
McCarthy Stone

Energy Statement

Church Walk, Gravesend

September 2022



Contact Information

Client:	McCarthy Stone 2 Genesis business Park Albert Drive Woking Surrey GU21 5RW
Client Lead:	Amit Rabheru
Tel:	07417 033 202
Email:	Amit.rabheru@mccarthyandstone.co.uk
Prepared By:	Focus Consultants 2010 LLP Focus House Millennium Way West Phoenix Business Park Nottingham NG8 6AS
Project:	Church Walk, Gravesend
Document Title:	Energy Statement
Date:	September 2022
Focus Contact Details:	Ben Matthews, Senior Sustainability Consultant Ben.matthews@focus-consultants.com
Signature:	

Focus Offices

NOTTINGHAM

Focus House
Millennium Way West Phoenix
Business Park Nottingham
NG8 6AS
T: 0115 976 5050
E: enquiries@focus-consultants.com

LONDON

45-46 Lower Marsh
London
SE1 7RG
T: 0203 096 9717
E: londonenquiries@focus-consultants.com

LEICESTER

Olympus House
Unit 1, Main Street
Kirby Muxloe
Leicestershire
LE9 2AP
T: 0116 275 8315
E: leicesterenquiries@focus-consultants.com

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1.0 Introduction

1.1 Purpose of the Report

Instructions were received from McCarthy and Stone to produce an Energy Statement for the proposed Church Walk, Gravesend development. This report has been produced to support the planning application to be submitted for the development, which is situated within the authority of Gravesham Borough Council.

This statement provides a response to the relevant planning policy objectives within the Gravesham Local Plan Core Strategy (Adopted September 2014).

1.2 Site and Building Description

The development will be located at the GRFC Bowls Club, Church Walk, Gravesend. The application seeks approval for the construction of a retirement living complex comprising of 35no. Retirement Living apartments and 27no. Shared Ownership Apartments, as well as associated parking space, landscaping and communal areas. The communal areas comprise: circulation spaces, Guest Suites, communal lounges and staff facilities.

A proposed site layout has been included in Appendix 1.

1.3 Methodology

The proposed drawings, elevations and site plans were reviewed to gain a good understanding of the development; following this the relevant policies were identified.

Full Design Stage SAP calculations have been completed to determine the approximate performance of the residential elements of the development, with representative SBEM data used for the communal areas. 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.

As assessment of renewable and low carbon technologies has been undertaken to review potential incorporation into the scheme. This report also utilises the BRE Part G Water calculator in order to demonstrate compliance with the council's water efficiency requirement.

2.0 Planning Policy

2.1 Gravesham Local Plan Core Strategy (Adopted September 2014)

The Gravesham Local Plan Core Strategy (specifically CS18 Climate Change, Water Demand Management and Carbon Reduction) has been used to determine the relevant policies for this scheme.

2.2 CS18: Climate Change

Carbon Reduction

The Council will seek to reduce the overall carbon footprint of the Borough. In particular, the Council will:

- In the context of national policy on the transition to zero carbon development via amendments to Part L of the Building Regulations, require proposals for development of the Key Sites throughout the Borough and other major development elsewhere in the Gravesend Town Centre Opportunity Area to consider the potential and include proposals for low carbon and renewable energy generation, including combined heat and power. Where choosing not to do so, applicants must submit evidence which demonstrates that compliance is not technically or financially feasible or that improved fabric energy efficiency or an allowable solution results in improved carbon saving benefits;*
- Support stand-alone decentralised, renewable or low carbon energy development where it is compatible with national policies for protecting the Green Belt and where it accords with policies in this plan, in particular those relating to Development and Design Principles, Transport, Green Infrastructure, and Heritage and the Historic Environment; and*
- Support other proposals which lead to a reduction in carbon footprint including the retrofitting of existing homes and businesses, including local initiatives based on carbon off-setting via allowable solution*

Water Demand Management

The Council will seek to manage the supply of water in the Borough and reduce the impact of new development on the supply of potable water as much as possible. In particular, the Council will:

