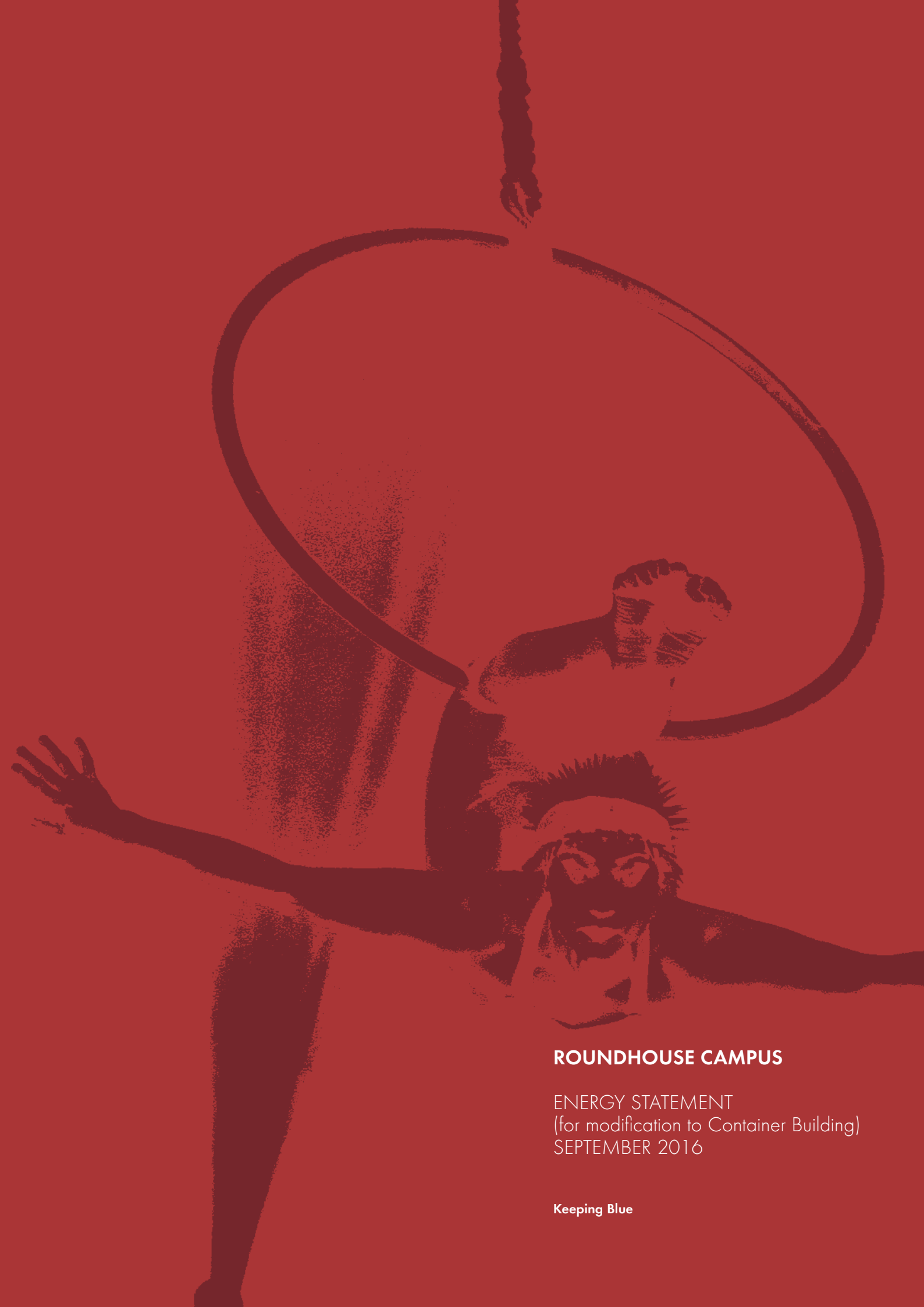

ROUNDHOUSE CAMPUS

ENERGY STATEMENT
(for modification to Container Building)
SEPTEMBER 2016

Keeping Blue

New Level, Roundhouse Administration Building, Regent's Park Road, Camden

Energy Statement

Issue 1.1

22 September 2016

Urban Space Management

keeping blue

Document Issue Register

Issue	Description	Date	Issued by
1.0	Issue to client	27/06/2016	Chris Collier
1.1	Assessment of improvement measures	22/09/2016	Chris Collier

