9 - 9A St Marys Abbots Place

Energy Strategy Report

August 2015
We aim to be the pre-eminent provider of quality building services solutions and the best to work with, in the view of our clients, partners and colleagues. We believe in a sustainability led approach to design for the benefit of our clients and the world we live in.

It is our ultimate goal to work closely with our fellow professionals and clients to minimise carbon emissions and to deliver a better environment for us all to live in.
Executive Summary

This report has been developed to outline the Energy Strategy for the proposed residential scheme at 9 – 9A St Mary’s Abbots Place, London. This document relates to the design stage proposals and will be submitted as part of a full planning application for the development.

This Energy Strategy responds to the requirements of the Royal Borough of Kensington and Chelsea (RBKC) Policy CE1 – Climate Change, the Minor Alteration to the London Plan (MALP) and the Housing Standards Policy Transition Statement.

RBKC’s Policy CE1 requires residential developments to achieve Code for Sustainable Homes level 5. However, the Government have ‘withdrawn’ the assessment as a National Policy standard. In the interim RBKC will continue to ask for Code Level 4 ‘equivalent’ standards to be met until the MALP is fully adopted. The London Plan requires a 35 % reduction from regulated carbon dioxide emissions. To note, CfSH level 4 requires a 19 % carbon dioxide reduction.

The development has been designed to maximise energy efficiency first to ensure that the overall energy demand does not exceed the limitations set by the Building Regulations Part L1A 2013. The development proposes to integrate highly efficient centralised gas fired condensing boilers and a tiled Solar Photovoltaics (PV) array integrated in the schemes roof. Through a contribution of these measures over a 35 % reduction of the predicted developments ‘regulated’ carbon dioxide emissions are achieved.

The following table summarises the development’s energy performance:

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Part L1A TER (Target kgCO₂)</th>
<th>Part L1A DER (Actual kgCO₂)</th>
<th>% Reduction</th>
<th>CfSH Level &amp; Reduction Required (%)</th>
<th>GLA Required Reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16.84</td>
<td>10.93</td>
<td>35.1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16.03</td>
<td>9.21</td>
<td>42.6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>16.16</td>
<td>9.39</td>
<td>41.9</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>13.56</td>
<td>8.89</td>
<td>34.4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>16.35</td>
<td>12.75</td>
<td>22.0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Averaged Total</td>
<td>15.78</td>
<td>10.23</td>
<td>35.2</td>
<td>19</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 1: CO₂ Reduction

The energy consumption associated with the scheme was assessed in accordance with the Building Regulations Part L2A 2013: Conservation of Fuel and Power (England and Wales) using the National Calculation Method for Dynamic Simulation Modelling.
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
1.0 Introduction

1.1 General

This document demonstrates a compliant Energy Strategy for the proposed development at 9 – 9A St Mary Abbots Place, London.

The Energy Strategy demonstrates how the Policy CE1 of the Royal Borough of Kensington & Chelsea has been addressed and recommends the best route of conformity through passive design measures, energy efficiency and Low and Zero Carbon (LZC) / renewable energy technology systems.

1.2 Sources of Information

In the collation of this analysis and report the following sources of information were used:

- Rodic Davidson Architects – Floor Plans
- Rodic Davidson Architects - Elevations

1.3 Objective

The objective of the analysis and this report is to demonstrate that the design complies with the Royal Borough of Kensington & Chelsea Core Strategy Policy CE1 – Climate Change and the Minor Alteration of the London Plan.

1.4 Limitations

This report has been prepared based on planning drawings. Whilst the information used is taken from the planning drawings, the final performance will be dependent on the final commissioning results and actual operation of the building.

