
Planning Issues Ltd

Energy and Sustainability Statement

Toyndee Road & Romsey Close, Eastleigh

June 2023



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Document Title:	Energy and Sustainability Statement
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1.0 Introduction

1.1 Purpose of the Report

Instructions were received from Planning Issues Ltd to produce an Energy Statement for the proposed Churchill Retirement Living development at Toynbee Road & Romsey Close, Eastleigh. This report has been produced to support the planning application for the development, which is situated within the authority of Eastleigh Borough Council.

This statement provides a response to the following document:

- Eastleigh Borough Local Plan 2016-2036
- Eastleigh Borough Local Plan 2016-2036 – Water Efficiency Background Paper.

1.2 Site and Building Description

The development will be located at Toynbee Road & Romsey Close, Eastleigh. The application seeks approval for the construction of a retirement living complex with 83 retirement apartments, comprising 52 x 1 bed apartments and 31 x 2 bed apartments. The communal areas will comprise: circulation spaces, a Guest Suite, a communal lounge with coffee facilities and staff areas.

A proposed site layout has been included in Appendix 1.

1.3 Methodology

Sample Design Stage SAP calculations and an SBEM calculation using representative data have been completed to determine the predicted energy performance of the development. Elmhurst SAP 10 software was used for the SAP Calculations, and IESVE software for the 2021 Building Regulations used for the SBEM, with all calculations carried out by accredited assessors. The specifications and results for the buildings as proposed are compared to the target building baseline, which is the benchmark for Part L of Building Regulations compliance.

The BRE Part G Calculation has been utilised to assess the proposed internal water usage of the scheme.

2.0 Planning Policy

The Eastleigh Borough Local Plan 2016-2036 has been reviewed to determine the relevant policies for this statement. Where certain sections of policies are considered relevant to this statement (and others not so), the relevant elements are detailed below only.

2.1 Eastleigh Borough Local Plan 2016-2036

"Policy DM2 Environmentally sustainable development":

- a) All new build residential development must achieve at the time a Reserved Matters of Full Planning Application is submitted:
 - i. 19% improvement in predicted carbon emissions, compared with the building regulations standard current at the time, through increased energy efficiency of the building fabric, unless this is superseded by an updated building regulations requirement equivalent to 'zero carbon homes'; and
 - ii. a predicted mains internal water consumption of no more than 110 litres/day.
- b) all non-residential and multi-residential development above 500 sqm of floor space measured externally (including extensions to existing buildings) must achieve;
 - i. BREEAM 'excellent' (or equivalent) or BREEAM 'very good' plus 'passivhaus' certification including a 15% improvement in predicted carbon emissions, compared with the building regulations current at the time, through low or zero carbon energy generation on site or in a Borough location agreed by the Council.
- c) All larger developments (above 150 dwellings or 10,000 sqm of floor space) must:
 - i. address sustainable development issues at the masterplan stage through BREEAM Communities 'excellent' certification; and
 - ii. fund post occupancy evaluation studies.

In addition to the above, all new residential development, and non-residential and multi-residential development above 500sq.m. of floor space measured externally (including extensions to existing buildings) and external spaces should where practical and viable:

- d) incorporate energy-efficient passive design principles, the best use of natural daylight and natural ventilation systems wherever possible;
- e) connect to any existing near or adjacent low carbon local energy network unless this is proved unviable;
- f) use recycled, low embodied carbon, low environmental impact and locally sourced materials in construction where possible;
- g) be designed with sufficient flexibility to enable the life of the building to be extended by re-use for other purposes where feasible;

- h) aim to achieve a predicted mains internal water consumption of no more than 90 litres/day;
- i) aim to deliver at least 1% of all residential units which achieve full 'passivhaus' certification.

"Policy DM3 Adaptation to climate change":

All development should be designed to adapt to the predicted climate change impacts for the Borough.

