

Development at George Leigh Street Manchester

Environmental Sustainability Statement

Report Ref: 2382/01: Revision VI

for Forshaw Land and Property

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1.0 Introduction

1.1 Context

Hattrell DS One Architects LLP (HDSI) has been commissioned by Forshaw Land and Property (FLP) to prepare this Environmental Standards Statement to accompany the planning application for the development on George Leigh Street, Manchester.

The Site lies within the Ancoats and Clayton ward, immediately east of Great Ancoats Street (A665), which forms the north eastern boundary of Manchester City Centre.

The site is bounded by George Leigh Street, Cotton Street and Loom Street.

Description of Development

The development comprises nos. 30, 32, 34 George Leigh Street. No.30 is a cleared site where the building has been demolished and has been surfaced with compacted hardcore. No.32 is an existing building, formerly a house. No.34 is an existing building, constructed in the nineteenth century as a school. The buildings are three storeys high with a small basement area.

The buildings have fallen out of use and are currently vacant. The development seeks to retain these and to bring them back into use. In choosing between wholesale demolition or partial demolition or retention of existing building fabric the retention of the buildings is the best sustainable approach to the development.

1.2 Scope of this report

This Environmental Sustainability Statement has been prepared to demonstrate how the proposed development relates to the environmental standards defined in Manchester City Council's (MCC) *Guide to Development in Manchester, Supplementary Planning Document and Planning Guidance Adopted April 2007* and the objectives in the adopted *Core Strategy Development Plan Document 2012*.

In line with Policy EN 6 of the Manchester Core Strategy, this document also incorporates an Energy Statement for the development (Section 4) detailing the energy saving and efficiency measures incorporated within the proposed development. Given their linkages, the Environmental Sustainability Statement and Energy Statement have been combined into this single document.

This report should be read in conjunction with the full suite of supporting documents and drawings that form the planning application submission.

2.0 Policy and legislation

A number of statutory and non-statutory planning policies and guidance documents apply to the proposed development. These are comprised of guidance produced at the national, regional and local levels.

The following environmental and planning policies are relevant to the proposed development:

National Planning Guidance

- The National Planning Policy Framework
- National Planning Practice Guidance (including sections on Air Quality, Waste and Climate Change)

Local Planning Guidance

- Manchester Core Strategy 2012 – 2017
- Policy EN 4 requires that all developments follow the principles of the energy hierarchy
- Policy EN 6 sets targets for emissions reduction for new developments compared with Part L (2010). In this case a target of 15% applies.
- Guide to Development in Manchester - Supplementary Planning Document and Planning Guidance (SPD)
- Section 4.4 of the SPD requires that an Environmental Standard Statement is prepared for all planning applications
- Stronger Together: Greater Manchester Strategy 2013- 2020
- East Manchester Strategic Regeneration Framework 2008 - 2018
- Ancoats and New Islington Neighbourhood Development Framework (2014)
- Manchester Residential Growth Prospectus

3.0 Review of proposal in relation to Environmental Standards

This section provides a review of the proposals with reference to the Environmental Standards outlined in MCC's *Guide to Development in Manchester, Supplementary Planning Document and Planning Guidance (2007)*.

3.1 Energy efficiency

Policy EN 4 of the Manchester Core Strategy seeks to reduce CO₂ emissions by encouraging low and zero carbon development. This requires the application of the energy hierarchy to ensure that passive measures, energy efficiency and low and zero carbon generation options are considered.

The energy hierarchy has been adopted for this development to ensure that the correct approach to the design is taken, and to promote an efficient low carbon energy solution. This ensures that the benefits of less expensive methods of energy use reduction are maximised first. The approach is as follows:

- Minimise energy demand – Consider passive design measures and optimise building envelope in terms of orientation, air tightness, and insulation.
- Meet demands efficiently – Specify energy-efficient plant, heating, ventilation, lighting and system controls to facilitate efficient operation.