The Notional and Actual Building calculations use standard SAP operational parameters as required by the SAP rules. These do not match the intended ‘Real’ building usage exactly but allow a ‘like for like’ analysis under the Building Regulations. The results presented in this report are therefore not valid for ‘Real’ building operation.
2.0 Legislative Compliance

2.1 Planning Policy and Building Regulation Targets

The development has been designed to meet sustainability and CO₂ targets outlined within:

- Building Regulations - Part L1A 2013
- MALP - 35% CO₂ reductions from regulated emissions
- RBKC – interim equivalent CfSH Level 4 standards

2.2 Building Regulations Part L2A 2013 Summary

Part L1A of the Building Regulations 2013 applies to the conservation of fuel and power of all new dwellings. The development has been assessed against the following criteria:

- Criterion 1: the calculated CO₂ emission rate for the building (the Building CO₂ Emission Rate, BER) must not be greater than the Target CO₂ Emission Rate (TER).
- Criterion 2: the fabric performance and fixed building services of the building must not be greater than target rates, known as Facade Energy Efficiency Ratings (FEEs).
- Criterion 3: demonstrates that the building has appropriate passive control measures to limit solar gains.
- Criterion 4: the performance of the building, as built, should be consistent with the BER.
- Criterion 5: provisions for enabling energy-efficient operation of the building should be put in place.

2.3 The Royal Borough of Kensington & Chelsea (RBKC) CE1 – Climate Change (adopted 8th December 2010)

The below policy extracts are relevant for this proposed development in terms of energy policy; RBKC require an assessment to demonstrate that all new buildings and extensions of 800m² or more residential development achieve the following Code for Sustainable Homes:

- Up to 2012: Level Four; and seek to achieve:
  - 2013 to 2015: Level 5
  - 2016 onwards: Level 6

However, the recent Ministerial Statement to Parliament from the Department for Communities and Local Government and the Rt Hon Eric Pickles, issued 25th March 2015, and the Royal Assent of the Deregulation Bill 2014, on 26th March 2015 has resulted in the CfSH being withdrawn. As a result this is no longer a requirement within Policy DM1.

In the interim RBKC intentions are to continue to ask for Code Level 4 equivalent until the MALP is adopted. The MALP will be ‘opting in’ to the national energy standards in building regulations when adopted in approx January 2016.
2.4 Greater London Authority (GLA) Plan

Policy 5.2 of the London Plan states that from 2013 to 2016 energy assessments should be produced to meet a target of 40% carbon dioxide reduction beyond Part L 2010 of the Building Regulations.

On 6th April 2014 the 2013 changes to Part L of the Building Regulations came into effect. Part L 2013 delivers an overall reduction in CO₂ emissions for new residential and new non-domestic buildings, with the targets for individual buildings differentiates according to building type. This reduction in CO₂ emissions affected the percentage reduction necessary above the Part L 2013 regulations to meet the Mayor’s targets in the London Plan.

As outlined in the Sustainable, Design and Construction SPG, since 6th April 2014 the Mayor has applied a 35% carbon reduction beyond Part L 2013 of the Building Regulations – this is deemed to be broadly equivalent to the 40% beyond Part L 2010 of the Building Regulations, as specified in Policy 5.2 of the London Plan for 2013-2016.

The 35% target is a flat % reduction across both residential and non-domestic buildings and must follow the ‘Be Lean’, ‘Be Clean’ and ‘Be Green’ energy hierarchy.
3.0 **Methodology**

3.1 **Standard Assessment Procedure (SAP) 2012**

SAP is an analysis process that is able to accurately estimate the environmental impact and energy consumption of a dwelling so that it can be assessed and compared with other dwellings. SAP calculates the Target Emissions Rate (TER) and Dwelling Emissions Rate (DER) and then assesses the dwelling performance based on these calculations. Building Regulations state that each building must have a (DER) that equals the (TER).

SAP quantifies a dwelling’s performance in terms of: energy use per unit floor area, a fuel cost based energy efficiency rating (the SAP rating) and CO\(_2\) emissions. It takes into account the energy needed to provide space heating, lighting, domestic hot water and cooling systems as well as estimating the heat loss through construction materials. The reports generated by SAP will provide engineers and architects with information to ensure that dwellings are built to the required efficiency standards.

FSAP 2012 software provided by STROMA to calculation Part L1A 2013 has been used in undertaking this assessment.

3.2 **Weather Data**

SAP weather profile ‘Thames Region’ has been selected.

3.3 **IES model image**

![Image 1 – IES model](image-url)
4.0 Design Criteria

4.1 Built Form

The SAP calculation has been modelled based on the architectural plans and elevations:

- Orientation
- Geometry of building form and all associated exposure of surfaces
- Material constructions
- Windows and glazing
- External wall area

The overall area and living area are included within the SAP calculation.

