Part L Planning Compliance

For the

Mechanical and Electrical Services Installations

At

Belgard Road

For

Ravensbrook Ltd

Date of Issue: 03/06/22 Revision: 0

Document History

Revision No.	Description	Prepared By	Reviewed By	Date
Rev 0	Planning Issue	EN	CD	02/06/2022

Contents

1. Planning Overview

The proposed strategic housing development comprises a mixed-use development including 310 no. "Build-to-Rent" residential apartments, a creche and commercial units (c. 2,289 sqm) on a c. 1.26 ha site at Belgard Square East, Belgard Road and Blessington Road, Tallaght, Dublin 24.

The proposed development will consist of the demolition of existing boundary wall and construction of:

1. c. 2,289 sqm of retail/commercial floor space across 10 no. units including retail, restaurant/café and Class 2 financial/professional services and office use, and a crèche (257sqm) at ground and first floor levels;
2. 310 no. build to rent residential apartments including 99 no. one bedroom units, 203 no. 2 bedroom units and 8 no. three bedroom units within a part 6 to part 12 no. storey development across 3 blocks over partial basement;
3. c. 2,223 sqm of communal external amenity space provided in the form of a ground floor garden and external terraces at fifth, sixth, seventh and eighth floor levels; c. 1,026 sqm of public open space provided in the form of a central courtyard with landscaped areas at site perimeters;
4. c. 1,785 sqm of resident support facilities and services and amenities provided at basement, ground and first floor levels;
5. Vehicular access to the basement development from a new access point at Belgard Square East;
6. A new tertiary route will be provided in the southern part of the site linking Belgard Square East and Belgard Road;
7. Provision of 130 no. car parking spaces (including 8 no. club car spaces and 6 no. disabled access spaces) at basement level in addition to 5 no. set down spaces (4 no. serving creche) and 1 no. disabled access space at ground level, layby on Belgard Square East, 6 no. motorcycle spaces and a total of 763 no. bicycle parking spaces;
8. Provision of 4 no. Ø0.3m microwave link dishes to be mounted on 2 no. steel support pole affixed to lift shaft overrun, all enclosed in radio friendly GRP shrouds, together with associated equipment at roof level at Block B;
9. Provision of 3 no. ESB substations with switch rooms and plant rooms at basement level, hard and soft landscaped areas, bin and bicycle stores, public lighting, attenuation, green roof, plant at roof level, service connections and all ancillary site development works.

2. Executive Summary

The purpose of this document is to detail how the development incorporates sustainability and energy efficiency into its design with the focus being on TGD L.

The initial design proposals as set out in this document has considered the EU Energy Performance of Buildings Directive (EPBD), the Building Regulations Technical Guidance Document Part L (NZEB), the Local Authorities strategy for sustainable design and generally reducing energy usage and carbon emissions.

Nearly Zero Energy Buildings (NZEB) means buildings that are designed to achieve nearly zero energy or a very low amount of energy which can be largely sourced from renewable energy produced on-site or nearby.

On this basis the building services design strategy is to utilise sustainable design options and energy efficient systems that are technically, environmentally, and economically feasible for a project of this kind.

The report demonstrates the proposed strategy will meet the energy and sustainability targets for this development.

3. Introduction

Axiseng was commissioned by Ravensbrook Ltd. to carry out a Part L assessment on the proposed development at Belgard Road.

The purpose of this report is to detail the energy efficient elements incorporated onto the design of the new residential units and demonstrate compliance with the 2021 Part L, Conservative of Fuel and Energy – Dwellings.

The development is compliant with Part L 2021 (NZEB) and the project is targeting an A3 BER (Building Energy Rating).

4. Strategy - Part L Conservation of Fuel & Energy - Dwellings

The design approach is to firstly address the passive measures associated with the building fabric, then implement active measures through efficient services design and finally the implementation of renewables to supply the energy.