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Table of Contents

Page

List of Figures

1 Introduction

This report details an Energy Statement for the New Level, Roundhouse Administration Building, Regent's Park Road, Camden. The extension is to be constructed from recycled shipping containers, according to the same construction method as the existing building. The external walls will be insulated with polyurethane spray foam and rockwool insulation batts, and lined internally with plasterboard. Much of the external façade is assigned to fenestration, consisting of double glazed floor to ceiling units with low solar transmittance and internal blinds. The roof will be insulated with polyurethane rigid foam.

The existing building is laid out over five storeys, with storage on ground floor, tenanted office space on 1st and 2nd floor (primarily open plan office space), and a mix of open and cellular office space on 3rd and 4th floor with a suspended floor section situated above the main driveway. The proposed extension will comprise the same layout as the existing 4th floor.

The purpose of this report is to demonstrate how the proposed extension will comply with national Building Regulations, in addition to the Camden Core Strategy and Camden Planning Guidance Document 3. The report will elaborate on various energy saving measures that will be implemented, according to the energy hierarchy.

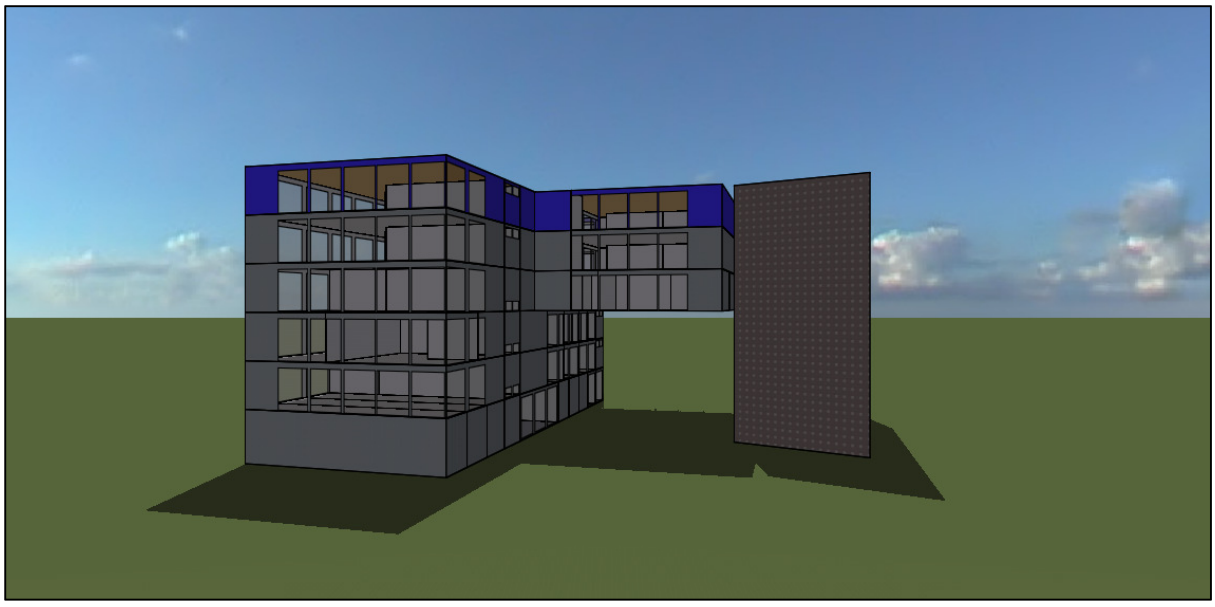

Figure 1: New Level (shown blue), Roundhouse Administration Building – 3D Engineering Model

2 Executive Summary

The proposed extension has been shown to meet the Building Regulations 'energy efficiency requirements', as set out in the Approved Document L2B. In addition, the Camden Core Strategy CS13 has been adhered to, as detailed in the Camden Planning Guidance Document 3 – Sustainability.