4.2 Material Constructions

Detailed analysis within the SAP has been completed to determine the impact of various fabric parameters and passive design solutions. The materials constructions within the thermal model are compliant with the maximum U-Values stipulated in the Building Regulations and are described below:

<table>
<thead>
<tr>
<th>Construction</th>
<th>Overall U-value (W/m²K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Walls</td>
<td>0.2</td>
</tr>
<tr>
<td>Internal Party Walls</td>
<td>0 – Fully filled and sealed</td>
</tr>
<tr>
<td>Ground Floor</td>
<td>0.1</td>
</tr>
<tr>
<td>Roof</td>
<td>0.1</td>
</tr>
<tr>
<td>Door</td>
<td>1.3</td>
</tr>
<tr>
<td>Glazing</td>
<td>1.2 (g-value 0.6)</td>
</tr>
<tr>
<td>Thermal Bridging</td>
<td>y- 0.15 (default)</td>
</tr>
</tbody>
</table>

Table 2: Fabric Efficiencies

An air permeability of 3 m³/h.m² at 50Pa has been included within the thermal model.

The above specification therefore demonstrates compliance with the Target Facade Energy Efficiency Rating (TFEE) and achieves an overall average Dwelling Facade Energy Efficiency (DFEE) of 57.4 kWh/m²/year.

4.3 Operational Parameters

Dwelling energy consumption is determined through generic zone and have been defined through the SAP methodology.
4.4 Building Systems

The dwellings will be serviced through the following technologies:

4.4.1 Heating

Split system: Centralised heat network

<table>
<thead>
<tr>
<th>Areas Served: All Areas</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Type</td>
<td>Gas - fired condensing</td>
</tr>
<tr>
<td>Efficiency</td>
<td>95 % (seasonal efficiency)</td>
</tr>
<tr>
<td>Delivery</td>
<td>Underfloor</td>
</tr>
</tbody>
</table>

Table 3: Heating system

4.4.2 Cooling

Split system: Local Fan Coil Units (FCUs)

<table>
<thead>
<tr>
<th>Areas Served: Living Areas, Master bedroom and 2nd bedroom</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Type</td>
<td>Electricity</td>
</tr>
<tr>
<td>Efficiency</td>
<td>4 (COP) / A rated</td>
</tr>
</tbody>
</table>

Table 4: Cooling system

4.4.3 Ventilation

Mechanical Ventilation incorporating Heat Recovery (MVHR):

<table>
<thead>
<tr>
<th>Areas Served: All Areas</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Fan Power (W/l/s)</td>
<td>0.5</td>
</tr>
<tr>
<td>Heat Recovery Efficiency (%)</td>
<td>85</td>
</tr>
</tbody>
</table>

Table 5: Mechanical Ventilation incorporating Heat Recovery (MVHR)
4.4.4 Domestic Hot Water

Centralised Heat Network

<table>
<thead>
<tr>
<th>Areas Served: All Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Type</td>
</tr>
<tr>
<td>Generator Efficiency (%)</td>
</tr>
<tr>
<td>Distribution</td>
</tr>
</tbody>
</table>

Table 6: Standalone System

4.4.5 Artificial Lighting

<table>
<thead>
<tr>
<th>Areas Served: All Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated fixed low energy lights</td>
</tr>
</tbody>
</table>

Table 7: Artificial Lighting

4.4.6 Renewable Technologies

The proposed developments likely energy demands are suitable for a connection to a district heat network and should one become available in the area of the scheme and will have the infrastructure in place to provide a connection point.

A desktop study has been completed for the integration of renewable energy technologies. Solar Photovoltaics (PV) have been concluded as the most appropriate technology. It is proposed that Solar PV tiles on the South facing roof provide the greatest energy and carbon dioxide reductions.

The below gives the Solar PV specification

<table>
<thead>
<tr>
<th>Solar PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel type</td>
</tr>
<tr>
<td>Orientation</td>
</tr>
<tr>
<td>kWp</td>
</tr>
<tr>
<td>Predicted energy (kWh)</td>
</tr>
</tbody>
</table>

Table 8: Solar PV
5.0 Compliance Summary

This report has been developed to demonstrate that the proposed residential development at 9 – 9A St Mary’s Abbots Place, London achieves the required energy and carbon dioxide emissions reductions to comply with GLA London Plan and RBKC’s CE1 – Climate Change Policy.