3.1.1 Fabric

The design has applied passive design principles and incorporated a 'fabric-first' approach to achieve a highly-efficient thermal envelope and reduce primary energy requirements. This approach will ensure that the buildings achieve high levels of thermal efficiency and air-tightness, with the aim of reducing heating demand beyond the requirements of Building Regulations.

3.1.2 Heating, cooling and ventilation

The application of passive design principles to maximise thermal efficiency means that electric heating is a valid and cost-effective proposal and will satisfy the requirements of Building Regulations Part L1A (2013).

Water-efficient fittings will help to reduce electrical loads for water heating.

The ventilation strategy includes a mix of openable windows and mechanical ventilation with heat recovery (MVHR). The MVHR units will recover heat from air extracted from wet areas (bathrooms/kitchens) at approximately 90% efficiency, further contributing to reduced space heating demand.

3.1.3 Lighting

Electrical demand for lighting will be minimised through the use of energy efficient lighting throughout all areas.

3.2 Renewable energy

The potential for renewables and low carbon technologies to be incorporated into the proposed development has been considered and evaluated throughout the design process. It has been determined that the incorporation of renewable technologies is not viable for this development.

3.3 CO2 emissions reduction

The Manchester Core Strategy Policy EN 6 requires that domestic developments of above 10 units achieve at least a 15% improvement over the Target Emissions Rate required by Part L (2010), subject to viability. This is equivalent to an approximate 9% reduction over the Part L (2013) requirement.

The development comprises of 20 apartments of which 13 are to be created within existing buildings. Under the Building Regulations carbon emission targets do not apply to existing premises and dwellings formed within existing buildings therefore need only achieve the U-values prescribed.

The criteria set out in policy EN6 is therefore only relevant to the 7 new build apartments. We contend therefore that as the number of apartments to which carbon emission target reductions apply, and can be measured, are less than the threshold specified in the Manchester Core Strategy Policy the requirements of the policy should not apply in this instance.

We have, however, undertaken an assessment of the scheme against the criteria set out in Policy EN 6 to demonstrate what will be achieved.

The application of passive design principles along with the specification of MVHR and energy efficient lighting will achieve reductions in emissions compared with the requirements of Building Regulations. Table 1 presents the levels of emissions reduction for each of the new build apartments accounting for fabric and fixed services measures.

Table 1: Improvements over Part L (2013) by apartment.
Apartment Floor area (m²) % improvement over Part L (2013)

Plot Ref.	Area m ²	% Reduction
G1	91.7	0%
F7	91.8	2.7%
F12	95.6	0%
S13	91.8	2.7%
S18	95.6	2.8%
T19	141.4	4.5%
T20	109.9	1.1%

As presented in Table 1, the fabric and energy efficiency measures specified for the development deliver a reduction for five of the seven new build apartments, the remaining two meeting the required target value. When considering the development as a whole (i.e. the weighted average of all apartment types and the non-dwelling space), an emissions reduction of 1.06% is achieved.

Although the predicted emission rates for the new build apartments achieve an improvement over Part L (2013) they do not achieve the level required by the Core Strategy. It is considered that

achieving emissions reductions required by the Core Strategy Policy is not deliverable for the development on the grounds of viability.

More detail on the energy performance of the development is included in the Energy Statement in Section 4.

3.4 Environmental design

Policy DM 1 of the Manchester Core Strategy requires that, subject to viability, new residential dwellings meet Code for Sustainable Homes (CSH) Level 4. However, following the Royal Assent of the Deregulation Bill on the 26 March 2015, the CSH has been now been withdrawn and is no longer applicable.

On grounds of viability, it is considered that achieving emissions reductions required under CSH Level 4 is not deliverable for the development.

3.5 Water management and weather resilience

3.5.1 Drainage design

It is an Environment Agency requirement that a hierarchy of drainage methods is considered for surface water disposal in order to reduce impacts associated with surface water run-off.

The site comprises the demise of No 30, 32 & 34 George Leigh Street. Nos. 32 and 34 are existing buildings which are to be retained with no change to the existing roof scape or rainwater discharge. No 30 is cleared site but was previously occupied by a Public House which has been demolished.

