved]	50.55	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.57	0.18	E16	Corner (normal)
[Approved]	5.14	0.09	E16	Corner (normal)
	1.23	0.16	E21	Exposed floor (inverted)
	1.6	0.32	E20	Exposed floor (normal)
	1.23	0.055	E7	Party floor between dwellings (in blocks of flats)
	1.23	0.23	E20	Exposed floor (normal)
	5.14	0.12	E25	Staggered party wall between dwellings
	6	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	6.7	0.158	P8	Exposed floor (inverted)
	6.7	0	P3	Intermediate floor between dwellings (in blocks of flats)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	1
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 30i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later

SAP Input

Design flow temperature: Design flow temperature >45°C

Boiler interlock: Yes

Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
Control code: 2106

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.86
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 12

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	6 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	339.1	(P1)
Transmission heat loss coefficient:	40.8	
Summer heat loss coefficient:	379.88	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South West (Rear Window 1)	1	1
South East (Left Window 1)	1	1
South East (Left Window 2)	1	1
South East (Left Window 3)	1	1
North West (Right French 1)	1	1
North West (Right Window 2)	1	1
North West (Right Window 3)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South West (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Left Window 1)	0.9	1	0.9	(P8)	
South East (Left Window 2)	0.9	1	0.9	(P8)	
South East (Left Window 3)	0.9	1	0.9	(P8)	
North West (Right French 1)	0.9	1	0.9	(P8)	
North West (Right Window 2)	0.9	1	0.9	(P8)	
North West (Right Window 3)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South West (Rear Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
South East (Left Window 1) x	0.89	119.92	0.39	0.7	0.9	23.6
South East (Left Window 2) x	2.72	119.92	0.39	0.7	0.9	72.13
South East (Left Window 3) x	2.04	119.92	0.39	0.7	0.9	54.1
North West (Right French 1) x	3.8	98.85	0.39	0.7	0.9	83.06
North West (Right Window 2) x	0.65	98.85	0.39	0.7	0.9	14.21
North West (Right Window 3) x	1.03	98.85	0.39	0.7	0.9	22.51
Total						296.92 (P3/P4)

Internal gains:

	June	July	August
Internal gains	407.72	391.26	399.23
Total summer gains	722.99	688.18	662.47 (P5)

SAP 2012 Overheating Assessment

Summer gain/loss ratio	1.9	1.81	1.74	(P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	0	0	0	
Threshold temperature	17.9	19.71	19.54	(P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant	

Assessment of likelihood of high internal temperature: Not significant

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:48

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 73.93m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 13

Address : Flat 13, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)

21.3 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

14.74 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

62.5 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

59.3 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall

0.00 (max. 0.20)

-

OK

Floor

(no floor)

Roof

0.15 (max. 0.20)

0.15 (max. 0.35)

OK

Openings

0.84 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: North West	2.64m ²
Windows facing: North West	2.04m ²
Windows facing: North West	0.89m ²
Windows facing: North East	1.37m ²
Ventilation rate:	4.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

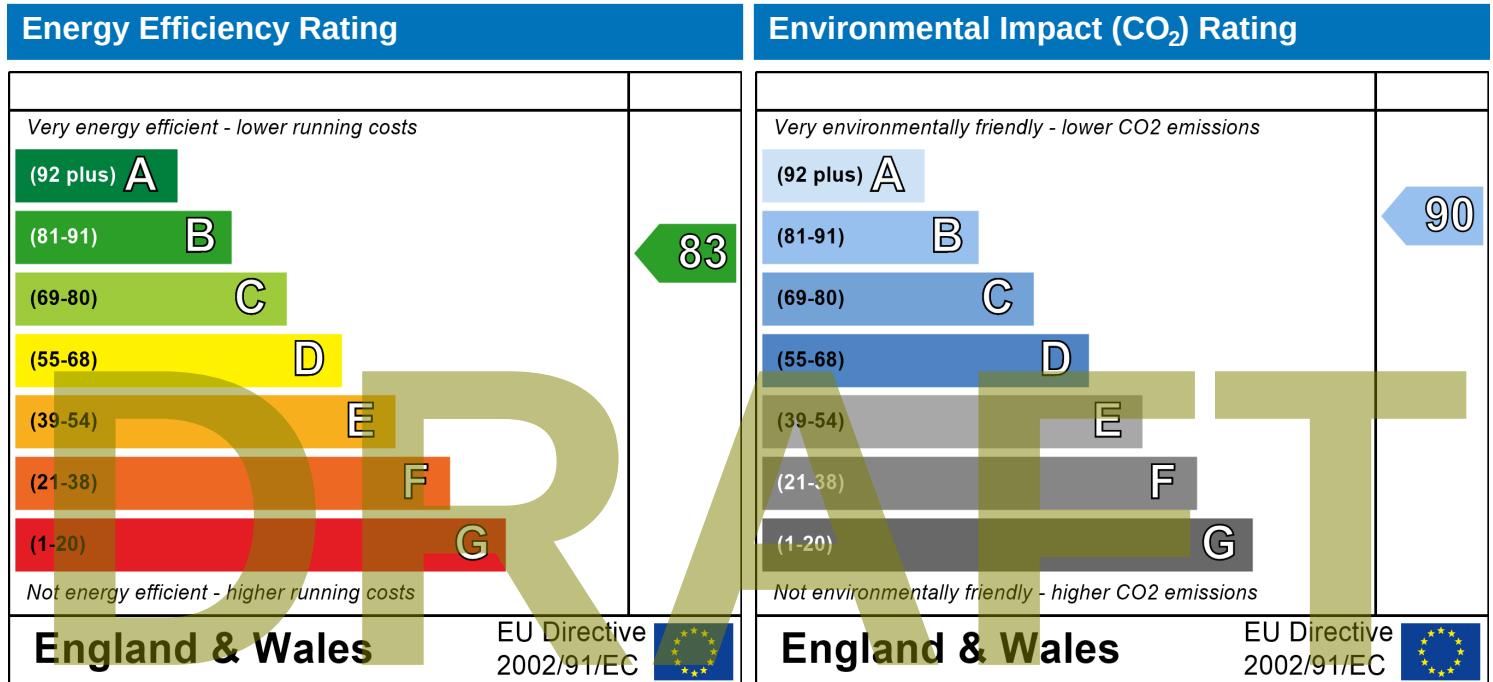
Flat 13
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Top floor Flat
17 August 2020
Stroma Certification
73.93 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 13

Address: Flat 13, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 73.93 m² Storey height: 2.47 m

Living area: 25.24 m² (fraction 0.341)
Front of dwelling faces: South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	2.64	1
Rear Window 2	16mm or more	0.7	0.39	0.8	2.04	1
Rear Window 3	16mm or more	0.7	0.39	0.8	0.89	1
Right Window	16mm or more	0.7	0.39	0.8	1.37	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	South East	0.91	2.1
Rear Window 1		External Wall	North West	1.76	1.5
Rear Window 2		External Wall	North West	1.36	1.5
Rear Window 3		External Wall	North West	0.91	0.975
Right Window		External Wall	North East	0.915	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	60.55	6.94	53.61	0.23	0	False	N/A
E-WM-21 to Corridor	14.92	1.91	13.01	0.25	0.43	False	N/A
Flat Roof	73.93	0	73.93	0.15	0		N/A
Internal Elements							
Blockwork Partitions	105.8						N/A