All dwellings individually achieve over the 19% CO₂ reductions required for CfSH Level 4 and when combined achieves over a 35% reduction from Part L1A 2013 calculations.

This has been achieved through high performance building fabric, with low associated U-values, centralised heat network and a Solar PV tile array.

The table below provides a summary of the carbon dioxide reductions:

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Part L1A TER (Target kgCO₂)</th>
<th>Part L1A DER (Actual kgCO₂)</th>
<th>% Reduction</th>
<th>CfSH Level &amp; Reduction Required (%)</th>
<th>GLA Required Reduction (%)</th>
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<tbody>
<tr>
<td>1</td>
<td>16.84</td>
<td>10.93</td>
<td>35.1</td>
<td>4</td>
<td></td>
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<tr>
<td>2</td>
<td>16.03</td>
<td>9.21</td>
<td>42.6</td>
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<td>3</td>
<td>16.16</td>
<td>9.39</td>
<td>41.9</td>
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<td>4</td>
<td>13.56</td>
<td>8.89</td>
<td>34.4</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>16.35</td>
<td>12.75</td>
<td>22.0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Averaged Total</td>
<td>15.78</td>
<td>10.23</td>
<td>35.2</td>
<td>19</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 9 – CO₂ performance summary

Therefore the table above demonstrates the five dwellings achieve over a 35% reduction in ‘regulated’ Part L1A 2013 carbon dioxide emissions and individually meet Code 4 standards in energy and carbon dioxide.
Appendix A

SAP calculations
# Regulations Compliance Report

Printed on 25 June 2015 at 14:52:43

<table>
<thead>
<tr>
<th>Assessed By:</th>
<th>Building Type: Flat</th>
</tr>
</thead>
</table>

**NEW DWELLING DESIGN STAGE**

<table>
<thead>
<tr>
<th>Site Reference:</th>
<th>Plot Reference:</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 - 9A St Mary Abbots Place</td>
<td>Unit 1</td>
</tr>
</tbody>
</table>

**Address:**

<table>
<thead>
<tr>
<th>Client Details:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>Address:</td>
</tr>
</tbody>
</table>

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 (c)
- **Fuel factor:** 1.00 (mains gas (c))
- **Target Carbon Dioxide Emission Rate (TER):** 16.84 kg/m²
- **Dwelling Carbon Dioxide Emission Rate (DER):** 10.70 kg/m²

*OK*

### 1b TEE and DEEE

- **Target Fabric Energy Efficiency (TFEE):** 65.1 kWh/m²
- **Dwelling Fabric Energy Efficiency (DFEEE):** 61.4 kWh/m²

*OK*

### 2 Fabric U-values

<table>
<thead>
<tr>
<th>Element</th>
<th>Average</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>External wall</td>
<td>0.20 (max. 0.30)</td>
<td>0.20 (max. 0.70)</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.00 (max. 0.20)</td>
<td></td>
</tr>
<tr>
<td>Floor</td>
<td>0.10 (max. 0.25)</td>
<td>0.10 (max. 0.70)</td>
</tr>
<tr>
<td>Roof</td>
<td>0.00 (max. 0.20)</td>
<td>0.00 (max. 0.35)</td>
</tr>
<tr>
<td>Openings</td>
<td>1.20 (max. 2.00)</td>
<td>1.30 (max. 3.30)</td>
</tr>
</tbody>
</table>

*OK*

### 2a Thermal bridging

Thermal bridging calculated using user-specified y-value of 0.15

### 3 Air permeability

- **Air permeability at 50 pascals:** 3.00 (design value)
- **Maximum:** 10.0

*OK*

### 4 Heating efficiency

- **Main Heating system:** Community heating schemes - mains gas
- **Secondary heating system:** None

### 5 Cylinder insulation

- **Hot water Storage:** No cylinder

### 6 Controls

- **Space heating controls:** Charging system linked to use of community heating, programmer and at least two room thermostats

*OK*
# Regulations Compliance Report

Printed on 23 June 2015 at 14:36:38

<table>
<thead>
<tr>
<th>Project Information</th>
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<tbody>
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<td>Assessed By: ()</td>
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<table>
<thead>
<tr>
<th>Dwelling Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW DWELLING DESIGN STAGE</td>
</tr>
<tr>
<td>Site Reference: 9 - 9A St Mary Abbots Place</td>
</tr>
<tr>
<td>Address:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Client Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>Address:</td>
</tr>
</tbody>
</table>