- Require all new homes to be built to at least level 3/4 of the Code for Sustainable Homes in terms of water use (105 litres per person per day consumption). Where it can be demonstrated that a development is unable to meet these standards, or the additional standards set out below, permission will only be granted if provision is made for compensatory water savings elsewhere in the Borough;*
- Seek 5% of homes on Key Sites to act as exemplars by meeting level 5/6 of the Code for Sustainable Homes in terms of water use (80 litres per person per day consumption);*
- Require all non-residential developments of 1,000 sq m and above to meet the BREEAM "excellent" standards of water efficiency and include provision for the collection of rainwater; and*
- Support proposals to retrofit existing residential properties in ways which reduce water consumption.*

3.0 Policy Response

In the context of national policy on the transition to zero carbon development via amendments to Part L of the Building Regulations, require proposals for development of the Key Sites throughout the Borough and other major development elsewhere in the Gravesend Town Centre Opportunity Area to consider the potential and include proposals for low carbon and renewable energy generation, including combined heat and power. Where choosing not to do so, applicants must submit evidence which demonstrates that compliance is not technically or financially feasible or that improved fabric energy efficiency or an allowable solution results in improved carbon saving benefits;

3.1 Sustainable Construction and Energy Efficiency

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, which allows it to achieve compliance with all metrics under Part L 2013.

This will be achieved in this project through building fabric improvements with an uplift on the minimum requirements of Approved Document Part L, and also specification of efficient mechanical and electrical services, including a number of 'add-on' measures to improve efficiency and performance.

The table below demonstrates how the specification of the Church Walk, Gravesend development compares to the limiting values and minimum efficiencies allowed within Part L 2013:

Building Element	Limiting Part L 2013 Specification	Proposed Specification
External Walls U-Value	0.30	0.20
Roof U-Value	0.20	0.11
Ground Floor U-Value	0.25	0.10
Window U-Value	2.00	1.36
Party Wall U-Value	0.20	0.00
Door U-Value	2.00	1.40
Heating Efficiency	88%	100%
Pressure Test	10.00	4.50
Thermal Bridge Y-Value	0.15	0.06 (Average)
Low Energy Lighting	75%	100%

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 all dwellings is a fully filled cavity with Masonry block that achieves a u-value of 0.20W/m²K. 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 4.50 m³/(h.m²) for the apartments, 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 ensure that thermal performance is enhanced by minimising heat and energy losses through thermal bridges and air gaps.

McCarthy Stone utilise panel heating in conjunction with thermal mass to regulate internal temperature, which achieves efficiencies up to 100%. This is a further improvement on the minimum efficiency required by individual gas combination boilers in the Notional Building.

Another key element to the specification of the proposed development is the utilisation of mechanical ventilation with heat recovery (MVHR) in all apartments. This system allows warm stale air produced by occupancy and internal activities to be extracted from the building; however, the heat within this air is retained, at up to 95% efficiency, and transferred into cool fresh air being brought into the building from outside. The use of MVHR reduces the need to use the main heating system as it provides background heating through occupation (as well as improving comfort levels through the flow of fresh air).

Due to the continuing decarbonisation of the UK energy supply, electricity is increasingly becoming the low carbon choice for heating strategy, and it is expected this will continue as more renewable electricity sources become operational and fossil fuel sources are phased out. The current proposed notional dwelling for the Part L1A 2025 Future Homes Standard includes low carbon electric heating. Therefore, the use of MVHR in this scheme can be seen to be ahead of the curve on this element, future proofing the scheme when compared against future Part L regulation changes.

In communal areas, lighting occupancy sensors will be utilised that switch off or dim the lighting when occupants are not present in areas such as circulation spaces, toilets or storage areas. This prevents lighting from being left on when it is not needed, therefore saving energy.

Metering and sub-metering equipment for the heating system will also be used that help identify areas where more energy than expected is being used, such as heaters being left on at times when they are not needed or where there are defective elements present. 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. These elements along with the incorporated heating and ventilation systems ensure enhanced energy efficiency and reduce CO₂ emissions, thus mitigating the impacts of climate change and ingraining principles of sustainable construction.

3.1.1 Carbon Emissions Breakdown

To understand the overall proposed carbon emissions of the domestic part of the development, SAP and SBEM calculations have been undertaken. The non-domestic emissions have been calculated based on a similar scheme of size and nature.