SAP Input

Party Elements

E-WM-21	12.75	N/A
E-FC 14	73.93	N/A

Thermal bridges:

Thermal bridges:	User-defined (individual PSI-values) Y-Value = 0.1465			
	Length	Psi-value		
[Approved]	5.855	0.3	E2	Other lintels (including other steel lintels)
[Approved]	4.945	0.04	E3	Sill
[Approved]	15.15	0.05	E4	Jamb
[Approved]	21.51	0.07	E7	Party floor between dwellings (in blocks of flats)
[Approved]	7.41	0.09	E16	Corner (normal)
[Approved]	2.47	0.06	E18	Party wall between dwellings
	2.47	0.12	E25	Staggered party wall between dwellings
	6.04	0.055	E7	Party floor between dwellings (in blocks of flats)
	24.52	0.56	E15	Flat roof with parapet
	6.04	0.062	E14	Flat roof
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	5.17	0	P3	Intermediate floor between dwellings (in blocks of flats)
	5.17	0.12	P4	Roof (insulation at ceiling level)

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	1
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 30i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

Secondary heating system:

Secondary heating system:	None
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Water heating:

Water heating:	From main heating system
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SAP Input

Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff:	Standard Tariff
In Smoke Control Area:	No
Conservatory:	No conservatory
Low energy lights:	100%
Terrain type:	Low rise urban / suburban
EPC language:	English
Wind turbine:	No
Photovoltaics:	<u>Photovoltaic 1</u> Installed Peak power: 0.89 Tilt of collector: 30° Overshading: None or very little Collector Orientation: South West
Assess Zero Carbon Home:	No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 13

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	No
Number of storeys:	1
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	4 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	241.04	(P1)
Transmission heat loss coefficient:	55.5	
Summer heat loss coefficient:	296.58	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North West (Rear Window 1)	1	1
North West (Rear Window 2)	1	1
North West (Rear Window 3)	1	1
North East (Right Window 1)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North West (Rear Window 1)	0.9	1	0.9	(P8)	
North West (Rear Window 2)	0.9	1	0.9	(P8)	
North West (Rear Window 3)	0.9	1	0.9	(P8)	
North East (Right Window)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g _u	FF	Shading	Gains
North West (Rear Window 1) x	2.64	98.85	0.39	0.7	0.9	57.7
North West (Rear Window 2) x	2.04	98.85	0.39	0.7	0.9	44.59
North West (Rear Window 3) x	0.89	98.85	0.39	0.7	0.9	19.45
North East (Right Window 1) x	1.37	98.85	0.39	0.7	0.9	29.94
Total						151.69 (P3/P4)

Internal gains:

	June	July	August
Internal gains	417.33	400.73	409.54
Total summer gains	581.09	552.42	533.64 (P5)
Summer gain/loss ratio	1.96	1.86	1.8 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	17.96	19.76	19.6 (P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Not significant

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:46

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 74.27m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 14

Address : Flat 14, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)

20.24 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

13.93 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

59.4 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

57.0 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall

0.00 (max. 0.20)

-

OK

Floor

(no floor)

Roof

0.15 (max. 0.20)

0.15 (max. 0.35)

OK

Openings

0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: South West	0.89m ²
Windows facing: South East	3.8m ²
Windows facing: South East	2.06m ²
Windows facing: North West	4.08m ²
Windows facing: North West	0.89m ²
Ventilation rate:	6.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

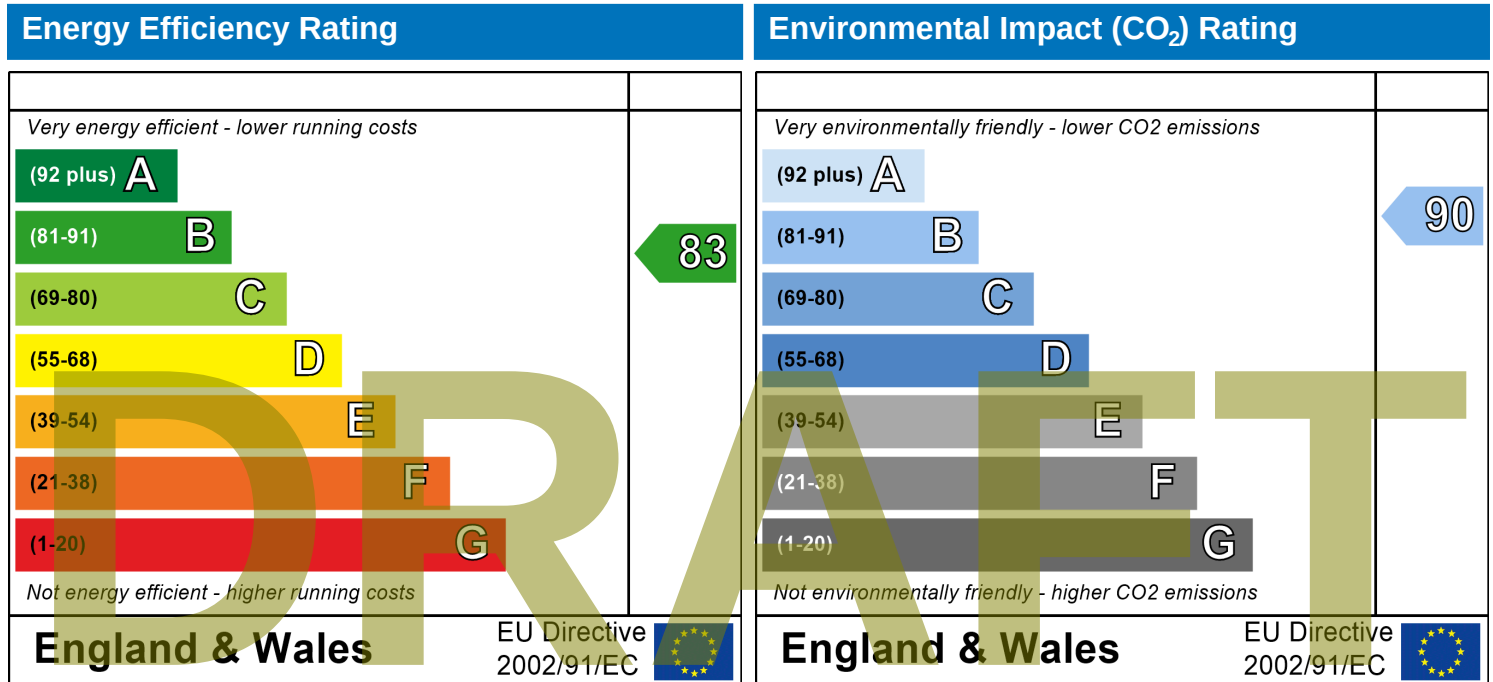
Flat 14
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Top floor Flat
17 August 2020
Stroma Certification
74.27 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 14

Address: Flat 14, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 74.27 m² Storey height: 2.47 m

Living area: 21.53 m² (fraction 0.29)
Front of dwelling faces: North East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 1+2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 1+2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	0.89	1
Left French	16mm or more	0.7	0.39	0.8	3.8	1
Left Window 1+2	16mm or more	0.7	0.39	0.8	1.03	2
Right Window 1+2	16mm or more	0.7	0.39	0.8	2.04	2
Right Window 3	16mm or more	0.7	0.39	0.8	0.89	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North East	0.91	2.1
Rear Window 1		External Wall	South West	0.91	0.975
Left French		External Wall	South East	1.81	2.1
Left Window 1+2		External Wall	South East	0.685	1.5
Right Window 1+2		External Wall	North West	1.36	1.5
Right Window 3		External Wall	North West	0.91	0.975