It has been shown that the proposed extension does not exceed the size limitations in order to be classed as a new building, for the purposes of Part L compliance (<25% of floor area of existing building).

However, due to the size of the existing building (>1,000m^2), the proposed extension triggers certain 'consequential improvements'. Due to the recent completion of the existing building (2015) and high standard of energy efficiency ('A' rated Energy Performance Certificate), it has been shown that the improvement measures outlined in Approved Document L2B would not be feasible.

The proposed extension will meet and exceed the fabric standards and building services efficiency requirements. In terms of opening areas, these will match the part of the building to which the extension is attached (the existing top floor), in order to demonstrate compliance with the limitations on opening areas.

Policy	Requirement	Proposed Extension	Achieved?
Building Regulations Part L2B	Fabric Standards	Equal to or better than Part L standard	Yes
	Opening Areas	Equal to limits	Yes
	Building Services	Equal to or better than Part L standard	Yes
	Consequential Improvements	Not economically feasible	N/A

3 Discussion

3.1 Building Regulations Part L

The proposed extension will be assessed under the Building Regulations 'energy efficiency requirements' (4A, 17C, 17D, 17E and Part L of Schedule 1), according to the guidance issued in the Approved Document L2B: Conservation of Fuel and Power in existing buildings other than dwellings.

Note: If an extension has a floor area that is both greater than 100m^2, and greater than 25% of the floor area of the existing building, then the work should be regarded as a new building and the guidance in Approved Document L2A followed. The table below indicates the floor area of the extension in relation to the existing building:

	Actual	**L2A Limit**
Floor area – extension	468.4 m^2	100 m^2
Floor area – existing building	2042.3 m^2	-
Total proposed floor area	2510.7 m^2	-
Extension % of existing building	22.9 %	25 %

Whilst the floor area of the extension is greater than 100m^2, it represents less than 25% of the floor area of the existing building and thus the guidance in Approved Document L2B will be followed. The following requirements are detailed in the Approved Document L2B and will be expanded upon:

- Fabric Standards
- Opening Areas
- Building Services
- Consequential Improvements – see below

The Approved Document L2B stipulates that the construction of an extension triggers the requirement for 'consequential improvements' in buildings with a total useful floor area greater than 1,000m^2.

3.1.1 Fabric Standards

The following U-value standards are required for new thermal elements:

Envelope Element	**Required U-Value**	**Proposed U-Value**
External Wall	0.28 W/m^{2}K	0.28 W/m^{2}K
Exposed Floor	0.22 W/m^{2}K	N/A W/m^{2}K
Flat Roof	0.18 W/m^{2}K	0.18 W/m^{2}K
Windows & Doors	1.80 W/m^{2}K	1.50 W/m^{2}K

In addition, the building fabric should be constructed so that there are no reasonably avoidable thermal bridges in the insulation layers. Reasonable provision should also be made to reduce unwanted air leakage. It is recommended that the Accredited Construction Details are adopted.

3.1.2 Opening Areas

Approved Document L2B indicates that the following limits should be applied to opening areas:

Building Type	Windows and Doors as % of exposed wall	Rooflights as % of area of roof
Residential buildings	30	20
Places of assembly, offices & shops	40	20
Industrial & storage buildings	15	20

Thus the area of windows and doors in the proposed extension should not exceed 40% of the exposed wall area. However, where a greater proportion of glazing is present in the part of the building to which the extension is attached, the proportion of glazing in the extension should be no greater than the proportion of glazing in that part of the existing building.

In the case of the proposed extension, the part of the building to which the extension will be attached (existing top floor) has a glazing proportion which is greater than 40% - thus the proportion of glazing in the extension will be limited by the existing glazing proportion:

L2B Glazing Proportion Limit	40.0 %
Glazing Proportion in existing top floor	49.8 %
Allowable Glazing Proportion	49.8 %

3.1.3 Building Services

The Approved Document L2B stipulates that building services should be provided that meet reasonable standards of energy efficiency, which is defined as an efficiency not less than that set out in the Non-Domestic Building Services Compliance Guide. This applies to the following building services:

- Heating & Hot Water Systems
- Mechanical Ventilation
- Mechanical Cooling / Air Conditioning
- Fixed Internal Lighting
- Renewable Energy Systems