Table 2 below demonstrates the development's approximate breakdown of carbon emissions based on the calculations completed, against the Part L Baseline.

Table 2: Carbon Emission Breakdown	
Domestic	Total Emission Rate (kg/CO ₂ /yr)
Target Emission Rate (TER)	90,509.91
Dwelling Emission Rate (DER)	88,017.26
Non-Domestic	Total Emission Rate (kg/CO ₂ /yr)
Target Emission Rate (TER)	61,092.01
Building Emission Rate (BER)	60,906.32
Total Carbon Reduction	2,678.34
Percentage Reduction (%)	1.77%

As a result of the SAP outputs for the development, Table 2 shows the Target CO₂ emissions (TER) of the development to be 90509.91 kg/CO₂/yr. The Predicted Carbon Emissions (DER) are demonstrated to be an improvement against this amount, currently modelled to achieve 88017.26 kg/CO₂/yr.

As a result of the sample SBEM output for the development, Table 2 shows the Target CO₂ emissions (TER) of the development to be 61,092.01 kg/CO₂/yr. The Predicted Carbon Emissions (BER) are demonstrated to be an improvement against this amount, currently modelled to achieve 60,906.32 kg/CO₂/yr.

Overall, this is a 2,678.34 kg/CO₂/yr reduction in carbon emissions, approximately 1.77% reduction against the notional amount. This highlights the design specification performance of the development being an uplift against Building Regulations requirements.

3.2 CS18 Climate Change – Stand Alone Renewable or Low Carbon Development

Support stand-alone decentralised, renewable or low carbon energy development where it is compatible with national policies for protecting the Green Belt and where it accords with policies in this plan, in particular those relating to Development and Design Principles, Transport, Green Infrastructure, and Heritage and the Historic Environment;

The development at Church Walk, Gravesend is not a stand-alone decentralised, renewable or low carbon energy development, therefore this criterion is not applicable.

3.3 Renewable and Low Carbon Technology Options Review

3.3.1 Small-Scale Wind Turbines

Wind turbines convert the power in the wind into electrical energy using rotating wing-like blades to drive a generator. Similar to Photovoltaic panels (PV), they can either be grid connected or used to charge batteries or for on-site use.

Wind turbines can range from small domestic turbines producing hundreds of watts to large offshore turbines with capacities of 3MW and diameters of 100m. A detailed study for urban deployment should take into account wind speed and turbulence and potential noise pollution issues.

There are two main types of turbine available, horizontal or vertical axis. Horizontal axis turbines, (sometimes referred to a propeller type) range in scale from 0.5m to 100m diameter. Vertical-axis turbines rotate around a vertical axis, resulting in lower rotor tip speed and reduced noise and vibration issues.

In both cases, the output of the turbine will be dependent upon both the start-up speed of the blades and the specific gearing and generator design.

The most common cause of poor performance is poor siting of the turbine. The turbulent wind conditions often found in urban locations undermines the performance of horizontal scale turbines as they have to regularly rotate Yaw to face the oncoming wind.

This process reduces the proportion of energy that the turbine can capture. Vertical axis turbines are designed to avoid this issue by always having blades facing the wind.

These performance issues mean that as a general rule, horizontal turbines are better suited to less turbulent wind regimes, whilst vertical axis turbines offer potential for installation in urban environments. In either case, the turbine must be mounted at a reasonable height to ensure that it can 'see' the wind. For urban deployment, this means that roof mounted turbines still require a mast and the structural design of the building must be developed to incorporate the additional loads and stresses.

Due to the likely issues associated with permissions required for such installation and the potential for nuisance noise in a residential area, the use of wind turbines has not been considered appropriate for the scheme.

3.3.2 Solar Thermal Heating

Solar thermal panels collect solar radiation to heat water that can then be used for either space heating or domestic hot water. There are two types of competing solar thermal technologies; flat-plate and evacuated tube.

Evacuated tube collectors are more efficient and therefore require less active collector array than the equivalent output of a flat plate system. However, in general, capital costs for the two technologies are comparable.

The system consists of solar collectors that are often roof mounted. Liquid is passed through the solar collectors and then to a heat exchanger in a domestic hot water cylinder, which will also have a top-up heat source (gas, biomass, or electricity) to ensure reliability of supply.