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	66.81	11.72	55.09	0.23	0	False	N/A
E-WM-21 to Corridor	9.65	1.91	7.74	0.25	0.43	False	N/A

SAP Input

Flat Roof	74.27	0	74.27	0.15	0	N/A
<u>Internal Elements</u>						
Blockwork Partitions	94.32					N/A
<u>Party Elements</u>						
E-WM-21	12.75					N/A
E-FC-14	74.27					N/A

Thermal bridges:

Thermal bridges:	User-defined (individual PSI-values) Y-Value = 0.1518				
	Length	Psi-value			
[Approved]	8.63	0.3	E2	Other lintels (including other steel lintels)	
[Approved]	5.92	0.04	E3	Sill	
[Approved]	24.3	0.05	E4	Jamb	
[Approved]	24.05	0.07	E7	Party floor between dwellings (in blocks of flats)	
[Approved]	4.94	0.09	E16	Corner (normal)	
[Approved]	2.47	0.06	E18	Party wall between dwellings	
	2.47	0.12	E25	Staggered party wall between dwellings	
	3.91	0.055	E7	Party floor between dwellings (in blocks of flats)	
	2.47	0.18	E16	Corner (normal)	
[Approved]	2.47	-0.09	E17	Corner (inverted internal area greater than external area)	
	24.05	0.56	E15	Flat roof with parapet	
	3.91	0.062	E14	Flat roof	
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall	
	5.17	0	P3	Intermediate floor between dwellings (in blocks of flats)	
	5.17	0.12	P4	Roof (insulation at ceiling level)	

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	1
Pressure test:	3

Main heating system:

Main heating system:	Boiler systems with radiators or underfloor heating
	Gas boilers and oil boilers
	Fuel: mains gas
	Info Source: Boiler Database
	Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
	Brand name: Worcester
	Model: Greenstar
	Model qualifier: 30i ErP
	(Combi boiler)
	Systems with radiators
	Central heating pump : 2013 or later
	Design flow temperature: Design flow temperature >45°C
	Boiler interlock: Yes
	Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

SAP Input

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.89
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 14

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	6 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	363.22	(P1)
Transmission heat loss coefficient:	59.4	
Summer heat loss coefficient:	422.66	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South West (Rear Window 1)	1	1
South East (Left French) 0	1	1
South East (Left Window 1+2)	1	1
North West (Right Window 1+2)	1	1
North West (Right Window 3)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South West (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Left French) 1	0.9	1	0.9	(P8)	
South East (Left Window 1+2)	0.9	1	0.9	(P8)	
North West (Right Window 1+2)	0.9	1	0.9	(P8)	
North West (Right Window 3)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South West (Rear Window 0.9 x)	0.89	119.92	0.39	0.7	0.9	23.6
South East (Left French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
South East (Left Window 1.9 x)	2.06	119.92	0.39	0.7	0.9	54.63
North West (Right Window 0.9 x 2)	4.08	98.85	0.39	0.7	0.9	89.18
North West (Right Window 0.9 x)	0.89	98.85	0.39	0.7	0.9	19.45
Total						287.63 (P3/P4)

Internal gains:

	June	July	August
Internal gains	416.6	399.79	407.97
Total summer gains	721.78	687.42	663.83 (P5)
Summer gain/loss ratio	1.71	1.63	1.57 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8

SAP 2012 Overheating Assessment

Thermal mass temperature increment	0	0	0
Threshold temperature	17.71	19.53	19.37 (P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant
Assessment of likelihood of high internal temperature:	<u>Not significant</u>		

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:44

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 51.1m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 15

Address : Flat 15, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER) 21.29 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 14.60 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 56.1 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 53.3 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall 0.22 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall 0.00 (max. 0.20)

-

OK

Floor (no floor)

Roof 0.15 (max. 0.20)

0.15 (max. 0.35)

OK

Openings 0.84 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 3.00 (design value)

Maximum 10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North East	1.03m ²	
Windows facing: North East	2.72m ²	
Windows facing: South West	3.8m ²	
Windows facing: South West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

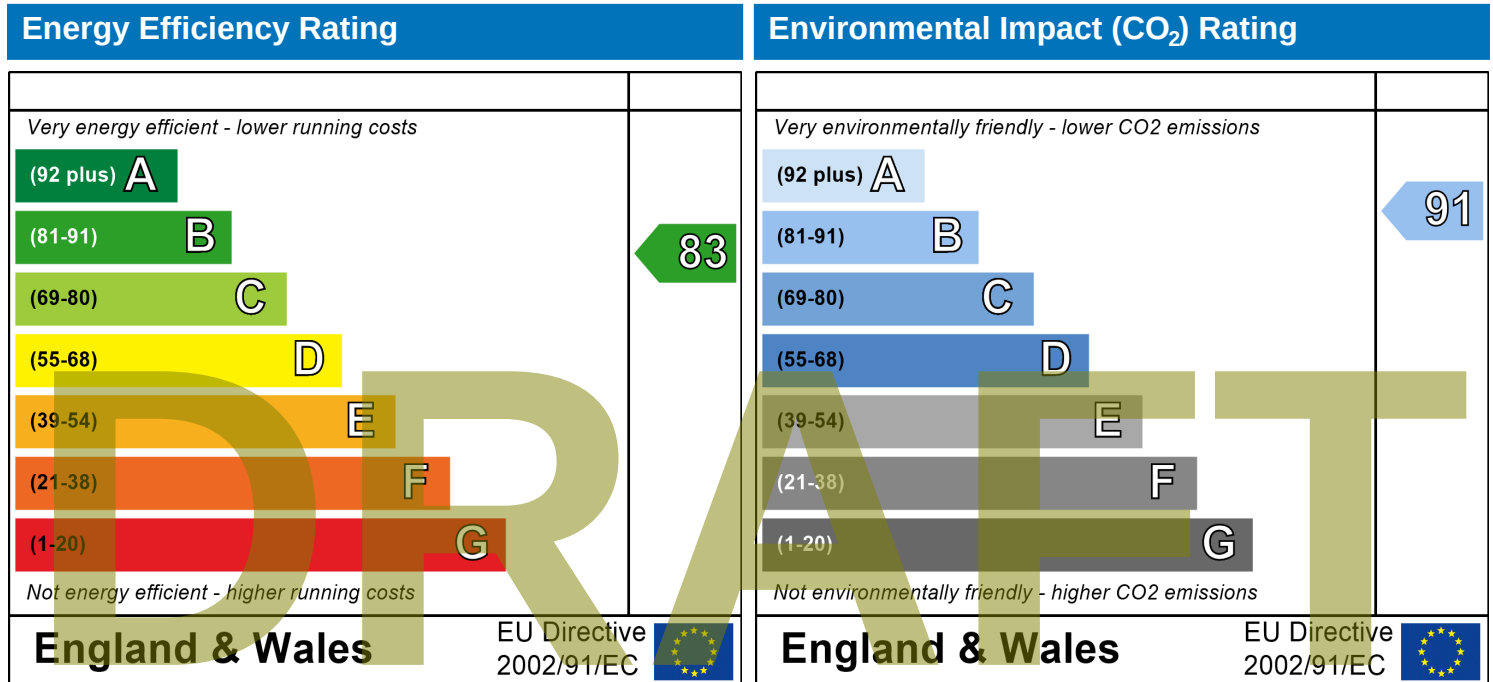
Flat 15
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Top floor Flat
17 August 2020
Stroma Certification
51.1 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 15