The building includes the following energy conservation measures to achieve the best energy performance possible

- Passive
    - High-performance construction envelope including low u-value and g-value
    - Air tightness in construction
    - Minimise Thermal Bridging
- Active
    - District Heating
    - Low Energy LED Lighting
    - Efficient Controls

- Renewable
    - District Heating

The design has been developed, and the analysis carried out, using the current Part L version of the Dwelling Energy Assessment Procedure (DEAP) software v4. The inputs used to perform the analysis are summarised in the following section together with an overview of the proposed design solution.

5. Design Inputs and Analysis

The sustainable design of the Apartment Block presents an opportunity for each dwelling to perform in an energy efficient manner and meet the NZEB challenges.

The following table outlines each element which has been designed to reduce energy, carbon emission, and cost throughout the buildings lifecycle.

Different apartment units within the development have been chosen as a representative sample of the dwellings. For the purpose of this exercise, more than 10 apartment units have been identified and used in the Part L assessment.

<table>
<tr><th>Measures</th><th>Description</th><th>Outcome</th></tr>
<tr><td>Sample Apt Unit tested</td><td>Ten apartment units selected from development, ground floor, 1st floor, 2nd floor, 5th floor, and 10th floor.</td><td>A representative sample of apartment units were selected for testing.</td></tr>
<tr><td>High Performance Construction Fabric</td><td>The construction u-values set out for each dwelling is lower than the u-value requirements set out in the building regulation 2021.

<table><tr><th>Element</th><th>U-value (W/m2k)</th></tr><tr><td>Window</td><td>1.2 (g-value 0.6)</td></tr><tr><td>Door</td><td>1.2</td></tr><tr><td>External Wall</td><td>0.16</td></tr><tr><td>Roof</td><td>0.12</td></tr><tr><td>Floor</td><td>0.15</td></tr></table>
The window design has been considered to maximising daylight and solar heat gains during winter which will reduce the artificial lighting and space heating load.

High-performance wall, roof, and glazing is being considered and selected to minimise heat loss from the space. Aside from the reduction in heating, energy consumption and carbon emissions, the reduction in loads results in reduced plant capacity and size. This has the net effect of reducing embodied energy, as well as the reduced input from the national electricity grid for heating.</td><td>This minimises heat loss and gain which impacts on the heating requirement, thus lowering energy and carbon footprint.</td></tr>
<tr><td>Air Tightness Construction</td><td>The building will be designed to ensure it is in compliant with the building regulation and achieving air tightness between 3.0 m³/(h.m²) or 0.15 ach infiltration.</td><td>This minimises heat losses through the building fabric thus lowering heating load.</td></tr>
<tr><td>Thermal Bridging</td><td>The limitation of thermal bridging will be achieved in accordance with section 1.3.3 within technical guidance Part L regulation, where provision for thermal bridging is made in accordance with guideline. To account for thermal bridging allowances for additional heat loss, it is assumed construction elements between the junction will be designed to achieve allowance less than 0.08 (W/m2k) factor.

When the detail of construction element between junction are known, the transmission heat loss coefficient shall be calculated using the psi values based on construction details.</td><td>This minimises heat losses at junctions between construction element, thus lowering energy consumption and carbon emission.</td></tr>
</table>