Solar thermal collectors can still produce energy from diffuse sunlight and are therefore less susceptible to performance reductions from orientation and angle compared to PV.

A typical 3-4m² collector area system (area dependent on technology) is capable of providing 50% the annual domestic hot water demand for a typical 2-3 bed house. The proportion of hot water provided varies over the course of a year, with the system achieving 100% coverage during the summer months and 5% during the winter.

It is highly unlikely that it would be the most efficient or cost-effective method of water heating. As such, the use of solar thermal has not been considered for this scheme.

3.3.3 Heat Pumps

A ground source heat pump (GSHP) can harness the energy from the ground for use within buildings. This makes it possible to use the heat in the ground during the winter months to meet a developments heating need. In the summer months it is also possible to cool buildings using ground temperatures that are lower than ambient air.

A typical ground system consists of a ground to water heat exchanger often called the 'ground loop' or 'ground coil', a heat pump and a distribution system. Water (or other solution) is passed round the system 'absorbing' heat from the ground and upgrading this heat via the heat pump into the building.

The heat exchanger can consist of either a vertical borehole system, where long pipes are driven deep into the ground or a horizontal trench system, which operates at shallower depths. The performance of a HP is measured using a COP (coefficient of performance). This defines the amount of useful energy output from the heat pump compared to the energy input. Typical systems can achieve a COP in the region of 350-400%.

The COP is maximised where the flow temperature of the heating circuit is between 35-40°C and therefore GSHP are ideally suited for connection to under-floor heating. The potential scale of GSHP is only limited by the availability of land for the ground loop and reasonable levels of energy abstraction. Typical costs for ground source heat pumps range from £800/kW for trench systems to £1,500/kW for vertical borehole systems.

The constraints and nature of the proposed site do not lend well to the use of ground source heat pumps and as a result, this technology has not been considered to be feasible.

Air source heat pumps (ASHP) work in a similar way to ground source and are able to extract heat from the outdoor air, even when the outside temperatures are very low, for use in space heating and hot water systems. ASHP are also available in air – air formats, in which the heat is emitted into the building through ductwork, in which instance can also provide the option for air conditioning or cooling in summer, however they cannot serve hot water systems.

These systems only require space for an external condenser unit, which makes them much simpler to install when compared to GSHP. These systems also offer a significant reduction in carbon emissions from that of a conventional heating system (especially electric heating systems).

Given site constraints (both in terms of space required and potential noise and visual nuisance) as well as financial viability reasons, currently heat pumps are not considered appropriate for the apartment element of the proposed development. Subject to ongoing client review, they could be considered, but this is not the current preferred strategy.

3.3.4 Photovoltaics

Photovoltaic 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. PV systems can be connected to the grid or battery arrays in remote locations. Grid connected systems consist of PV arrays connected to the grid through a charge controller and an inverter. PV cells are more efficient at lower temperatures so good ventilation should be allowed around the PV modules where possible. PV does require outdoor space e.g. a 3kW system needs around 226 sq. ft.

Solar panels themselves are not sufficient to provide a constant supply of electricity on their own as they do not have the capacity to store energy for later use in the day. To store energy, they also require the addition of a battery bank, making the installation more complex and expensive and also take up more space. For PV to be most efficient, it would require the most energy intensive equipment, e.g. washing machines and dishwashers, to be used during the day, because at night power would have to be taken from the grid. It is unrealistic to expect all residents and energy using building processes to use power during the day only.

McCarthy Stone have opted for more highly efficiency systems such as panel heating and MVHR, and have invested in reducing carbon through robust building fabric and intelligent construction to reduce heat loss and reduce the energy demand on heating. Energy efficient lighting and white goods will also be installed to further mitigate carbon emissions.

3.3.5 Combined Heat and Power

CHP is a technology that produces electricity and thermal energy at high efficiencies using a range of technologies and fuels. With on-site power production, losses are minimized and heat that would otherwise be wasted is applied to facility loads in the form of process heating, steam, hot water, or even chilled water. CHP can be located at an individual facility or building, or it can be a district energy, microgrid, and/or utility resource that provides power and thermal energy to multiple end-users. CHP equipment can provide resilient power 24/7 in the event of grid outages, and it can be paired with other distributed energy technologies like solar photovoltaics (PV) and energy storage.