Address: Flat 15, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 51.1 m² Storey height: 2.47 m

Living area: 19.19 m² (fraction 0.376)
Front of dwelling faces: North West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Left Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North West	0.91	2.1
Left Window 1		External Wall	North East	0.685	1.5
Left Window 2		External Wall	North East	1.81	1.5
Right French		External Wall	South West	1.81	2.1
Right Window		External Wall	South West	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	30.98	8.58	22.4	0.23	0	False	N/A
E-WM-21 to Corridor	5.24	1.91	3.33	0.25	0.43	False	N/A
E-WM-21 to Stairs	14.43	0	14.43	0.25	0.9	False	N/A
Flat Roof	51.1	0	51.1	0.15	0		N/A

SAP Input

Internal Elements

Blockwork Partitions 46.55 N/A

Party Elements

E-WM-21 21.05 N/A

E-FC-14 51.1 N/A

Thermal bridges:

Thermal bridges:

User-defined (individual PSI-values) Y-Value = 0.1458

	Length	Psi-value		
[Approved]	5.9	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.18	0.04	E3	Sill
[Approved]	17.4	0.05	E4	Jamb
[Approved]	9.56	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.47	0.18	E16	Corner (normal)
[Approved]	2.47	0.09	E16	Corner (normal)
[Approved]	4.94	0.06	E18	Party wall between dwellings
	5.84	0.05	E7	Party floor between dwellings (in blocks of flats)
	2.12	0.055	E7	Party floor between dwellings (in blocks of flats)
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	5.84	0.0576	E14	Flat roof
	2.12	0.062	E14	Flat roof
	12.56	0.56	E15	Flat roof with parapet
	8.52	0	P3	Intermediate floor between dwellings (in blocks of flats)
	8.52	0.12	P4	Roof (insulation at ceiling level)

Ventilation:

Pressure test: Yes (As designed)
 Ventilation: Balanced with heat recovery
 Number of wet rooms: Kitchen + 1
 Ductwork: Insulation, rigid
 Approved Installation Scheme: True
 Number of chimneys: 0
 Number of open flues: 0
 Number of fans: 0
 Number of passive stacks: 0
 Number of sides sheltered: 2
 Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating
 Gas boilers and oil boilers
 Fuel: mains gas
 Info Source: Boiler Database
 Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
 Brand name: Worcester
 Model: Greenstar
 Model qualifier: 25i ErP
 (Combi boiler)
 Systems with radiators
 Central heating pump : 2013 or later
 Design flow temperature: Design flow temperature >45°C
 Boiler interlock: Yes
 Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
 Control code: 2106

Secondary heating system:

Secondary heating system: None

SAP Input

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.61
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West

Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 15

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	124.95	(P1)
Transmission heat loss coefficient:	39.9	
Summer heat loss coefficient:	164.86	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North East (Left Window 1)	1	
North East (Left Window 2)	1	
South West (Right French 1)	1	
South West (Right Window 1)	1	

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North East (Left Window 1)		0.9	1	0.9	(P8)
North East (Left Window 2)		0.9	1	0.9	(P8)
South West (Right French 1)		0.9	1	0.9	(P8)
South West (Right Window 1)		0.9	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North East (Left Window 1) x	1.03	98.85	0.39	0.7	0.9	22.51
North East (Left Window 2) x	2.72	98.85	0.39	0.7	0.9	59.45
South West (Right French 1) x	3.8	119.92	0.39	0.7	0.9	100.77
South West (Right Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
Total						210.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	319.14	306.43	312.96
Total summer gains	542.08	516.48	499.51 (P5)
Summer gain/loss ratio	3.29	3.13	3.03 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.29	21.03	20.83 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:42

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 51.1m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 16

Address : Flat 16, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)

21.29 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

14.60 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

56.1 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

53.3 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.22 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall

0.00 (max. 0.20)

-

OK

Floor

(no floor)

Roof

0.15 (max. 0.20)

0.15 (max. 0.35)

OK

Openings

0.84 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017505):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 25i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Slight	OK
Based on:		
Overshading:	Average or unknown	
Windows facing: North East	1.03m ²	
Windows facing: North East	2.72m ²	
Windows facing: South West	3.8m ²	
Windows facing: South West	1.03m ²	
Ventilation rate:	3.00	
Blinds/curtains:	None	

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

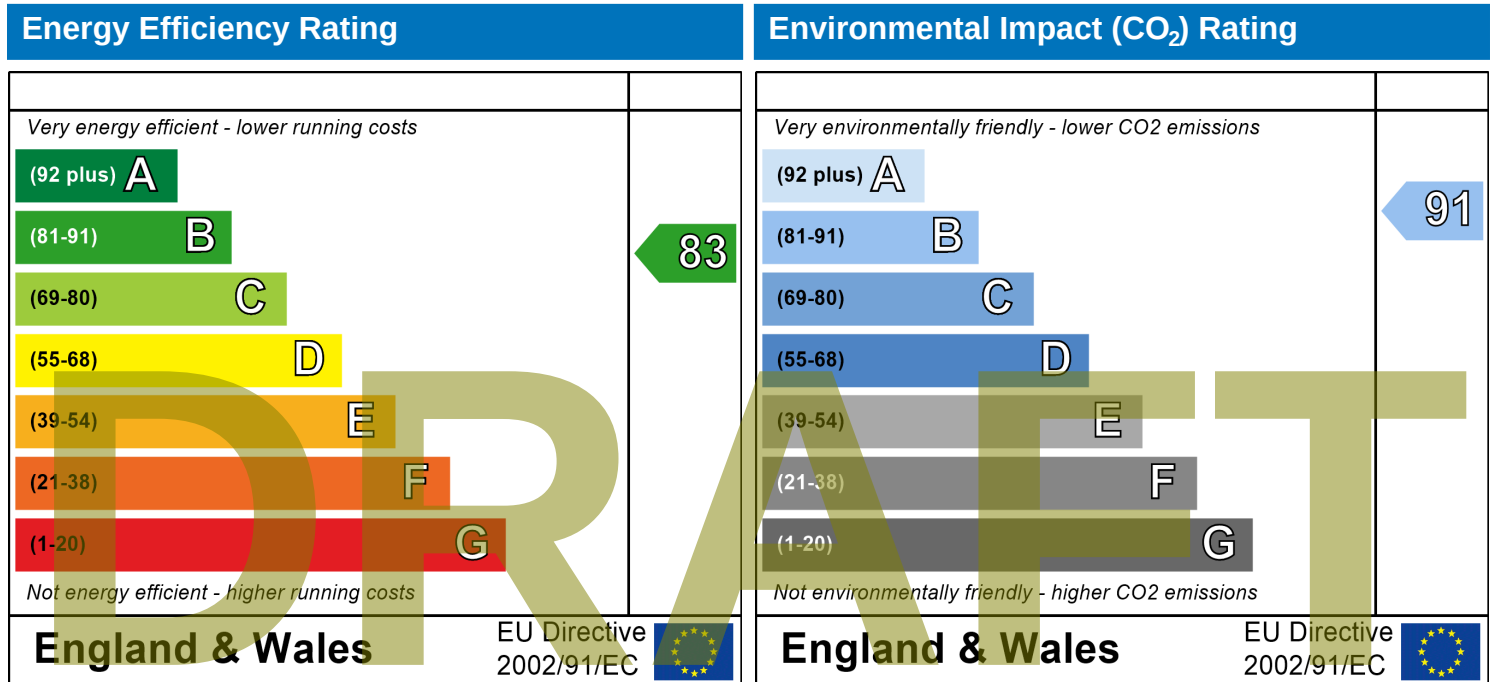
Flat 16
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Top floor Flat
17 August 2020
Stroma Certification
51.1 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 16