Daylight & Lighting	Provision of natural daylight in buildings creates a positive environment by providing connectivity with the outside world and assisting in the well-being of the building inhabitants. Daylight also represents an energy source - reducing the reliance on artificial lighting. All lamps will be LED type. This will deliver a reduction of 30-35% reduction in electrical energy usage when compared to fluorescent lighting. It is assumed each LED type lamp will achieve minimum efficiency value of 66.9 lumen/watt per bulb.	This will reduce the lighting electricity energy consumption, thus reducing carbon emission footprint overall. This will result in a healthier environment through the use of natural daylight. This will also provide free heating from solar load, reducing heating load.
HVAC system	Ventilation System Natural ventilation will be used as the main source of ventilation. This reduces the energy demand when compared to mechanical ventilation and thus reducing the load on the building and improving building performance.	
	Heating System A district heating system will be used for heating and hot water generation for all apartment units.. The overall primary energy factor, renewable energy factor and C02 factor should be at least: Renewable Primary Energy Factor: 0.17 Non-Renewable Primary Energy Factor 0.54 C02 Emissions Factor – 0.14	The use of a district heating is a highly efficient system and solution and allows end users control of their bills. This promotes energy reduction by the end user.
	Hot Water System & Appliances All hot water taps including the shower in the proposed development will be fitted with flow regulators. The hot water flow discharge rate of shower head must reach less than six litre per minute to allow for the conservation of water usage as well as energy used to heat hot water.	This minimises hot water usage, thus reducing heating energy load and increasing heating plant operating performance and reducing the cost.
Building Energy Management System	No central control will be provided, however local time clocks and temperature stats will regulate temperature and demand within the space.	Continuous energy monitoring allows for further energy savings to be quantified through building lifecycle thus lowering overall cost and carbon footprint.
Result	Energy Performance Coefficient (EPC) = - 0.238 – 0.297 Carbon Performance Coefficient (CPC) = 0.230 – 0.283 Renewable Energy Ratio (RER) = 0.21– 0.22 (21% - 22%) Building Energy Rating = A3	Part L/NZEB compliant

5.1 Design Forecasting

The current design model is based on an initial envelope performance and using a district heating system to achieve Part L and NZEB compliance.

When the design moves into further detail stages these will continue to be reviewed and refined whilst adhering to planning conditions & building regulations.

6. Results and Conclusions

In conclusion the development complies with the Part L and NZEB requirements and is achieving an A3 BER. The following output of sample dwellings from DEAP software can be found under *Appendix A – DEAP Part L report* in this report.

The results show that the apartment units analysed have an Energy Performance Coefficient (EPC) between 0.238 and 0.297 which is less than the maximum permitted energy performance coefficient (MPEPC) of 0.3.

The results also show that the apartment units analysed has a Carbon Performance Coefficient (CPC) between 0.230 and 0.283 which is less than the maximum permitted energy performance coefficient (MPEPC) of 0.35.

The result also shows the renewable energy ratio target is achieved with results ranging between 0.21 to 0.22 (21% - 22%) for the apartments analysed.

7. Appendix A – DEAP Part L Sample Results

Check conformity with MPEPC, MPCPC and RER requirements in TGD L
Relevant for new-build.

	Primary energy [kWh/y]	CO2 emissions [kg/y]	Renewable Energy Ratio
Totals for reference dwelling	10,848	2,191	
	EPC	CPC	RER
Performance coefficients	0.238	0.230	0.21
Maximum permitted	0.300	0.350	0.20
	Complies	Complies	Complies

Check conformity with MPEPC, MPCPC and RER requirements in TGD L
Relevant for new-build.