- a) To reduce the potential impacts of surface water flooding, sustainable drainage systems need to be implemented as part of an integrated SuDS strategy for the site in accordance with policy DM6 (Sustainable surface water management and watercourse management) and as part of the landscape framework for the site including green open space and green roofs where appropriate.
- b) New development should have a cooling strategy which can include:
 - i. cooling through generous green infrastructure
 - ii. areas of shade
 - iii. water cooling
 - iv. building design and orientation to reduce overheating
 - v. 'cool roofs' or green roofs and green walls
 - vi. porous cool pavements
- c) To adapt to water stress, new development should be designed to reduce demand. Measures can include:
 - i. Reduced residential mains water consumption (as per policy DM2)
 - ii. Water efficient appliances, fittings and leak detection devices for non- residential and multi-residential development
 - iii. Rainwater harvesting and grey water recycling
 - iv. Drought resistant landscape design

"Policy DM4 Zero or low carbon energy":

The Borough Council will permit the development of infrastructure to:

- a) generate zero or low carbon energy; and/ or
- b) make more efficient use of energy sources e.g. installations deploying combined heat and power (CHP technology).

3.0 Policy Response

3.1 Eastleigh Borough Local Plan 2016-2036

3.1.1 Policy DM2 Environmentally Sustainable Development

a.i)

In efforts to reduce the overall carbon emissions associated with the development and to maximise the energy efficiency, the developer has a robust 'fabric first' approach to the build specification.

This has been achieved through building fabric improvements with an uplift on the minimum requirements of ADL1, and also specification of efficient mechanical and electrical services.

The table below demonstrates how the specification of the Eastleigh development compares to the limiting values and minimum efficiencies allowed within Part L 2022:

Table 1: Comparison with Building Regulations Part L 2022		
Building Element	Limiting Part L 2022 Specification	Proposed Specification Part L
External Walls U-Value	0.26	0.17
Roof U-Value	0.16	0.16
Ground Floor U-Value	0.18	0.12
Window U-Value	1.60	0.70 (Triple Glazed)
Party Wall U-Value	0.20	0.00
Heating Efficiency	100%	100%
Pressure Test	8.00	5.00
Lighting Lumens	75 lm/w	80 lm/w

The development is proposed to adopt a 'fabric first' approach to the specification and as detailed above, the proposed U-Values are a significant uplift on the minimum requirements under Part L.

The build-up of external wall for the apartment is a fully filled 150mm cavity that achieves a u-value of 0.17W/m²K with the addition of insulated plasterboard. With regards to the thermal envelope as a whole, well insulated cavity walls, roof, floors and openings provide a comfortable environment within the development and reduce the buildings' reliance on the main heating system. The air permeability target is 5.00 m³/(h.m²), again providing a significant improvement over the Notional Building target.

Intelligent construction methods are also utilised in the specification of this development. The use of bespoke calculated thermal bridge details and a relatively simple building form ensures that thermal performance is enhanced by minimising heat and energy losses through thermal bridges and air gaps.

Space Heating is serviced through direct electric panel heaters which provide efficiencies of up to 100%. The use of an electric heating solution strategy also brings the client in line with what appears to be the Government's preferred direction of travel for domestic heating going forward and given the continuing decarbonisation of the grid, electricity can be seen as an increasingly low carbon solution.

A Decentralised Mechanical Ventilation System (DMEV) will be installed to all apartments. DMEV is a whole house ventilation methodology which consists of a system of extract fans and background ventilators in bathrooms and kitchens. These are set to run constantly at low speeds to draw moisture-laden air out of the home. As such, they provide the same benefits as intermittent fans in wet rooms, but do so with a higher degree of efficiency, minimising the need for electricity use for ventilation.

An EVCP control unit is used to monitor electricity use within the building and assists with distribution of the solar photovoltaic (PV) output around the building and to elements such as Electric Vehicle (EV) charging points. Each apartment also benefits from its own individual meter. This helps improve the heating strategy and saves further energy.

To summarise, all of the main building elements outlined in Table 1 have been designed to provide a thermally efficient building envelope that achieves an improvement on the minimum requirements set out within Part L.

The below table details the performance achieved by the sample SAPs conducted for the scheme using the specification as detailed above, using Elmhurst SAP 10 software.