In terms of the proposed extension, the following building services are proposed:

Building Service	Minimum Efficiency	Proposed Efficiency
Heating COP	2.5	3.0
Heating: Direct Electric	100 %	100 %
Hot Water: Local Electric Water Heater	100 %	100 %
Mechanical Cooling EER	2.6	3.4
Toilet Extract Ventilation SFP	0.3 W/L/s	0.27 W/L/s
Fixed Internal Lighting	60 Lum / W	80 Lum / W

3.1.4 Consequential Improvements

The Approved Document L2B stipulates that the construction of an extension triggers the requirement for 'consequential improvements' in buildings with a total useful floor area greater than 1,000m^2. The improvements should only be applied to the extent that they are technically, functionally and economically feasible. The economic feasibility test for improvement measures is a simple payback not exceeding 15 years.

Where a building is extended, a way of complying with the regulation would be to adopt measures to the extent that their value is not less than 10% of the value of the principal works (of the extension).

The document lists a number of improvements that in ordinary circumstances would be practical and economically feasible. However, in this case, the building is already inherently efficient due to achieving (and improving upon) compliance with the Building Regulations 2010.

The following measures are listed in the Approved Document:

No.	Improvement Measure	Feasibility	Reason
1	'Upgrading heating systems more than 15 years old…'	No	Heating systems are less than 15 years old (approx. 1 year old)
2	'Upgrading cooling systems more than 15 years old…'	No	Cooling systems are less than 15 years old (approx. 1 year old)
3	'Upgrading air-handling systems more than 15 years old…'	No	Air-handling systems are less than 15 years old (approx. 1 year old)
4	'Upgrading general lighting systems that have an average lamp efficacy of less than 40 lamp-lumens/W (serving >100m^2)…'	No	LED lighting is already installed with an average lamp efficacy of than 80 lamp-lumens/W
5	'Installing energy metering following the guidance given in CIBSE TM39'	No	Energy metering is already installed
6	'Upgrading thermal elements which have U-values worse than those set out in column (a) of Table 5…'	No	U-values meet current building regulations standards
7	'Replacing existing windows, roof windows or rooflights… or doors… which have a U-value worse than 3.3 W/m^{2}K…'	No	U-values meet current building regulations standards
8	'Increasing the on-site low and zero carbon (LZC) energy-generating systems if the existing on-site systems provide less than 10% of on-site energy demand…'	No	Existing Solar PV provides more than 10% of on-site energy demand (approx. 20% of on-site energy demand, incl. equipment)
9	'Measures specified in the Recommendations Report produced in parallel with a valid Energy Performance Certificate	No	No recommendations have been specified, due to the high standard of energy efficiency achieved by the building

None of the listed measures have been identified as being feasible, however the cost of maintaining the efficiency of the existing building should be taken into consideration. As the proposed extension is at roof level, and the existing roof currently accommodates Solar PV panels, the cost of removing and retro-fitting this equipment to the new roof will be significant.

3.2 Camden Core Strategy & Camden Planning Guidance

Camden Core Strategy Policy CS13, paragraph 13.9 states that 'Given the large proportion of development in the borough that relates to existing buildings, we will expect proportionate measures to be taken to improve their environmental sustainability, where possible'.

Camden Planning Guidance Document 3 – Sustainability (CPG3) provides further guidance on this matter, stating that 'As a guide, at least 10% of the project cost should be spent on environmental improvements'. This aligns with the Approved Document L2B guidance on compliance with 'Consequential Improvements'.

It has been shown in section 3.1.4 'Consequential Improvements' that the existing building is already built to a high standard of energy efficiency, and thus the listed improvement measures would not be economically feasible.

3.3 Conclusion

The proposed extension has been shown to meet the Building Regulations 'energy efficiency requirements', as set out in the Approved Document L2B. This includes: Fabric standards, Opening Areas, and Building Services. In addition, the Camden Core Strategy CS13 has been adhered to, as detailed in the Camden Planning Guidance Document 3 – Sustainability.

The existing building exhibits a well-insulated fabric along with energy efficient services, due to its recent completion (2015). As such, the scope of possible improvements to the existing building fabric are restricted.