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

### 1a TEE and DER

- **Fuel for main heating system:** Mains gas (c)
- **Fuel factor:** 1.00 (mains gas (c))
- **Target Carbon Dioxide Emission Rate (TER):** 16.03 kg/m²
- **Dwelling Carbon Dioxide Emission Rate (DER):** 9.21 kg/m²
  - **Status:** OK

### 1b TEE and DFEF

- **Target Fabric Energy Efficiency (TFEE):** 59.7 kWh/m²
- **Dwelling Fabric Energy Efficiency (DFEE):** 56.3 kWh/m²
  - **Status:** OK

### 2 Fabric U-values

<table>
<thead>
<tr>
<th>Element</th>
<th>Average</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>External wall</td>
<td>0.20 (max. 0.30)</td>
<td>0.20 (max. 0.70)</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.00 (max. 0.20)</td>
<td>OK</td>
</tr>
<tr>
<td>Floor</td>
<td>0.10 (max. 0.25)</td>
<td>0.10 (max. 0.70)</td>
</tr>
<tr>
<td>Roof</td>
<td>0.00 (max. 0.20)</td>
<td>0.00 (max. 0.35)</td>
</tr>
<tr>
<td>Openings</td>
<td>1.20 (max. 2.00)</td>
<td>1.30 (max. 3.30)</td>
</tr>
</tbody>
</table>

**Status:** OK

### 2a Thermal bridging

Thermal bridging calculated using user-specified y-value of 0.15

### 3 Air permeability

- **Air permeability at 50 pascals:** 3.00 (design value)
- **Maximum:** 10.0
  - **Status:** OK

### 4 Heating efficiency

- **Main Heating system:** Community heating schemes - mains gas
- **Secondary heating system:** None

### 5 Cylinder insulation

- **Hot water Storage:** No cylinder

### 6 Controls

- **Space heating controls:** Charging system linked to use of community heating, programmer and at least two room thermostats
  - **Status:** OK
## Regulations Compliance Report

### 7 Low energy lights

<table>
<thead>
<tr>
<th>Percentage of fixed lights with low-energy fittings</th>
<th>Minimum</th>
<th>100.0%</th>
</tr>
</thead>
</table>

OK

### 8 Mechanical ventilation

<table>
<thead>
<tr>
<th>Continuous supply and extract system</th>
<th>Specific fan power</th>
<th>Maximum</th>
<th>0.5</th>
</tr>
</thead>
</table>

OK

<table>
<thead>
<tr>
<th>MVHR efficiency</th>
<th>Minimum</th>
<th>85%</th>
</tr>
</thead>
</table>

OK

### 9 Summer time temperature

<table>
<thead>
<tr>
<th>Overheating risk (Thames valley)</th>
<th>Slight</th>
</tr>
</thead>
</table>

OK

**Based on:**

- Overshading: More than average
- Windows facing: East 5.0m²
- Windows facing: North 6.0m²
- Windows facing: North 5.0m²
- Windows facing: East 5.6m²
- Windows facing: North 11.76m²
- Windows facing: West 6.6m²
- Windows facing: East 7m²
- Windows facing: East 7m²
- Ventilation rate: 3.00
- Blinds/curtains: Closed 100% of daylight hours

### 10 Key features

- Air permeability: 3.0 m³/m²/h
- Floors U-value: 0.1 W/m²K
- Community heating, heat from boilers – mains gas
- Photovoltaic array
- Fixed cooling system
Regulations Compliance Report

Printed on 25 June 2015 at 15:00:08

Project Information:
- Assessed By: ()
- Building Type: Flat

Dwelling Details:
- NEW DWELLING DESIGN STAGE
- Total Floor Area: 103m²
- Site Reference: 9 - 9A St Mary Abbots Place
- Plot Reference: Unit 3
- Address:

Client Details:
- Name:
- 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 (c)
- Fuel factor: 1.00 (mains gas (c))
- Target Carbon Dioxide Emission Rate (TER): 16.15 kg/m²
- Dwelling Carbon Dioxide Emission Rate (DER): 9.40 kg/m²