Table 2: Carbon Emission Breakdown	
Domestic	Total Predicted Carbon Emissions (kg/CO ₂ /yr)
Target Emission Rate (TER)	49,707.56
Dwelling Emission Rate (DER)	28,514.67
Total Carbon Reduction	21,192.89
Percentage Reduction (%)	42.64%

As a result of the SAP outputs for the development, Table 2 shows the Target Carbon Emissions (TER) of the development to be 49,707.56 kg/CO₂/yr. The Predicted Carbon Emissions (DER) are demonstrated to be a substantial improvement against this amount, currently modelled to achieve 28,514.67 kg/CO₂/yr.

Overall, this is a 21,192.89 kg/CO₂/yr reduction in Carbon Emissions, approximately 42.64% reduction against the notional amount.

This highlights the design specification performance of the development being a significant improvement above Building Regulations requirements and the 19% improvement in predicted carbon emissions as per Policy DM2. Design Stage SAP and SBEM outputs for these calculations are available on request.

It should be noted that these figures are derived from the calculations before the addition of renewables, so these figures will improve further once the Solar Photovoltaic panels (to be detailed further under Policy DM4) have been applied to the scheme.

a.ii)

The sanitaryware specification for the apartments will aim to achieve a predicted mains internal water consumption of no more than 110 litres/day.

Representative specifications are shown below in Tables 3 and 4. Based on these specifications, the 1 bed flats at the site will achieve a predicted mains internal water consumption of 98.20 litres/person/day and the 2 bed flats will achieve a predicted mains internal water consumption of 104.70 litres/person/day. Whilst the final flow rates of individual sanitaryware items may change as detailed design progresses, performance sufficient to comply with this condition will be maintained. A full breakdown of calculations is available in Appendix 2.

Table 3: Proposed Sanitaryware Specification Flow Rates (1 Bed Flats)	
Component	Water Usage
WC's	4.5 Litres (Full Flush Volume), 3 Litres (Part Flush Volume)
Showers	8 Litres/Minute
Wash-hand basin taps	4 Litres/Minute
Kitchen taps	5 Litres/Minute
Bath	N/A
Washing Machine	8.17 Litres/kg (Default Figures)
Dishwasher	1.25 Litres/Place Setting (Default Figures)

Table 4: Proposed Sanitaryware Specification Flow Rates (2 Bed Flats)	
Component	Water Usage
WC's	4.5 Litres (Full Flush Volume), 3 Litres (Part Flush Volume)
Showers	8 Litres/Minute
Wash-hand basin taps	4 Litres/Minute
Kitchen taps	5 Litres/Minute
Bath	155 Litres Capacity
Washing Machine	8.17 Litres/kg (Default Figures)
Dishwasher	1.25 Litres/Place Setting (Default Figures)

b.i)

Due to the C3 Planning designation of the scheme, we do not believe this policy is relevant for this scheme.

c.)

As the scheme is neither above 150 dwellings or 10,000 sqm of floor space, this requirement has not been considered further.

d.)

The majority of apartments have sizable windows to South East, South or West orientations, which will allow for significant solar gain, and therefore will lessen space heating requirements for the end user.

High thermal mass, achieved through the use of dense internal blockwork and the application of insulated plasterboard to the inside face, provides for a thermally efficient internal envelope as well as helping to regulate internal temperature for the end user, helping to mitigate heat loss in the winter and overheating in the summer.

e.)

An exercise has been completed reviewing the potential for the proposed development at Toynbee Road & Romsey Close, Eastleigh to connect to an existing district heat network. The Association for Decentralised Energy's (ADE) District Heating connection map has been reviewed to confirm the closest possible connection point.

The closest connection point is the University of Southampton which is approximately 4.15 km from the proposed site location. Due to the extended distance between these two points, it is considered that this would not be a feasible application.

f.)

In attempts to ensure there are no significant adverse impacts from the development at Eastleigh, the project will strive to incorporate sustainable construction practices into the building. Material selection will endeavour to show preference to suppliers who operate responsible sourcing practices and have current environmental management certificates. Examples including FSC/PEFC certified timber products will be utilised, this ensures all products have been obtained from sustainable and legal sources.