The buildings face onto George Leigh Street, Cotton Street and Loom Street encircling a hard paved central courtyard. The new build element of the scheme that is being constructed broadly replicates the footprint of the buildings that were on the site previously and will have virtually the same roof area and effective rainwater run-off.

Permeability tests have shown that the ground is unsuitable for soakaways. It is therefore proposed that all rainwater pipes and gullies within the courtyard are connected to the existing Local Authority drainage system.

A new piped drainage system will be provided for the development with separate surface and foul systems connecting into the existing combined sewers. Roof drainage is to be collected and removed via downpipes. Surface water from the courtyard will be collected via gullies and piped to the existing combined sewers.

Drainage attenuation systems have not been provided due to the constrained nature of the site.

The above strategy has been discussed and agreed with the Manchester Flood Risk Management Team and Manchester Planning Department (correspondence of 26.10.2016 refers).

3.5.2 Flood risk

The site is located within Flood Zone 1 which is subject to low flood risk from rivers and watercourses. The location of the site in relation to the sources of potential flooding means that the anticipated risk of the development being exposed to flooding is low. A formal flood risk assessment or flood mitigation measures are therefore not be necessary.

3.5.3 Water efficiency

The proposed design promotes water efficiency through reducing overall water consumption for non-potable purposes.

The following measures are included:

- Water efficient dual flush toilets (6/3 litres);
- Restricted flow rate wash hand basin taps (4.0 litres/min);
- Restricted flow rate kitchen taps (5 litres/minute);
- Low capacity baths (approx 150 litres)
- Low flow rate showers (10 litres/minute);
- Water efficient washing machines (7.0 litres/kg dry load); and
- Water-efficient dishwashers (1.2 litres/place setting).

Water consumption values have been defined to give a reasonable balance between low use, performance and cost, and to ensure that there is a wide variety of fixtures available to meet these targets. This will allow the fixtures selected to have a proven track record of reliability, provide performance in line with purchasers expectations, and to meet architectural aesthetic aspirations.

3.6 Operational Waste Management

3.6.1 Residential waste

Manchester City Council offers four types of containers for the segregation of recyclables and waste that need to be accommodated within the development:

- Brown bin or bag for dry mixed recycling (glass, plastic bottles, tins & cans, foils);
- Blue bin or bag for paper and card;
- Green bin or kerbside caddy for food/garden waste;
- Black bin / authorised sack for general waste.

Provision for the segregation and temporary storage of each of these recycling and waste streams will be incorporated within each apartment. Residents will be asked to segregate recycling and general waste and to take to the recycling bins within the courtyard.

3.7 Construction Management

3.7.1 Construction waste management, materials and procurement

The development will seek to minimise the use of primary resources and materials and to minimise the generation of waste during construction works. Where feasible, the contractor will incorporate secondary and recycled materials with low embodied impacts.

A Site Waste Management Plan (SWMP) will be prepared prior to the commencement of the development. The SWMP is an important tool to improve the environmental performance of a project. It will be used throughout the design process, to promote 'designing out waste'. It will also be used to monitor waste arisings and optimise waste strategy during construction.

3.7.2 Construction site environmental management

It is proposed that the principal contractor will register the site with the Considerate Constructor Scheme (CCS) and will undertake works in accordance with the standard. Sites registered with CCS are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.

A Construction Environmental Management Plan (CEMP) will be prepared and implemented during construction to ensure that best practice measures are implemented to minimise potential impacts to sensitive local residents resulting from emissions to air and water, noise and vibration, and from site lighting.

3.8 Biodiversity

Consideration of the biodiversity and ecological value of the site has been undertaken in accordance with statutory and planning requirements.

The site comprises three building plots, nos. 30, 32, 34, on George Leigh Street. No.30 is a cleared site where the building has been demolished and the site surfaced with a compacted hardcore. No.32 and No.34 are existing buildings three storeys high with a small basement area. The buildings face onto George Leigh Street, Cotton Street and Loom Street encircling a hard paved central courtyard. There are no areas of natural landscape on the site.