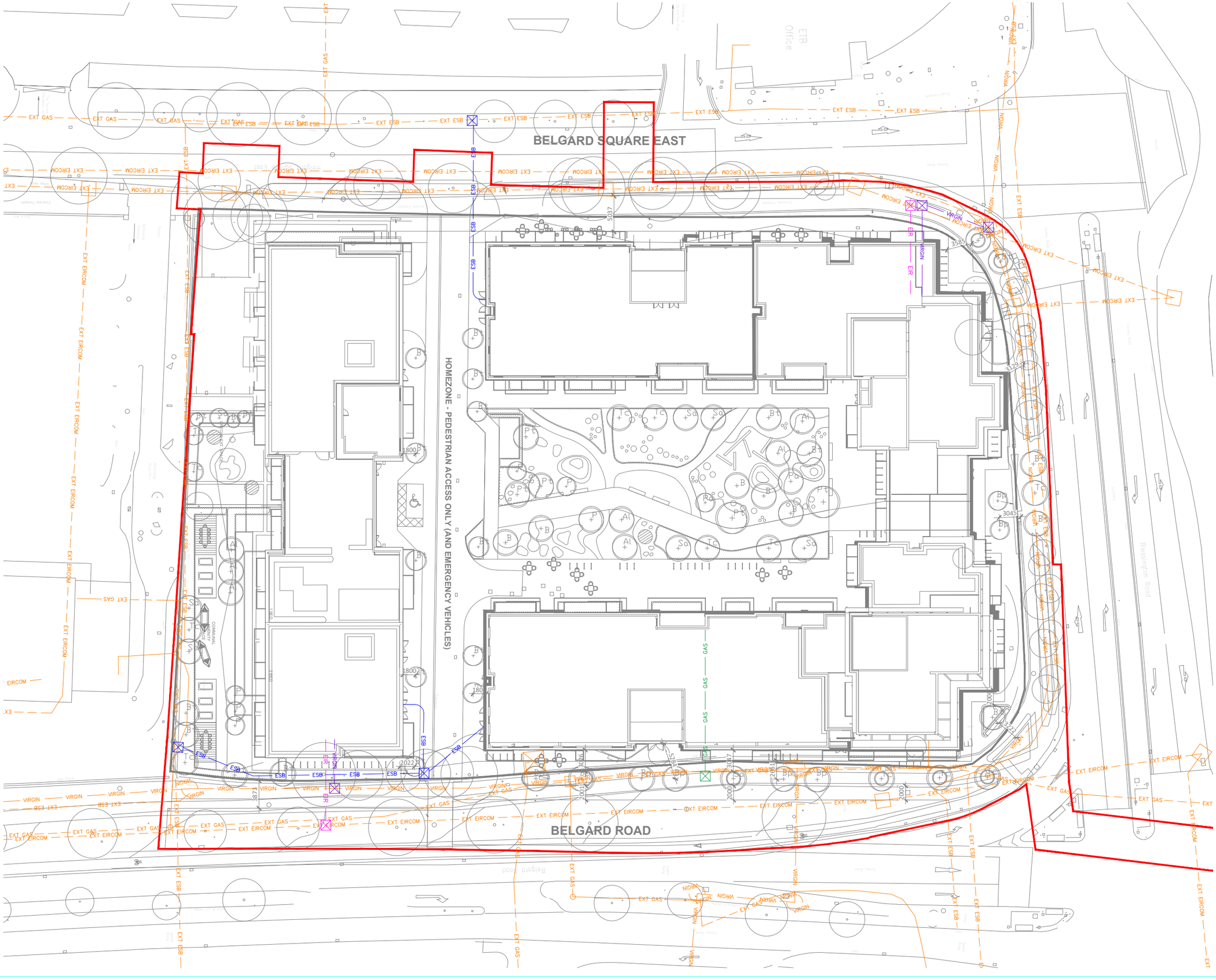
	Primary energy [kWh/y]	CO2 emissions [kg/y]	Renewable Energy Ratio
Totals for reference dwelling	11,413	2,315	
	EPC	CPC	RER
Performance coefficients	0.248	0.239	0.21
Maximum permitted	0.300	0.350	0.20
	Complies	Complies	Complies

Check conformity with MPEPC, MPCPC and RER requirements in TGD L
Relevant for new-build.

	Primary energy [kWh/y]	CO2 emissions [kg/y]	Renewable Energy Ratio
Totals for reference dwelling	11,413	2,315	
	EPC	CPC	RER
Performance coefficients	0.297	0.282	0.22
Maximum permitted	0.300	0.350	0.20
	Complies	Complies	Complies

Check conformity with MPEPC, MPCPC and RER requirements in TGD L
Relevant for new-build.