Where possible, local suppliers of required building materials will be given preferred selection over those who operate at further distance from the development site. Through this approach, delivery materials will be transported lesser distance, reducing the associated CO₂ emissions and fuel use of delivery loads. The procurement of these materials closer to the site, will support local businesses & operations within the region. Where allowing, suppliers who possess environmental certifications such as BES 6001/ISO 14001 will be sourced from to further encourage the use of materials ascertained from responsible accredited supply chains.

Similarly, where contractors and site personnel are required to aid the construction efforts, they too will also be given preferential consideration where they are local to the site. This again will reduce the associated CO₂ emissions of travel, in addition to supporting the local economy.

g.)

It is the intention that the scheme remains as a Retirement Living facility for the foreseeable future, especially as demand for this type of accommodation will likely increase in the upcoming years. However, the robust construction form is very much planned to stand the test of time so alternative future uses should be considered.

The layout of the building as it is would easily lend itself to more general apartment accommodation, or self-catered student accommodation. The nature of the centralised M&E services also means that the building could be 'retro-fitted' for office or similar commercial usage.

h.)

Due to the nature of the scheme and the profile of proposed resident, it is not considered that the lower flow rate of 90 litres/per person/per day is practical nor in the best interests of the residents, many of whom will have increased health needs.

i.)

Due to the nature of the scheme, it would not be practical or viable to deliver at least 1% of all residential units to achieve full 'passivhaus' certification.

3.1.2 Policy DM3 Adaptation to Climate Change

a.)

It is assumed that surface water drainage and flood risk will be covered in another specific planning statement for these elements.

b.)

While more detailed information on landscaping and green spaces will be provided in a separate statement, it is clear from the Site Plan that there will be substantial green spaces provided within the boundaries of the development, especially to the South elevation.

The Site Plan also shows a substantial paved area to the North elevation, which will allow residents to congregate to the exterior of the communal lounge. Given the location, and the height of the proposed scheme, this area will be heavily sheltered for the vast majority of the day (even in summer) which will provide a cooler area for residents to access.

Given the timescales of the proposed scheme, it will be assessed against the new Part O Overheating Building Regulations, using the Dynamic Thermal Modelling method, which follows the CIBSE TM59 methodology. Where further measures are required to ensure Part O Compliance, these will be installed in full by the client.

c.)

A specification for reduced residential mains water consumption is detailed under the response to Policy DM2 aii elsewhere in this statement. The client will install water butts to allow for rainwater harvesting for use on the external communal areas of the scheme.

3.1.3 Policy DM4 Zero or Low Carbon Energy

a.)

Renewable Energy generation is incorporated into the scheme through the application of roof mounted Solar Photovoltaic (PV) panels, which are the clients preferred renewable technology. PV panels convert solar radiation into direct current electricity. In principle, they are an ideal source of renewable energy as they harness the most abundant source of energy on the Earth, the sun, and they produce electricity, which is the most useful form of energy. PV's are silent in operation, have no moving parts and have a long life with low maintenance levels.

The client is currently proposing to install 1kW Peak worth of PV for each of the 83 apartments at the scheme. Based on the assumption that the PV can be installed to optimal orientation and inclination, with minimal overshadowing, SAP 10 indicates that an output of 863.62 kWh/yr per kW Peak can be achieved. On this basis, the proposed array based on 83 apartments would give an output of circa 71,680.46 kWh/yr per year. In addition to this, an output of 27,823.31 will be applied to served the communal areas of the scheme. As such, the client is proposing to install an array with a total minimum site-wide output of 99,503.77 kWh/yr.

A suitably qualified PV installer will be contracted by the client to provide and install a site-wide array. This PV output figure remains to be confirmed and will be finalised once full Design Stage SAP and SBEM calculations are completed and as scheme design develops.

b.)

As per Policy DM2 e), the connection to a low carbon district heat network is not considered viable, and the nature of the scheme means it is not appropriate for an on-site installation deploying combined heat and power.