The assessment concluded that there is no likelihood of amphibians or of nesting birds on the site. There is the possibility of bats being present in the vicinity therefore to avoid potential disturbance to them construction works will be undertaken during daylight hours and site lighting will be sensitively positioned.

As part of the development bat boxes will be incorporated into the buildings, to encourage bats to roost in the area.

4 Energy Statement

4.1 Introduction

Policy EN 6 of the Manchester Core Strategy requires that developers prepare an energy statement in order to demonstrate the total regulated energy requirement of the completed development, and the associated carbon emissions. Against this baseline, developers are asked to consider measures to reduce the predicted carbon emissions of the development with reference to with the relevant Core Strategy carbon reduction target. In this case, a target of a 15% improvement over Part L (2010) applies to the scheme. This is equivalent to an approximate 9% improvement over Part L (2013). To align with the modelling undertaken, this section refers to the target in relation to Part L (2013).

Appendix A of the Manchester Core Strategy provides a guide to assist in completing the energy statement and sets out the methodology that should be followed. This consists of the following steps:

1. Set out baseline information including proposed uses and floor space.
2. Calculate regulated energy demand and associated CO₂ emissions of completed development assuming only compliance with Part L.
3. Apply the appropriate emissions reduction target.
4. Apply the energy hierarchy to identify opportunities to design out energy consumption and emissions and set out reductions achieved by each measure.
5. Consider appropriate low carbon, renewable or decentralised technologies.
6. Assessment of least cost option of meeting the reduction target.

This Section provides information in relation to these steps for the George Leigh Street development.

4.2 Development information

The development consists of 20 residential apartments in total with associated non-dwelling space Table 2 details the apartment type and internal habitable floor areas.

Table 2:

Type of Residence Number Gross internal floor area (m2)

Apartments	Construction	Net Area	
		(sq.m.)	(sq.ft.)
G1	New Build	91.7	987
G2	Conversion	81.9	882
G3	Conversion	58.7	632
G4	Conversion	41.3	445
G5	Conversion	58.7	632
G6	Conversion	58.0	624
F7	New Build	91.8	988
F8	Conversion	83.8	902
F9	Conversion	84.9	914
F10	Conversion	75.5	813
F11	Conversion	57.0	614
F12	New Build	95.6	1029
S13	New Build	91.8	988
S14	Conversion	85.7	922
S15	Conversion	87.8	945
S16	Conversion	75.7	815
S17	Conversion	58.1	625
S18	New Build	95.6	1029
T19	New Build	141.4	1522
T20	New Build	109.9	1183

4.3 Proposed specification

As described in Section 3.1, the development uses a fabric-first approach to energy efficiency and makes use of high-efficiency fixed services including MVHR and low-energy lighting. Table 3 presents fabric and fixed services specifications. Although there is variation between apartment, these figures are representative of the development as a whole.

Table 3: Fabric and fixed services

Construction element Specification

Element	New Build	Conversion
Wall	0.16 – 0.18 W/m2K	0.26 – 0.28 W/m2K
Floor	0.19 W/m2K	0.21 W/m2K
Roof – insulation in plane of roof	0.12 W/m2K	0.16 W/m2K
Roof – insulation at ceiling level	-	0.18 W/m2K
Roof - flat	0.15 W/m2K	-
Windows – double glazed	-	1.0W/m2K

Windows – triple glazed	0.85 W/m ² K	-
Air permeability	5m ³ /hm ² (@50Pa	
Ventilation MVHR	√	√
Lighting 100% low energy	√	√
Thermal bridge Integration of bespoke details	√	√
Space Electric panel heaters	√	√
Heating control Programmer and room thermostats	√	√
Water heating Immersion hot water cylinder	√	√

4.4 Emissions calculations

In order to demonstrate the environmental benefits associated with the fabric-first approach to energy efficiency, approved SAP software has been used to generate energy demand models for apartments within the development.

Calculations have been undertaken for each of the twenty apartment within the development. This captures the variation in apartment type in terms of their size, layout, orientation and level of glazing.