Address: Flat 16, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 51.1 m² Storey height: 2.47 m

Living area: 19.19 m² (fraction 0.376)
Front of dwelling faces: South East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Left Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	South East	0.91	2.1
Left Window 1		External Wall	North East	0.685	1.5
Left Window 2		External Wall	North East	1.81	1.5
Right French		External Wall	South West	1.81	2.1
Right Window		External Wall	South West	0.685	1.5

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	30.98	8.58	22.4	0.23	0	False	N/A
E-WM-21 to Corridor	5.24	1.91	3.33	0.25	0.43	False	N/A
E-WM-21 to Stairs	14.43	0	14.43	0.25	0.9	False	N/A
Flat Roof	51.1	0	51.1	0.15	0		N/A

SAP Input

Internal Elements

Blockwork Partitions 46.55 N/A

Party Elements

E-WM-21 21.05 N/A

E-FC-14 51.1 N/A

Thermal bridges:

Thermal bridges:

User-defined (individual PSI-values) Y-Value = 0.1458

	Length	Psi-value		
[Approved]	5.9	0.3	E2	Other lintels (including other steel lintels)
[Approved]	3.18	0.04	E3	Sill
[Approved]	17.4	0.05	E4	Jamb
[Approved]	9.56	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.47	0.18	E16	Corner (normal)
[Approved]	2.47	0.09	E16	Corner (normal)
[Approved]	4.94	0.06	E18	Party wall between dwellings
	5.84	0.05	E7	Party floor between dwellings (in blocks of flats)
	2.12	0.055	E7	Party floor between dwellings (in blocks of flats)
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	5.84	0.0576	E14	Flat roof
	2.12	0.062	E14	Flat roof
	12.56	0.56	E15	Flat roof with parapet
	8.52	0	P3	Intermediate floor between dwellings (in blocks of flats)
	8.52	0.12	P4	Roof (insulation at ceiling level)

Ventilation:

Pressure test: Yes (As designed)
 Ventilation: Balanced with heat recovery
 Number of wet rooms: Kitchen + 1
 Ductwork: Insulation, rigid
 Approved Installation Scheme: True
 Number of chimneys: 0
 Number of open flues: 0
 Number of fans: 0
 Number of passive stacks: 0
 Number of sides sheltered: 2
 Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating
 Gas boilers and oil boilers
 Fuel: mains gas
 Info Source: Boiler Database
 Database: (rev 463, product index 017505) Efficiency: Winter 86.6 % Summer: 90.5
 Brand name: Worcester
 Model: Greenstar
 Model qualifier: 25i ErP
 (Combi boiler)
 Systems with radiators
 Central heating pump : 2013 or later
 Design flow temperature: Design flow temperature >45°C
 Boiler interlock: Yes
 Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
 Control code: 2106

Secondary heating system:

Secondary heating system: None

SAP Input

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.61
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 16

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	South East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	3 (Windows open half the time)

Overheating Details:

Summer ventilation heat loss coefficient:	124.95	(P1)
Transmission heat loss coefficient:	39.9	
Summer heat loss coefficient:	164.86	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
North East (Left Window 1)	1	1
North East (Left Window 2)	1	1
South West (Right French 1)	1	1
South West (Right Window 1)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
North East (Left Window 1)		0.9	1	0.9	(P8)
North East (Left Window 2)		0.9	1	0.9	(P8)
South West (Right French 1)		0.9	1	0.9	(P8)
South West (Right Window 1)		0.9	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
North East (Left Window 1) x	1.03	98.85	0.39	0.7	0.9	22.51
North East (Left Window 2) x	2.72	98.85	0.39	0.7	0.9	59.45
South West (Right French 1) x	3.8	119.92	0.39	0.7	0.9	100.77
South West (Right Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
Total						210.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	319.14	306.43	312.96
Total summer gains	542.08	516.48	499.51 (P5)
Summer gain/loss ratio	3.29	3.13	3.03 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8
Thermal mass temperature increment	0	0	0
Threshold temperature	19.29	21.03	20.83 (P7)
Likelihood of high internal temperature	Not significant	Slight	Slight

SAP 2012 Overheating Assessment

Assessment of likelihood of high internal temperature: Slight

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:40

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 71.11m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 17

Address : Flat 17, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)

20.06 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

13.56 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

57.0 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

55.3 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Party wall

0.00 (max. 0.20)

-

OK

Floor

(no floor)

Roof

0.15 (max. 0.20)

0.15 (max. 0.35)

OK

Openings

0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: South East	2.7m ²
Windows facing: South East	2.04m ²
Windows facing: South East	3.8m ²
Windows facing: North East	1.79m ²
Windows facing: North East	0.89m ²
Ventilation rate:	4.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

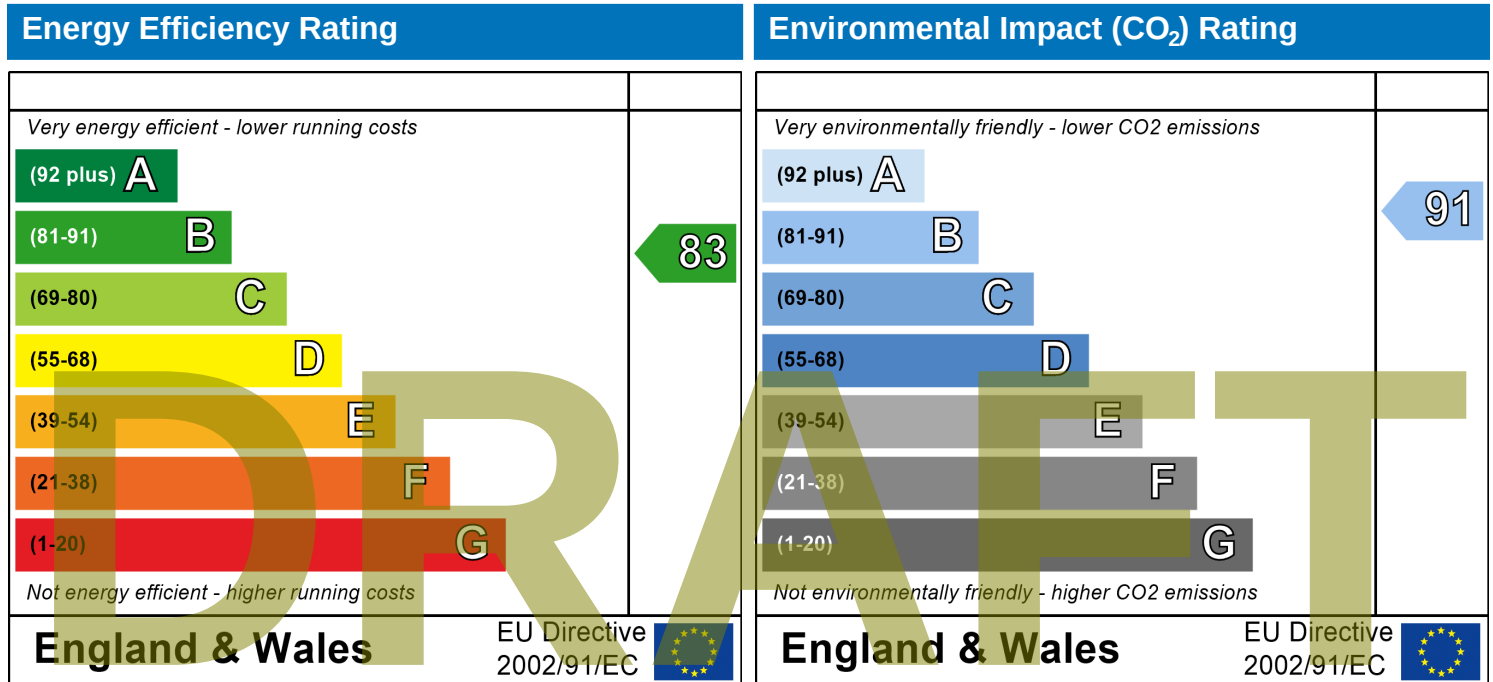
Flat 17
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Top floor Flat
17 August 2020
Stroma Certification
71.11 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 17