4.0 Conclusion

This statement has reviewed the proposed development at Toynbee Road and Romsey Close, Eastleigh which consists of 83 retirement apartments, comprising 52 x 1beds and 31 x 2 beds. There will also be a communal living area with a coffee bar, a Guest Suite and staff areas. The statement has provided an assessment of the proposed scheme against relevant planning policy objectives within Eastleigh Borough Local Plan 2016-2036.

The statement has highlighted that the scheme currently proposes to utilise a good thermal envelope to minimise heat loss, with U-Values proposed that are significant improvements against the Limiting Part L1A 2022 U-Values. This will drive energy efficiency in the building, as will the specification of efficient mechanical and electrical services.

The statement has detailed the predicted energy requirement for the proposed scheme, utilising sample Design Stage SAP and representative Design Stage SBEM Calculations, produced using accredited software by qualified assessors. The Target Carbon Emissions (TER) of the development to be 49,707.56 kg/CO₂/yr. The Predicted Carbon Emissions (DER) are demonstrated to be a substantial improvement against this amount, currently modelled to achieve 28,514.67 kg/CO₂/yr. Overall, this is a 21,192.89 kg/CO₂/yr reduction in Carbon Emissions, approximately 42.64% reduction against the notional amount, a significant improvement over the 19% requirement.

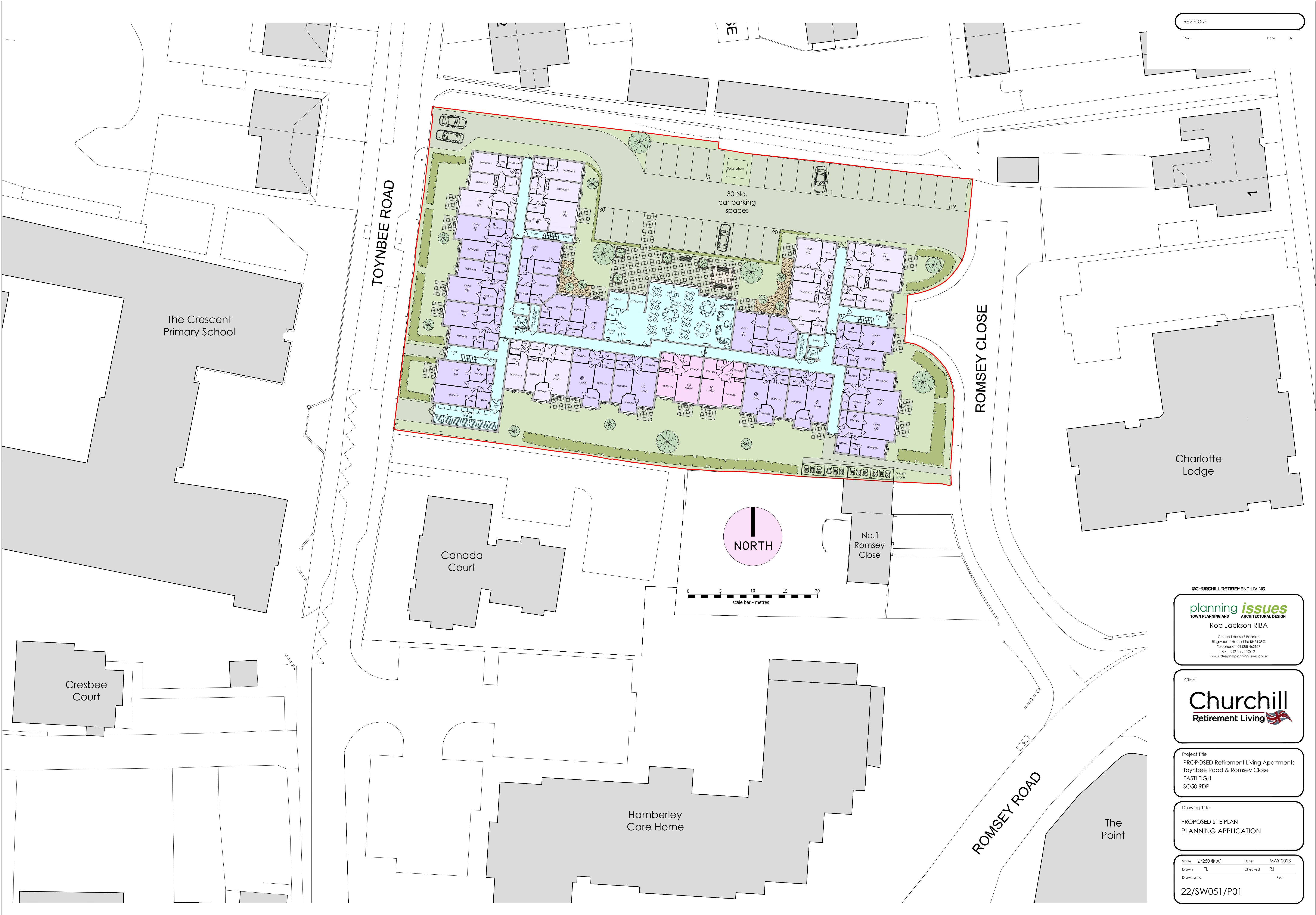
The client has also provided two sanitaryware specs for different elements of the scheme. Both of these provide per person/per day water usage figures lower than 110 litres/ per person/ per day. This statement has also provided a response to policies regarding energy-efficient passive design principles, sustainable construction methods, low carbon local energy network, flexible future building usage, overheating / cooling and water stress.