By capturing and using heat that would otherwise be wasted and by avoiding distribution losses, CHP can achieve efficiencies of over 80 percent, compared to 50 percent for typical technologies (e.g., conventional electricity generation and an on-site boiler). Because of this increased efficiency, CHP systems can emit less carbon emissions than separate heat and grid power.

The two most common CHP system configurations are:

- Combustion turbine, or reciprocating engine, with heat recovery unit

Combustion turbine or reciprocating engine CHP systems burn fuel (natural gas, oil, or biogas) to turn generators to produce electricity and use heat recovery devices to capture the heat from the turbine or engine. This heat is converted into useful thermal energy, usually in the form of steam or hot water.

- Steam boiler with steam turbine

With steam turbines, the process begins by producing steam in a boiler. The steam is then used to turn a turbine to run a generator to produce electricity. The steam leaving the turbine can be used to produce useful thermal energy. These systems can use a variety of fuels, such as natural gas, oil, biomass, and coal.

Full CHP systems are generally only suitable for sites where there is a constant load requirement for space heating and hot water demand with on-site power in order to maximise the cogeneration cost. For larger scale systems heat and power demand need to remain fairly consistent for maximum efficiency and a good return on investment. This particularly applies to energy centre heating systems which are powered continuously via larger systems. As such CHP has been deemed unsuitable for space heating and hot water demand for a retirement complex where the heating and water demand will fluctuate throughout the day.

3.3.6 Mechanical Ventilation with Heat Recovery

Mechanical Ventilation with Heat Recovery (MVHR) is a continuous source of ventilation that extracts stale, moisture-laden air from a building and resupplies fresh, filtered air back in, resulting in a comfortable and condensation free environment all year round.

MVHR systems continuously extract moist, stale and polluted air from the wet rooms of a property such as bathrooms, utility rooms and kitchens.

This air is passed over a heat exchange cell which recovers and retains the heat that would otherwise be lost from the extracted air. This heat is then transferred to incoming fresh, filtered air that the unit is resupplying back into habitable rooms such as bedrooms and living rooms, resulting in minimal heat losses and a more comfortable indoor environment.

MVHR can recover up to 95% of the heat of the extracted air therefore reducing the need to use the main heating system and also requires minimal maintenance.

For McCarthy Stone, following research and evaluation over several years, MVHR has been adopted as their preferred low carbon heating technology. McCarthy Stone put their customers at the heart of product choice, it is the attributes of MVHR's high performance by delivering heating comfort and energy reduction benefits to running costs, added to the low maintenance costs, which is vital to reduce whole life costs of a scheme for all residents. It is this that makes it one of their preferred renewable approaches for CO2 reduction and energy reduction targets.

3.4 Water Demand Management

Require all new homes to be built to at least level 3/4 of the Code for Sustainable Homes in terms of water use (105 litres per person per day consumption). Where it can be demonstrated that a development is unable to meet these standards, or the additional standards set out below, permission will only be granted if provision is made for compensatory water savings elsewhere in the Borough;

The Code for Sustainable Homes was discontinued by the British government on the 22nd April 2015, following the technical standards review. However, in order to comply with the limit of 105 litres/person/day. The Church Walk, Gravesend development will incorporate efficient, water saving sanitaryware to meet this goal. Where this is not possible, flow restrictors will be installed to limit water use of sanitaryware items.

A representative specification is shown below in Table 3, whilst the final flow rates of individual sanitaryware items may change as detailed design progresses, the 105 Litre limit will be maintained. A full breakdown of calculations is available in Appendix 3.

Table 3: Proposed Sanitaryware Specification Flow Rates	
Component	Water Usage
WC's	4.5 Litres (Full Flush Volume), 3 Litres (Part Flush Volume)
Showers	7 Litres/Minute
Wash-hand basin taps	5 Litres/Minute
Kitchen taps	5 Litres/Minute
Washing Machine	8.29 Litres/kg
Dishwasher	1.25 Litres/Place Setting

The proposed specification shown in Table 3 achieves 94.5 litre/person/day, therefore achieving the requirement of 105 litres/person/day.