4.4.1 Baseline: Part L compliance only

SAP software calculates the regulated carbon dioxide emissions of the dwellings in accordance with the requirements of Building Regulations, Part L (2013) that the development will be designed and constructed in compliance with.

Table 4 presents the baseline regulated energy demand and emissions for each apartment assuming that the development does not go beyond compliance with Part L (2013).

Table 4: Baseline regulated emissions (Target Emissions Rate)

Apartment Type Energy demand associated with TER (kWh/m²/year) Target

New Build

Plot Ref.	DER
G1	23.8
F7	21.54
F12	22.64
S13	21.45
S18	20.29
T19	20.35
T20	21.8

4.4.2 Emissions under proposed specification (fabric and fixed services)

Table 5 presents the regulated energy demand and emissions for each apartment type accounting for the fabric and fixed plant measures specified for the development, as described in Sections 3.1 and 4.3. It also presents the percentage emissions reduction achieved compared with baseline emissions in Table 4 where appropriate.

This method of measurement only applies to the new build properties. Carbon emission targets do not apply to existing premises. The apartments created within the existing buildings only need to

achieve U-values prescribed in the Building Regulations. Table 6 below summarises the predicted U-values against the target U-values.

Table 5: Dwelling Emissions Rate and % reduction

Apartment Type Energy demand associated with DER (kWh/m²/year) Dwelling Emissions Rate, Part L 2013 (kgCO₂/m²/year) % emissions reduction (improvement over Part L 2013)

New Build			
Plot Ref.	DER	TER	% Reduction
G1	23.8	25.5	0%
F7	21.54	20.95	2.7%
F12	22.64	22.88	0%
S13	21.45	20.88	2.7%
S18	20.29	19.72	2.8%
T19	20.35	19.43	4.5%
T20	21.8	21.56	1.1%
Block Compliance			
Average TER	21.55		
Average DER	21.32		
% Reduction	1.06%		

The Core Strategy emissions reduction target for developments of this type is equivalent to a 9% improvement over Part L (2013). As presented in Table 5, the highly-efficient fabric and fixed plant measures specified for the development deliver a reduction for five of the seven new build apartments, the remaining two meeting the required target value.

When the weighted average of all apartment types is considered a reduction of 1.06% is achieved when measured against the Building Regulations standards.

Although the predicted TER for the new build apartments achieves an improvement over Part L (2013) it does not achieve the level required by the Core Strategy.

The current U-values of the structural elements and glazing are quite low and any further reductions would not lead to a corresponding reduction in emission rates.

In order to achieve a 9% reduction in emission rates over Part L 2013, it would be necessary to incorporate over 25m² of photovoltaic panels on South facing roofs of the development.

This would be in conflict with the planning restrictions within the Conservation Area and would not be viable.

Table 6: U-values

Element	New Build	Conversion
Wall	0.16 – 0.18 W/m ² K	0.26 – 0.28 W/m ² K
Floor	0.19 W/m ² K	0.21 W/m ² K
Roof – insulation in plane of roof	0.12 W/m ² K	0.16 W/m ² K
Roof – insulation at ceiling level	-	0.18 W/m ² K
Roof - flat	0.15 W/m ² K	-

Windows – double glazed	-	1.0 W/m ² K
Windows – triple glazed	0.85W/m ² K	-

MVHR systems are to be incorporated into the apartments created within the existing building to improve their energy performance. This is in excess of Building Regulations requirements.

4.4.3 Additional renewable energy measures

As described in Section 3.2, the potential for renewables and low carbon technologies to be incorporated into the proposed development has been considered throughout the design process. It has been determined that the incorporation of renewable technologies is not viable for this development and could be in conflict with planning criteria for the conservation area.

4.5 Conclusion

This Energy Statement has summarised the ways in which the George Leigh Street development responds to the EN 6 regulated emissions reduction target set out in the Manchester Core Strategy. The inclusion of highly-efficient fabric and fixed services measures delivers emissions deliver a reduction for five of the seven new build apartments, the remaining two meeting the required target U-value.

The weighted average emissions reduction from fabric and fixed plant measures across all apartment types (and including non-dwelling space) is 1.06%