Finally, the client is currently proposing to install an array with a total site-wide output of 99,503.77 kWh/yr. A suitably qualified PV installer will be contracted by the client to provide and install a site-wide array. This PV output figure remains to be confirmed, and will be finalised once full Design Stage SAP and SBEM calculations are completed.



Appendix 1

Proposed Site Plan



REVISIONS

Rev. Date By

©CHURCHILL RETIREMENT LIVING

planning *issues*
TOWN PLANNING AND ARCHITECTURAL DESIGN

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Churchill
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Project Title
PROPOSED Retirement Living Apartments
Toynbee Road & Romsey Close
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Drawing Title

PROPOSED SITE PLAN
PLANNING APPLICATION

Scale: 1:250 @ A1 Date: MAY 2023
Drawn: TL Checked: RJ
Drawing No. Rev.

22/SW051/P01



Appendix 2

Part G Water Calculation



Job no:	R3220
Date:	25.11.2022
Assessor name:	Ben Matthews
Registration no:	
Development name:	Eastleigh

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WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS - (BASIC CALCULATOR)

		House Type:		Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7		Type 8		Type 9		Type 10			
		Description:		1 BED		2 BED																			
Installation Type	Unit of measure	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day		
Is a dual or single flush WC specified?		Dual		Dual		Select option:		Select option:		Select option:		Select option:		Select option:		Click to Select		Click to Select		Click to Select					
WC	Full flush volume	4.5	6.57	4.5	6.57		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
	Part flush volume	3	8.88	3	8.88		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Taps (excluding kitchen and external taps)	Flow rate (litres / minute)	4	7.90	4	7.90		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Are both a Bath & Shower Present?		Shower only		Bath & Shower		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:					
Bath	Capacity to overflow	0	0.00	155	17.05		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Shower	Flow rate (litres / minute)	8	44.80	8	34.96		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Kitchen sink taps	Flow rate (litres / minute)	5	12.56	5	12.56		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Has a washing machine been specified?		Yes		Yes		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:					
Washing Machine	Litres / kg	8.17	17.16	8.17	17.16		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Has a dishwasher been specified?		Yes		Yes		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:					
Dishwasher	Litres / place setting	1.25	4.50	1.25	4.50		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Has a waste disposal unit been specified?		Select option:		0.00		Select option:		0.00		Select option:		0.00		Select option:		0.00		Select option:		0.00		Select option:		0.00	
Water Softener	Litres / person / day		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
Calculated Use		102.4		109.6		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0			
Normalisation factor		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91		0.91			
Total Consumption		93.2		99.7		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0			
Mandatory level		Level 3/4		Level 3/4		-		-		-		-		-		-		-		-		-			
External use		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0			
Total Consumption		98.2		104.7		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0			
17.K Compliance?		Yes		Yes		-		-		-		-		-		-		-		-		-			