3.4.1 CS18 Water Demand Management

Seek 5% of homes on Key Sites to act as exemplars by meeting level 5/6 of the Code for Sustainable Homes in terms of water use (80 litres per person per day consumption);

The Development at Church Walk, Gravesend is not located on a Key Site. Therefore, this criterion is not applicable.

3.4.2 CS18 Water Demand Management

Require all non-residential developments of 1,000 sq m and above to meet the BREEAM" excellent" standards of water efficiency and include provision for the collection of rainwater;

The development proposal at Church Walk, Gravesend is a residential development therefore this criterion does not apply.

4.0 Conclusion

This statement has reviewed the proposed development at Church Walk, Gravesend, which consists of 35no. Retirement Living apartments, 27 no. shared apartments, as well as associated parking space, landscaping and communal areas, and has provided an assessment of the proposed scheme against The Gravesham Local Plan Core Strategy (specifically policy CS18: Climate Change - Carbon Reduction, and Water Demand Management).

The statement has highlighted that the scheme currently proposes to utilise a good thermal envelope to minimise heat loss, as well as efficient heating and lighting systems, which will drive energy efficiency in the building along with an MVHR system to retain heat produced by the building and reduce the need for utilising the main heating system.

On 15 June 2022 an important update to the Building Regulations took place which included an uplift to Part L. The new Part L 2022 focus on low carbon heating systems. Even though this scheme is assessed against building regulations part L 2013, the use of MVHR in this development will contribute to reduced energy usage from the main heating system and thus CO₂ emissions and can be seen to be ahead of the curve on this element, future proofing the scheme when compared against future Part L regulation changes.

Overall, following SAP and sample SBEM calculations completed, the proposed development is set to reduce carbon emissions by 2,678.34 kg/CO₂/yr, equating to an approximate 1.77% reduction against the notional amount, reflective of the robust fabric and specification set to be employed.

A proposed sanitaryware specification has also been provided in order to comply with Policy CS18 – Water Demand Management, and a water requirement of 105 litres/use/person/day. The specification proposed achieves a total of 94.5 litres/use/person/day, meeting the requirement.

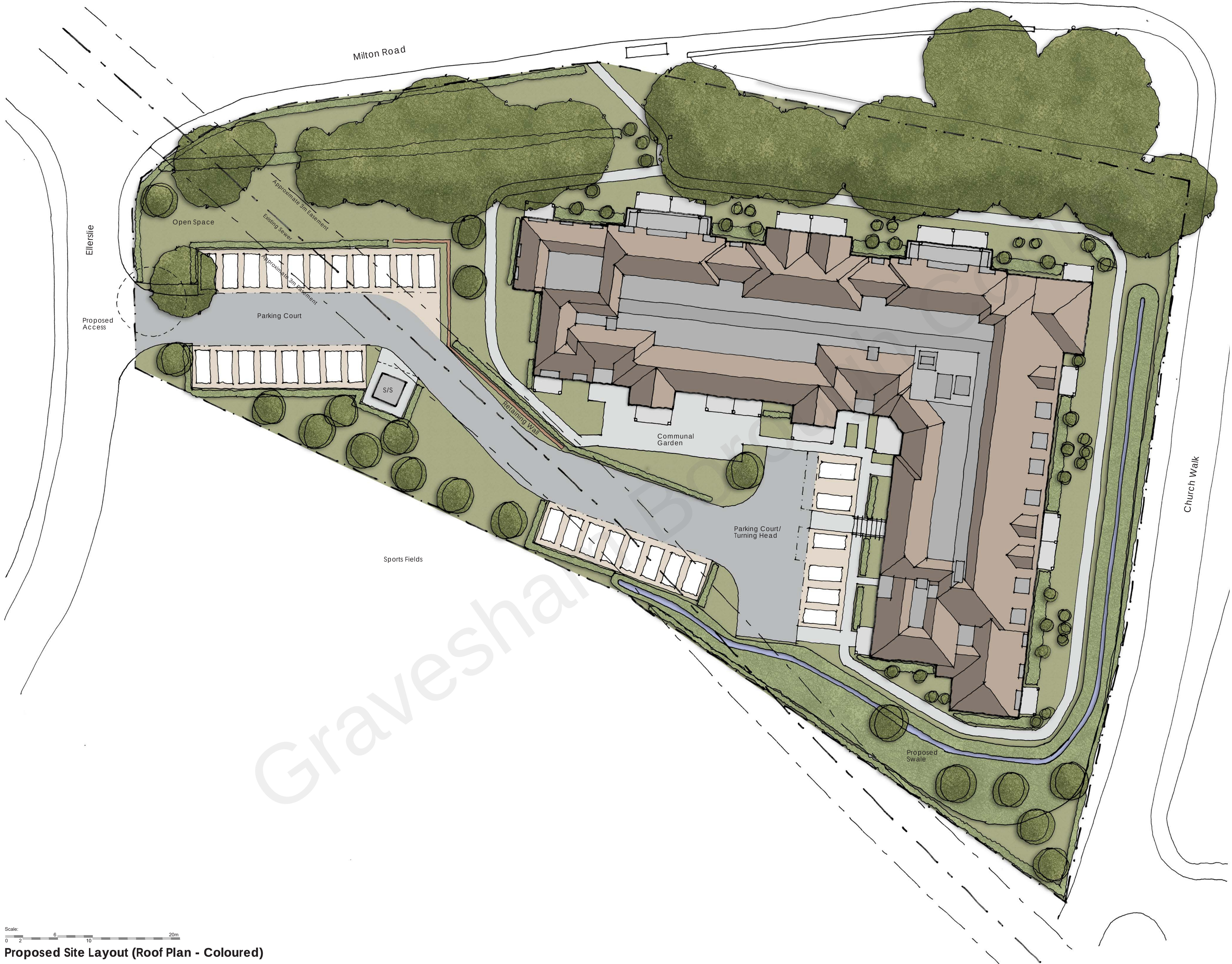
Whilst the listed water sanitaryware flow rates are the preferred specification at this present time, the strategy may be subject to change as design develops further. Nonetheless, it will be ensured that where any changes are made, the policy requirements listed will be maintained.