Address: Flat 17, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Floor 0 71.11 m² Storey height: 2.47 m

Living area: 31.13 m² (fraction 0.438)
Front of dwelling faces: North West

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Rear French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	2.7	1
Rear Window 2	16mm or more	0.7	0.39	0.8	2.04	1
Rear French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window	16mm or more	0.7	0.39	0.8	1.79	1
Right Window 2	16mm or more	0.7	0.39	0.8	0.89	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		E-WM-21 to Corridor	North West	0.91	2.1
Rear Window 1		External Wall	South East	1.8	1.5
Rear Window 2		External Wall	South East	1.36	1.5
Rear French		External Wall	South East	1.81	2.1
Right Window		External Wall	North East	0.85	2.1
Right Window 2		External Wall	North East	0.915	0.975

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
External Elements							
External Wall	51.18	11.22	39.96	0.23	0	False	N/A
E-WM-21 to Corridor	20.5	1.91	18.59	0.25	0.43	False	N/A

SAP Input

Flat Roof	71.11	0	71.11	0.15	0	N/A
<u>Internal Elements</u>						
Blockwork Partitions	129.48					N/A
<u>Party Elements</u>						
E-WM-21	16.6					N/A
E-FC 14	71.11					N/A

Thermal bridges:

Thermal bridges:		User-defined (individual PSI-values) Y-Value = 0.1462				
		Length	Psi-value			
	[Approved]	7.645	0.3	E2	Other lintels (including other steel lintels)	
	[Approved]	4.14	0.04	E3	Sill	
	[Approved]	16.35	0.05	E4	Jamb	
	[Approved]	17.15	0.07	E7	Party floor between dwellings (in blocks of flats)	
	[Approved]	9.88	0.09	E16	Corner (normal)	
		4.94	0.12	E25	Staggered party wall between dwellings	
		8.3	0.055	E7	Party floor between dwellings (in blocks of flats)	
		3.55	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall	
	[Approved]	2.47	-0.09	E17	Corner (inverted internal area greater than external area)	
		20.7	0.56	E15	Flat roof with parapet	
		8.3	0.062	E14	Flat roof	
		6.72	0	P3	Intermediate floor between dwellings (in blocks of flats)	
		6.72	0.12	P4	Roof (insulation at ceiling level)	

Ventilation:

Pressure test:	Yes (As designed)
Ventilation:	Balanced with heat recovery
	Number of wet rooms: Kitchen + 1
	Ductwork: Insulation, rigid
	Approved Installation Scheme: True
Number of chimneys:	0
Number of open flues:	0
Number of fans:	0
Number of passive stacks:	0
Number of sides sheltered:	2
Pressure test:	3

Main heating system:

Main heating system:		Boiler systems with radiators or underfloor heating
		Gas boilers and oil boilers
		Fuel: mains gas
		Info Source: Boiler Database
		Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5
		Brand name: Worcester
		Model: Greenstar
		Model qualifier: 30i ErP
		(Combi boiler)
		Systems with radiators
		Central heating pump : 2013 or later
		Design flow temperature: Design flow temperature >45°C
		Boiler interlock: Yes
		Delayed start

Main heating Control:

Main heating Control:	Programmer, room thermostat and TRVs
	Control code: 2106

Secondary heating system:

Secondary heating system:	None
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SAP Input

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.85
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

DRAFT

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 17

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	No
Number of storeys:	1
Front of dwelling faces:	North West
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	4 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	231.85	(P1)
Transmission heat loss coefficient:	55.5	
Summer heat loss coefficient:	287.39	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South East (Rear Window 01)	1	1
South East (Rear Window 02)	1	1
South East (Rear French)	0	1
North East (Right Window 0)	1	1
North East (Right Window 0 2)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South East (Rear Window 1)	0.9	1	0.9	(P8)	
South East (Rear Window 2)	0.9	1	0.9	(P8)	
South East (Rear French)	0.9	1	0.9	(P8)	
North East (Right Window 1)	0.9	1	0.9	(P8)	
North East (Right Window 2)	0.9	1	0.9	(P8)	

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South East (Rear Window 01) x	2.7	119.92	0.39	0.7	0.9	71.6
South East (Rear Window 02) x	2.04	119.92	0.39	0.7	0.9	54.1
South East (Rear French) 0.9 x	3.8	119.92	0.39	0.7	0.9	100.77
North East (Right Window 0) x	1.79	98.85	0.39	0.7	0.9	39.13
North East (Right Window 0 2) x	0.89	98.85	0.39	0.7	0.9	19.45
Total						285.05 (P3/P4)

Internal gains:

	June	July	August
Internal gains	404.72	388.42	396.41
Total summer gains	705.69	673.46	655.6 (P5)
Summer gain/loss ratio	2.46	2.34	2.28 (P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8

SAP 2012 Overheating Assessment

Thermal mass temperature increment	0	0	0
Threshold temperature	18.46	20.24	20.08 (P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant
Assessment of likelihood of high internal temperature:	<u>Not significant</u>		

DRAFT

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 25 August 2020 at 12:05:38

Project Information:

Assessed By: ()

Building Type: Flat

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 71.96m²

Site Reference : Norcot Community Centre

Plot Reference: Plot 18

Address : Flat 18, Norcot Community Centre, Reading

Client Details:

Name: HWM Building Services

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas

Fuel factor: 1.00 (mains gas)

Target Carbon Dioxide Emission Rate (TER)

19.63 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

12.89 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

55.7 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

52.5 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.23 (max. 0.30)

0.23 (max. 0.70)

OK

Floor

0.23 (max. 0.25)

0.23 (max. 0.70)

OK

Roof

(no roof)

Openings

0.83 (max. 2.00)

1.00 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

3.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Database: (rev 463, product index 017507):

Boiler systems with radiators or underfloor heating - mains gas

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi)

Efficiency 89.6 % SEDBUK2009

Minimum 88.0 %

OK

Secondary heating system:

None

Regulations Compliance Report

5 Cylinder insulation

Hot water Storage: No cylinder

6 Controls

Space heating controls	Programmer, room thermostat and TRVs	OK
Hot water controls:	No cylinder thermostat	
	No cylinder	
Boiler interlock:	Yes	OK