1b TFEE and DFEF
- Target Fabric Energy Efficiency (TFEE): 60.5 kWh/m²
- Dwelling Fabric Energy Efficiency (DFEE): 56.7 kWh/m²

2 Fabric U-values

<table>
<thead>
<tr>
<th>Element</th>
<th>Average</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>External wall</td>
<td>0.20 (max. 0.30)</td>
<td>0.20 (max. 0.70)</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.00 (max. 0.20)</td>
<td>-</td>
</tr>
<tr>
<td>Floor</td>
<td>0.10 (max. 0.25)</td>
<td>0.10 (max. 0.70)</td>
</tr>
<tr>
<td>Roof</td>
<td>0.00 (max. 0.20)</td>
<td>0.00 (max. 0.35)</td>
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<tr>
<td>Openings</td>
<td>1.20 (max. 2.00)</td>
<td>1.30 (max. 3.30)</td>
</tr>
</tbody>
</table>

2a Thermal bridging
- Thermal bridging calculated using user-specified y-value of 0.15

3 Air permeability
- Air permeability at 50 pascals: 3.00 (design value)
- Maximum: 10.0

4 Heating efficiency
- Main Heating system: Community heating schemes - mains gas
- Secondary Heating system: None

5 Cylinder insulation
- Hot water Storage: No cylinder

6 Controls
- Space heating controls: Charging system linked to use of community heating, programmer and at least two room thermostats | OK
### Regulations Compliance Report

#### 7 Low energy lights
- **Percentage of fixed lights with low-energy fittings:** 100.0%
- **Minimum:** 75.0%
  - **Status:** OK

#### 8 Mechanical ventilation
- **Continuous supply and extract system**
  - **Specific fan power:** 0.5
  - **Maximum:** 1.5
  - **MVHR efficiency:** 85%
  - **Minimum:** 70%
  - **Status:** OK

#### 9 Summertime temperature
- **Overheating risk (Thames valley):** Slight
  - **Status:** OK

**Based on:**
- **Overshading:** More than average
  - Windows facing: East
    - 5.04m²
  - Windows facing: North
    - 5.04m²
  - Windows facing: North
    - 5.6m²
  - Windows facing: East
    - 5.6m²
  - Windows facing: North
    - 11.76m²
  - Windows facing: West
    - 5.0m²
  - Windows facing: East
    - 7m²
  - Windows facing: East
    - 7m²
- **Ventilation rate:** 3.00
- **Blinds/curtains:** Closed 100% of daylight hours

#### 10 Key features
- **Air permeability:** 3.0 m³/m²h
- **Floors U-value:** 0.1 W/m²K
- **Community heating, heat from boilers – mains gas**
- **Photovoltaic array**
- **Fixed cooling system**
Regulations Compliance Report

Printed on 25 June 2015 at 15:01:43

Project Information:
Assessed By: () Building Type: Flat

Dwelling Details:
NEW DWELLING DESIGN STAGE
Site Reference : 9 - 9A St Mary Abbots Place
Address : 

Total Floor Area: 260m²
Plot Reference: Unit 4

Client Details:
Name: 
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 (c)
Fuel factor: 1.00 (mains gas (c))
Target Carbon Dioxide Emission Rate (TER) 13.56 kg/m²
Dwelling Carbon Dioxide Emission Rate (DER) 6.89 kg/m²

1b TFEE and DFE
Target Fabric Energy Efficiency (TFEE) 52.0 kWh/m²
Dwelling Fabric Energy Efficiency (DFEE) 48.1 kWh/m²

2 Fabric U-values

<table>
<thead>
<tr>
<th>Element</th>
<th>Average</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>External wall</td>
<td>0.20 (max. 0.30)</td>
<td>0.20 (max. 0.70)</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.00 (max. 0.20)</td>
<td>OK</td>
</tr>
<tr>
<td>Floor</td>
<td>(no floor)</td>
<td>OK</td>
</tr>
<tr>
<td>Roof</td>
<td>0.00 (max. 0.20)</td>
<td>0.00 (max. 0.35)</td>
</tr>
<tr>
<td>Openings</td>
<td>1.21 (max. 2.00)</td>
<td>1.30 (max. 3.30)</td>
</tr>
</tbody>
</table>