Appendix 1

Proposed Site Plan

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Proposed Site Layout (Roof Plan - Coloured)
Proposed Retirement Living Development, Bowls Club, Gravesend

Revision Note & Date				Initials
Rev	Date	Note		
A	20/10/2022	Minor amendments following Drainage Engineer comments.		AK
B	02/11/2022	Amendment to parking layout.		PTW

ON
ARCH
TECT
URE

Canterbury Studio
Logan House, St Andrews Close
Canterbury
CT1 2RP
info@onarchitecture.co.uk
onarchitecture.co.uk
01227 634334

Project Title
Proposed Retirement Living Development
Bowls Club, Gravesend
Client Details
McCarthy Stone

Drawing Title
Proposed Site Layout
(Roof Plan - Coloured)

Scale		Date	Drawn	Checked
1:200 @A1		September 2022	DK	RD
Drawing Status				
PINKFILE				
Project Number		Drawing Number	Drawing Revision	
LSE-2821-03-AC-11			B	



Appendix 2

Energy Calculations (available on request due to size)



Appendix 3

Part G Water Calculations



Job no:	R3141
Date:	20/09/2022
Assessor name:	Adam Revill
Registration no:	
Development name:	Church Walk, Gravesend

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WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS - (BASIC CALCULATOR)

		Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7		Type 8		Type 9		Type 10	
House Type:		Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7		Type 8		Type 9		Type 10	
Description:		Specification 1																			
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
Is a dual or single flush WC specified?		Dual		Select option:		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		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
	Part flush volume	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)	5	9.48		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		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:	
Bath	Capacity to overflow	0	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Shower	Flow rate (litres / minute)	7	39.20		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		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Has a washing machine been specified?		No		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:	
Washing Machine	Litres / kg	8.29	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?		No		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:	
Dishwasher	Litres / place setting	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?		No		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:		Select option:	
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
Calculated Use		98.3		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	
Code for Sustainable Homes	Total Consumption	89.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
	Mandatory level	Level 3/4		-		-		-		-		-		-		-		-		-	
Building Regulations 17.K	External use	5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total Consumption	94.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
	17.K Compliance?	Yes		-		-		-		-		-		-		-		-		-	