7 Low energy lights

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

8 Mechanical ventilation

Continuous supply and extract system		
Specific fan power:	0.42	
Maximum	1.5	OK
MVHR efficiency:	91%	
Minimum	70%	OK

9 Summertime temperature

Overheating risk (Thames valley):	Not significant	OK
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Based on:

Overshading:	Average or unknown
Windows facing: South West	1.03m ²
Windows facing: South East	0.89m ²
Windows facing: South East	2.72m ²
Windows facing: South East	2.04m ²
Windows facing: North West	3.8m ²
Windows facing: North West	0.65m ²
Windows facing: North West	1.03m ²
Ventilation rate:	6.00
Blinds/curtains:	None

10 Key features

Air permeability	3.0 m ³ /m ² h
Windows U-value	0.8 W/m ² K
Doors U-value	1 W/m ² K
Photovoltaic array	

Predicted Energy Assessment

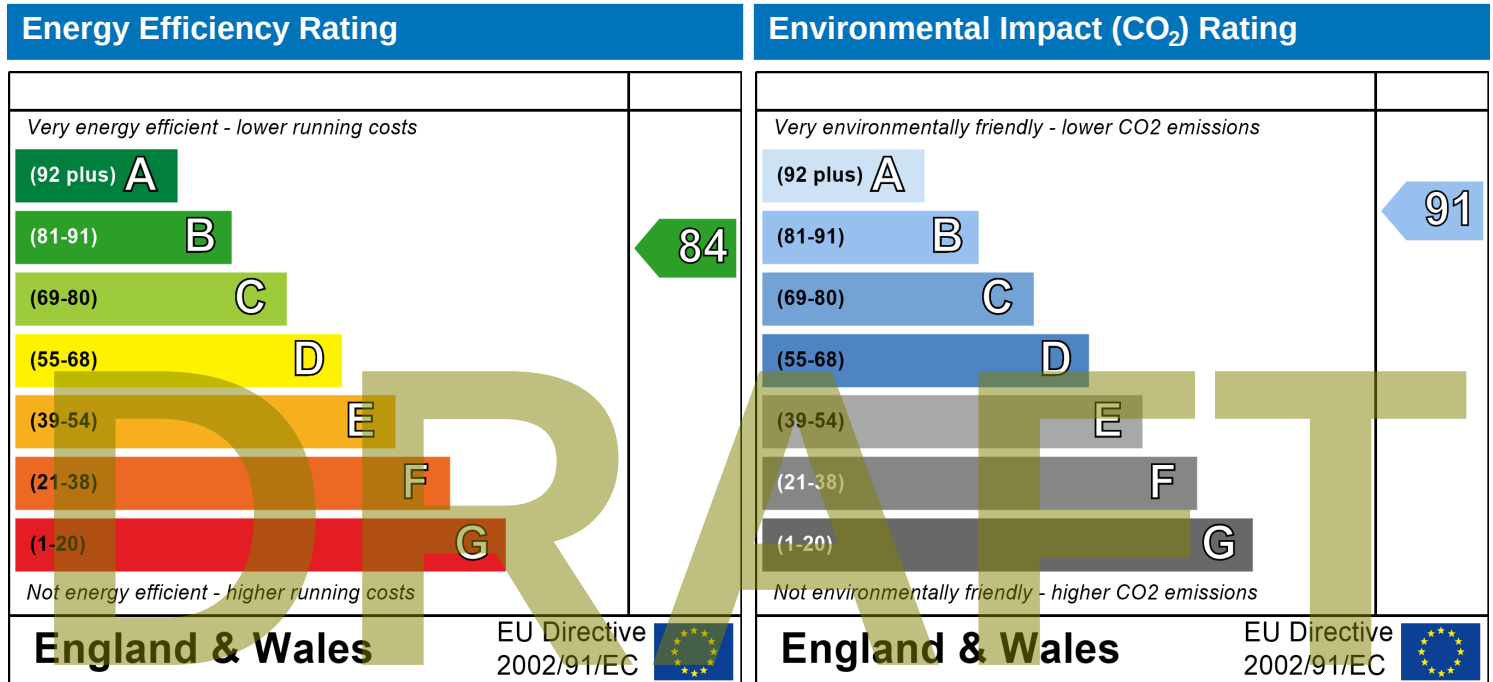
Flat 18
Norcot Community Centre
Reading

Dwelling type:
Date of assessment:
Produced by:
Total floor area:

Top floor Flat
17 August 2020
Stroma Certification
71.96 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

SAP Input

Property Details: Plot 18

Address: Flat 18, Norcot Community Centre, Reading
Located in: England
Region: Thames valley
UPRN:
Date of assessment: 17 August 2020
Date of certificate: 25 August 2020
Assessment type: New dwelling design stage
Transaction type: New dwelling
Tenure type: Unknown
Related party disclosure: No related party
Thermal Mass Parameter: Indicative Value High
Water use <= 125 litres/person/day: True
PCDF Version: 463

Property description:

Dwelling type: Flat
Detachment:
Year Completed: 2020
Floor Location: Floor area:
Storey height:
Floor 0 71.96 m² 2.47 m

Living area: 24.27 m² (fraction 0.337)
Front of dwelling faces: North East

Opening types:

Name:	Source:	Type:	Glazing:	Argon:	Frame:
Door to Corridor	Manufacturer	Solid			PVC-U
Rear Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 1	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Left Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right French	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 2	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	
Right Window 3	Manufacturer	Windows	low-E, En = 0.05, soft coat	Yes	

Name:	Gap:	Frame Factor:	g-value:	U-value:	Area:	No. of Openings:
Door to Corridor	mm	0.7	0	1	1.91	1
Rear Window 1	16mm or more	0.7	0.39	0.8	1.03	1
Left Window 1	16mm or more	0.7	0.39	0.8	0.89	1
Left Window 2	16mm or more	0.7	0.39	0.8	2.72	1
Left Window 3	16mm or more	0.7	0.39	0.8	2.04	1
Right French	16mm or more	0.7	0.39	0.8	3.8	1
Right Window 2	16mm or more	0.7	0.39	0.8	0.65	1
Right Window 3	16mm or more	0.7	0.39	0.8	1.03	1

Name:	Type-Name:	Location:	Orient:	Width:	Height:
Door to Corridor		W-WM-21 to Corridor	North East	0.91	2.1
Rear Window 1		External Wall	South West	0.685	1.5
Left Window 1		External Wall	South East	0.91	0.975
Left Window 2		External Wall	South East	1.81	1.5
Left Window 3		External Wall	South East	1.36	1.5
Right French		External Wall	North West	1.81	2.1
Right Window 2		External Wall	North West	0.685	0.95
Right Window 3		External Wall	North West	0.685	1.5

SAP Input

Overshading: Average or unknown

Opaque Elements:

Type:	Gross area:	Openings:	Net area:	U-value:	Ru value:	Curtain wall:	Kappa:
<u>External Elements</u>							
External Wall	74.74	12.16	62.58	0.23	0	False	N/A
W-WM-21 to Corridor	3.16	1.91	1.25	0.25	0.43	False	N/A
E-FC-14 to Corridor	1.96			0.23			N/A
<u>Internal Elements</u>							
Blockwork Partitions	124.71						N/A
<u>Party Elements</u>							
E-FC-14	71.96						N/A
E-FC-14	70						N/A