2a Thermal bridging
Thermal bridging calculated using user-specified y-value of 0.15

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

4 Heating efficiency
Main Heating system: Community heating scheme - maine gas
Secondary heating system: None

5 Cylinder insulation
Hot water Storage: No cylinder

6 Controls
Space heating controls Charging system linked to use of community heating, programmer and at least two room thermostats

OK
## Regulations Compliance Report

### 7 Low energy lights
- **Percentage of fixed lights with low-energy fittings**
  - Minimum: 75.0% | OK

### 8 Mechanical ventilation
- **Continuous supply and extract system**
  - Specific fan power: 0.5 | OK
- **Maximum**
  - 1.5 | OK
- **MVHR efficiency**
  - Minimum: 85% | OK

### 9 Summertime temperature
- **Overheating risk (Thames valley):**
  - Not significant | OK
- **Based on:**
  - Overshading:
    - More than average
    - Windows facing: East
      - 2.68m²
    - Windows facing: East
      - 3.6m²
    - Windows facing: South
      - 2.52m²
    - Windows facing: South
      - 2.52m²
    - Windows facing: East
      - 2.55m²
    - Windows facing: West
      - 2.68m²
    - Windows facing: West
      - 2.88m²
    - Windows facing: North
      - 1.62m²
    - Windows facing: North
      - 1.62m²
- **Ventilation rate:**
  - 3.00
- **Blinds/curtains:**
  - None
  - Closed: 100% of daylight hours

### 10 Key features
- **Air permeability**
  - 3.0 m³/m²/h
- **Community heating, heat from boilers – mains gas**
- **Photovoltaic array**
Regulations Compliance Report


Printed on 23 June 2013 at 13:03:22

1a TER and DER
Fuel for main heating system: Mains gas (c)
Fuel factor: 1.00 (mains gas (c))
Target Carbon Dioxide Emission Rate (TER) 16.35 kg/m²
Dwelling Carbon Dioxide Emission Rate (DER) 12.76 kg/m²

1b TFEF and DFEE
Target Fabric Energy Efficiency (TFEE) 66.8 kWh/m²
Dwelling Fabric Energy Efficiency (DFEE) 65.7 kWh/m²

2 Fabric U-values

<table>
<thead>
<tr>
<th>Element</th>
<th>Average</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>External wall</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.20</td>
<td>0.70</td>
</tr>
<tr>
<td>Floor (no floor)</td>
<td>0.10</td>
<td>0.35</td>
</tr>
<tr>
<td>Roof</td>
<td>1.21</td>
<td>1.30</td>
</tr>
</tbody>
</table>

2a Thermal bridging
Thermal bridging calculated using user-specified y-value of 0.15

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

4 Heating efficiency
Main Heating system: Community heating schemes - mains gas
Secondary heating system: None

5 Cylinder insulation
Hot water Storage: No cylinder

6 Controls
Space heating controls Charging system linked to use of community heating, programmer and at least two room thermostats
### Regulations Compliance Report

#### 7 Low energy lights
- Percentage of fixed lights with low-energy fittings: **100.0%**
- Minimum: **75.0%**

#### 8 Mechanical ventilation
- Continuous supply and extract system
  - Specific fan power: **0.5**
  - Maximum: **1.5**
  - MVHR efficiency: **85%**
  - Minimum: **70%**

#### 9 Summertime temperature
- Overheating risk (Thames valley):
  - Based on: More than average
  - Overshading:
    - Windows facing: East: **2.50m²**
    - Windows facing: North: **2.55m²**
    - Windows facing: West: **3.36m²**
    - Windows facing: East: **3.36m²**
    - Windows facing: West: **3.36m²**
    - Windows facing: North: **3.36m²**
    - Windows facing: East: **3.36m²**
    - Windows facing: West: **6.72m²**
    - Roof windows facing: South: **3.0m²**
    - Roof windows facing: West: **3.6m²**
    - Roof windows facing: East: **1.2m²**
    - Roof windows facing: West: **1.2m²**
  - Ventilation rate: **3.00**
  - Blinds/curtains: None

#### 10 Key features
- Air permeability: **3.0 m³/m²h**
- Roofs U-value: **0.1 W/m²K**
- Community heating, heat from boilers – mains gas
- Photovoltaic array
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