	Primary energy [kWh/y]	CO2 emissions [kg/y]	Renewable Energy Ratio
Totals for reference dwelling	11,413	2,315	
	EPC	CPC	RER
Performance coefficients	0.295	0.283	0.22
Maximum permitted	0.300	0.350	0.20
	Complies	Complies	Complies



General Notes:

1. All details indicated on this drawing are for guidance only and are to be developed, verified and co-ordinated by the Contractor.
2. This drawing is intended to be viewed in colour.
3. Do not scale from this drawing.
4. The Contractor shall verify all dimensions on site.
5. For details of setting out dimensions, refer to the Architect's drawings.
6. Equipment and fitting substitutes will not be permitted without the written approval of the Engineer.
7. Workshop drawings are the responsibility of the Contractor. Axiseng drawings shall not be used as reference on site.
8. This drawing is to be read in conjunction with all other relevant information from the specifications, schedules, schematics and design packages from other Design Team members.
9. Should any discrepancy be apparent in this drawing, the Engineer shall be made aware of this for further action.
10. The exact location of all plant equipment and penetrations are the responsibility of the Contractor, who shall co-ordinate the installation with all other trades.
11. The Contractor shall be responsible for the design, supply and installation of supports, bracketing systems and secondary steelwork supports required for this works package, unless otherwise stated.
12. Final co-ordination with the existing services and structure are the responsibility of the Contractor.
13. The Contractor is to ensure that all existing services are identified, with locations and invert levels reported to the Engineer prior to the commencement of works.
14. The Contractor shall identify any 'live' service which is to be retained and protected during the construction works.
15. The Contractor is responsible for the builder's works dimensioning and setting out for all penetrations through the building structure. The Contractor shall submit builder's work details for review prior to their installation, which shall be arranged in consultation with all other trades.
16. The contractor shall note that all pipework and ductwork routes are indicative only.
17. Existing network lines are shown in orange. Specific network lines are as noted.
18. Co-ordination between services are to be carried out onsite. Surveys of existing and proposed locations of routes shall be carried out prior to works.
19. All manhole sizes and types must be confirmed with Utility provider prior to installation.

Symbols Reference:

- Existing line (As Noted).
- New – ESB line. 4no. x 125mm LV ducts.
- New – 2no. x 110mm Comms ducts.
- New – 2no. 110mm Comms ducts.
- New – Gas Supply line.
- New – Utility Access Chamber.