Thermal bridges:

Thermal bridges: User-defined (individual PSI-values) Y-Value = 0.3262

	Length	Psi-value		
[Approved]	8.855	0.3	E2	Other lintels (including other steel lintels)
[Approved]	6.15	0.04	E3	Sill
[Approved]	24.25	0.05	E4	Jamb
[Approved]	26.08	0.07	E7	Party floor between dwellings (in blocks of flats)
	2.47	0.18	E16	Corner (normal)
[Approved]	4.96	0.09	E16	Corner (normal)
	1.23	0.055	E7	Party floor between dwellings (in blocks of flats)
	4.96	0.12	E25	Staggered party wall between dwellings
	3	0.5	E23	Balcony within or between dwellings, balcony support penetrates wall
	1.23	0.062	E14	Flat roof
	29.08	0.56	E15	Flat roof with parapet
	5.82	0	P3	Intermediate floor between dwellings (in blocks of flats)
	5.82	0.12	P4	Roof (insulation at ceiling level)

Ventilation:

Pressure test: Yes (As designed)

Ventilation: Balanced with heat recovery

Number of wet rooms: Kitchen + 1

Ductwork: Insulation, rigid

Approved Installation Scheme: True

Number of chimneys: 0

Number of open flues: 0

Number of fans: 0

Number of passive stacks: 0

Number of sides sheltered: 1

Pressure test: 3

Main heating system:

Main heating system: Boiler systems with radiators or underfloor heating

Gas boilers and oil boilers

Fuel: mains gas

Info Source: Boiler Database

Database: (rev 463, product index 017507) Efficiency: Winter 86.6 % Summer: 90.5

Brand name: Worcester

Model: Greenstar

Model qualifier: 30i ErP

(Combi boiler)

Systems with radiators

Central heating pump : 2013 or later

Design flow temperature: Design flow temperature >45°C

SAP Input

Boiler interlock: Yes
Delayed start

Main heating Control:

Main heating Control: Programmer, room thermostat and TRVs
Control code: 2106

Secondary heating system:

Secondary heating system: None

Water heating:

Water heating: From main heating system
Water code: 901
Fuel :mains gas
No hot water cylinder
Solar panel: False

Others:

Electricity tariff: Standard Tariff
In Smoke Control Area: No
Conservatory: No conservatory
Low energy lights: 100%
Terrain type: Low rise urban / suburban
EPC language: English
Wind turbine: No
Photovoltaics: Photovoltaic 1
Installed Peak power: 0.86
Tilt of collector: 30°
Overshading: None or very little
Collector Orientation: South West
Assess Zero Carbon Home: No

SAP 2012 Overheating Assessment

Calculated by Stroma FSAP 2012 program, produced and printed on 25 August 2020

Property Details: Plot 18

Dwelling type:	Flat
Located in:	England
Region:	Thames valley
Cross ventilation possible:	Yes
Number of storeys:	1
Front of dwelling faces:	North East
Overshading:	Average or unknown
Overhangs:	None
Thermal mass parameter:	Indicative Value High
Night ventilation:	False
Blinds, curtains, shutters:	None
Ventilation rate during hot weather (ach):	6 (Windows fully open)

Overheating Details:

Summer ventilation heat loss coefficient:	351.93	(P1)
Transmission heat loss coefficient:	52.5	
Summer heat loss coefficient:	404.44	(P2)

Overhangs:

Orientation:	Ratio:	Z_overhangs:
South West (Rear Window 1)	1	1
South East (Left Window 1)	1	1
South East (Left Window 2)	1	1
South East (Left Window 3)	1	1
North West (Right French 1)	1	1
North West (Right Window 2)	1	1
North West (Right Window 3)	1	1

Solar shading:

Orientation:	Z blinds:	Solar access:	Overhangs:	Z summer:	
South West (Rear Window 1)	0.9	1	1	0.9	(P8)
South East (Left Window 1)	0.9	1	1	0.9	(P8)
South East (Left Window 2)	0.9	1	1	0.9	(P8)
South East (Left Window 3)	0.9	1	1	0.9	(P8)
North West (Right French 1)	0.9	1	1	0.9	(P8)
North West (Right Window 2)	0.9	1	1	0.9	(P8)
North West (Right Window 3)	0.9	1	1	0.9	(P8)

Solar gains:

Orientation	Area	Flux	g_	FF	Shading	Gains
South West (Rear Window 1) x	1.03	119.92	0.39	0.7	0.9	27.31
South East (Left Window 1) x	0.89	119.92	0.39	0.7	0.9	23.6
South East (Left Window 2) x	2.72	119.92	0.39	0.7	0.9	72.13
South East (Left Window 3) x	2.04	119.92	0.39	0.7	0.9	54.1
North West (Right French 1) x	3.8	98.85	0.39	0.7	0.9	83.06
North West (Right Window 2) x	0.65	98.85	0.39	0.7	0.9	14.21
North West (Right Window 3) x	1.03	98.85	0.39	0.7	0.9	22.51
Total						296.92 (P3/P4)

Internal gains:

	June	July	August
Internal gains	407.72	391.26	399.23
Total summer gains	722.99	688.18	662.47 (P5)

SAP 2012 Overheating Assessment

Summer gain/loss ratio	1.79	1.7	1.64	(P6)
Mean summer external temperature (Thames valley)	16	17.9	17.8	
Thermal mass temperature increment	0	0	0	
Threshold temperature	17.79	19.6	19.44	(P7)
Likelihood of high internal temperature	Not significant	Not significant	Not significant	

Assessment of likelihood of high internal temperature: Not significant

DRAFT

5.0 BLOCK COMPLIANCE REPORT

Block Compliance WorkSheet: Norcot Community Centre

User Details

Assessor Name:

Software Name: Stroma FSAP

Stroma Number:

Software Version:

Version: 1.0.4.26

Calculation Details

Dwelling	DER	TER	DFEE	TFEE	TFA
Plot 01	14.84	21.92	52.5	56.4	50.35
Plot 02	12.57	19.33	50.5	53.2	71
Plot 03	13	19.99	46.4	49.4	51.1
Plot 04	13	19.99	46.4	49.4	51.1
Plot 05	15.39	22.33	56.9	61.9	50.39
Plot 06	13.28	19.54	52.4	54.6	70
Plot 07	12.15	18.72	48.5	49	73.93
Plot 08	9.24	16.82	37.4	41.7	74.27
Plot 09	10.59	17.68	36.2	37.6	51.1
Plot 10	10.72	17.72	36.7	37.7	51.1
Plot 11	9.71	17.36	39	43.3	71.11
Plot 12	10.24	17.24	41.2	43.4	71.96
Plot 13	14.74	21.3	59.3	62.5	73.93
Plot 14	13.93	20.24	57	59.4	74.27
Plot 15	14.6	21.29	53.3	56.1	51.1
Plot 16	14.6	21.29	53.3	56.1	51.1
Plot 17	13.56	20.06	55.3	57.1	71.11
Plot 18	12.89	19.63	52.5	55.7	71.96

Calculation Summary

Total Floor Area	1130.88
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Average TER	19.47
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Block Compliance WorkSheet: Norcot Community CentreCont.

Average DER	12.63
Average DFEE	48.73
Average TFEE	51.47
Compliance	Pass
% Improvement DER TER	35.13
% Improvement DFEE TFEE	5.32

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