REV	DATE	REVISION DESCRIPTION	DRN	CHK
0	25.05.22	ISSUED FOR PLANNING	SS	CD

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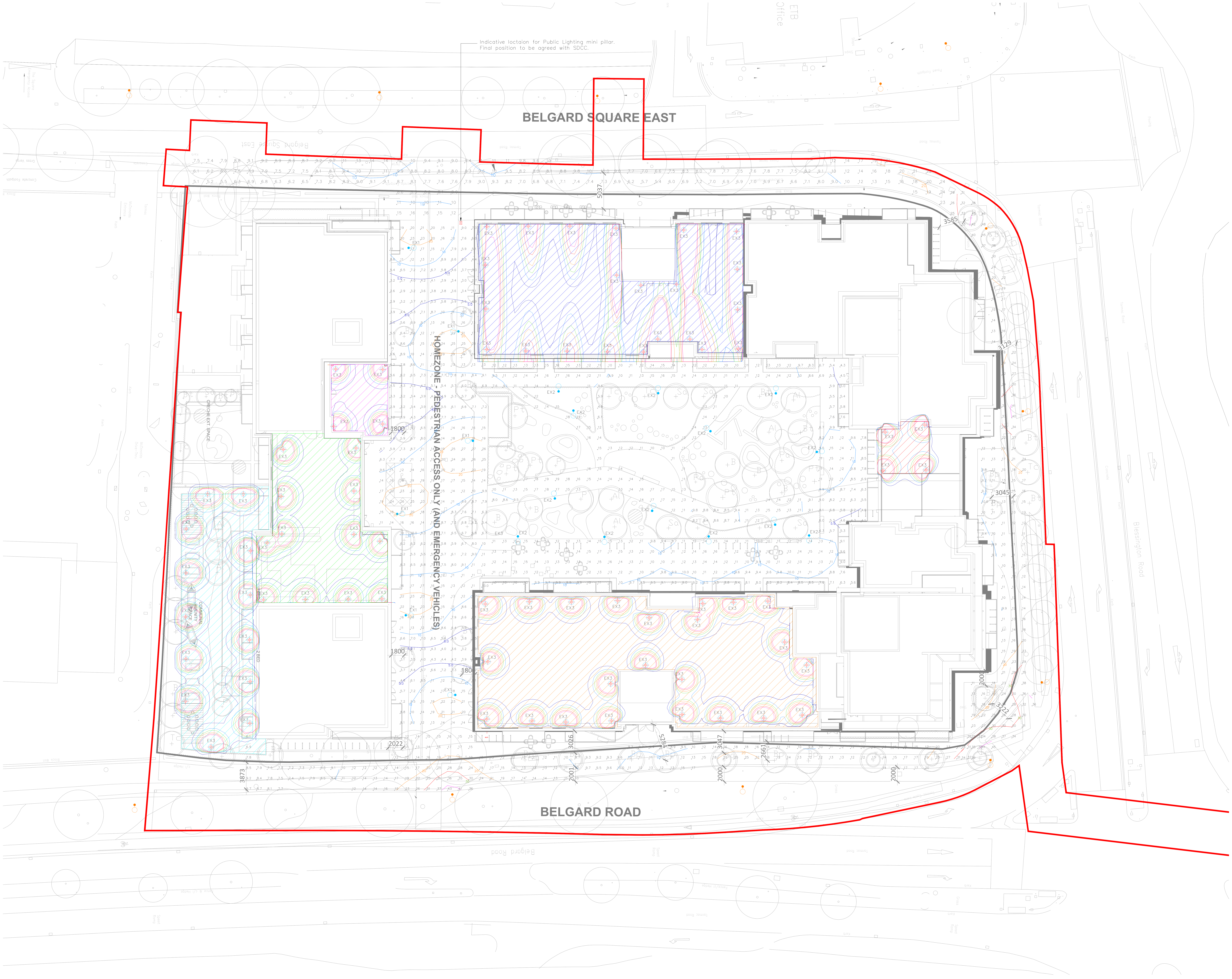
Architect:	Henry J Lyons
Project:	Belgard Road Residential Planning
Title:	Site Infrastructure - Site Services
Drg. No:	BEL-X-X-DR-AXR-EE-60101
Job No:	20120
Purpose Code:	P1
Revision:	0
Scale:	SCALE @ A1



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Notes for Bat Lighting Protection

1. Hours of illumination: Lighting of pedestrian walkways surrounding each warehouse unit shall be controlled via in-built luminaire photocell & PIR motion sensors and remain off during times of no pedestrian traffic.
Lighting within the truck yard at each warehouse unit shall be controlled via photocell & timeclocks. Lighting in these areas will operate with a reduced number of fittings during inactive site hours.

2. Light levels and type: Site lighting shall be a warm white spectrum (2700K – 3000K) to reduce the blue light component.

3. Column heights of lamp posts: All pole mounted fitting shall be mounted at 6m height.

Symbols Reference:

Symbol	Description
EX1	Proposed New Public Lighting – Thorn Olsys Street –96633537 OLSYS1 12L70 730 CL2 BP5 STR
EX2	Proposed New Landscape Lighting – Veelite: Vista – 5VSTX1014–A14–3K, 14w 8LED Forward Throw Optic A14 3000K 500mA
	Existing SDCC Public Road Lighting
EX3	GOCCIA 545–QL18–S01 ART–5593 (1136 lm; 12.3 W; 1x545–QL18–S01 LED)
	Ground Level Communal Amenity Space
	Level 5 Residents Terrace 1
	Level 6 Residents Terrace 2
	Level 7 Residents Terrace 3
	Level 8 Residents Terrace 4
	Level 10 Residents Terrace 5

Isolines:

- 5.0 lx
- 10.0 lx
- 15.0 lx
- 20.0 lx
- 30.0 lx
- 40.0 lx

REV	DATE	REVISION DESCRIPTION	DRN	CHK
0	13.05.22	ISSUED FOR PLANNING	SS	CD

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Client: Ravensbrook Limited

Architect: Henry J Lyons

Project: Belgard Road Residential Planning
Title: Site Lighting

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Scale: 1:250 @ A1

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