39 Fitzjohn's Avenue
London
NW3 5JY

Sustainability Statement

Prepared For:
39 Fitzjohn's Avenue LTD

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1. Executive Summary

In support of the planning application for the proposed development at 39 Fitzjohn's Avenue, and to comply with the London Plan and Camden Council's requirements on environmental sustainability and efficient energy design a Sustainability Statement has been produced.

The Sustainability Statement contained herein describes the numerous planning policies specified both by the regional requirements of the London Plan and local development requirements stipulated by Camden Council.

This document provides a brief summary of how the proposals comply with the relevant policies, and refer to other documents submitted in support of the planning application.

2. Introduction

In support of the planning application, a Sustainability Statement that examines the national, regional, and local planning requirements in terms of social, economic, and environmental sustainability for the proposed development at 39 Fitzjohn's Avenue, London, has been compiled on request of the Applicant.

The existing house is a detached part 2 and part 3 storey private dwelling with accommodation at basement, ground, first, and second floors with additional accommodation in the roof space which will be converted into 35 apartments.

The existing standalone dwelling at 39a Fitzjohn's Avenue will form part of a separate planning application, the energy statement stipulated here is for the 35 units at 39 Fitzjohn's Avenue.

The Sustainability Statement contained herein describes how the proposed development will meet the following planning requirements.

London Plan 2021

The London Plan's Chapter 9 'Sustainable Infrastructure' describes a number of policies to be implemented by all projects in the Greater London Area. All the policies have been listed below, and where these policies have specific requirements for planning decisions, a detailed description of how each of these have been addressed in Section 3 of this Sustainability Statement.

Policy SI 1 Improving air quality
Policy SI 2 Minimising greenhouse gas emissions
Policy SI 3 Energy infrastructure
Policy SI 4 Managing heat risk
Policy SI 5 Water infrastructure
Policy SI 6 Digital connectivity infrastructure
Policy SI 7 Reducing waste and supporting the circular economy
Policy SI 8 Waste capacity and net waste self-sufficiency
Policy SI 9 Safeguarded waste sites
Policy SI 10 Aggregates
Policy SI 11 Hydraulic fracturing (Fracking)
Policy SI 12 Flood risk management
Policy SI 13 Sustainable drainage
Policy SI 14 Waterways – strategic role
Policy SI 15 Water transport
Policy SI 16 Waterways – use and enjoyment
Policy SI 17 Protecting and enhancing London's waterways

Camden Local Plan

Camden Council's Local Plan London Plan's Chapter 8 'Sustainability and Climate Change' describes a number of policies to be implemented by all proposed developments within the London Borough of Camden. All the policies have been listed below, and where these policies have specific requirements for planning decisions, a detailed description of how each of these have been addressed in Section 4 of this Sustainability Statement.

CC1 Climate Change Mitigation
CC2 Adaptation to Climate Change
CC3 Water and Flooding
CC4 Air Quality
CC5 Waste

3. London Plan Policies

3.1. Policy SI 2 Minimising Greenhouse Gas Emissions

Policy Details

Planning Decisions

A Major development should be net zero-carbon.151 This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

1 Be lean: use less energy and manage during operation

2 Be clean: exploit local energy resources and supply energy efficiently and cleanly

3 Be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on site

4 Be seen: monitor, verify and report on energy performance

B Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.

C A minimum on-site reduction of at least 35 per cent beyond Building Regulations152 is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

1 through a cash in lieu contribution to the borough's carbon offset fund, or

2 off-site provided that an alternative proposal is identified and delivery is certain.

D Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

E Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

F Development proposals referable to the Mayor should calculate whole lifecycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

Feasibility

Following the Mayors guidance and using the Be Lean, Be Clean, Be Green energy hierarchy, the proposed development has been modelled to demonstrate that the development is targeting a carbon emission reduction of 55% against a Part L 2013 compliant building for the new build elements of the scheme.

In order to achieve this reduction the scheme has incorporated the use of air source heat pumps to provide the space heating and hot water for the development.

For further detail demonstrating how the proposed development attempts to comply with this specific policy please refer to the ***Energy Statement*** document submitted in support of this planning application.

3.2. Policy SI 3 Energy Infrastructure

Policy Details

A Boroughs and developers should engage at an early stage with relevant energy companies and bodies to establish the future energy and infrastructure requirements arising from large-scale development proposals such as Opportunity Areas, Town Centres, other growth areas or clusters of significant new development.

B Energy masterplans should be developed for large-scale development locations (such as those outlined in Part A and other opportunities) which establish the most effective energy supply options. Energy masterplans should identify:

1 major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals and social housing)

2 heat loads from existing buildings that can be connected to futurephases of a heat network

3 major heat supply plant including opportunities to utilise heat from energy from waste plants

4 secondary heat sources, including both environmental and waste heat

5 opportunities for low and ambient temperature heat networks

6 possible land for energy centres and/or energy storage

7 possible heating and cooling network routes

8 opportunities for futureproofing utility infrastructure networks to minimise the impact from road works

9 infrastructure and land requirements for electricity and gas supplies

10 implementation options for delivering feasible projects, considering issues of procurement, funding and risk, and the role of the public sector

11 opportunities to maximise renewable electricity generation and incorporate demand-side response measures.

C Development Plans should:

1 identify the need for, and suitable sites for, any necessary energy infrastructure requirements including energy centres, energy storage and upgrades to existing infrastructure

2 identify existing heating and cooling networks, identify proposed locations for future heating and cooling networks and identify opportunities for expanding and inter-connecting existing networks as well as establishing new networks.

D Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:

1 the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:

a. connect to local existing or planned heat networks

b. use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)

c. use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network)

d. use ultra-low NOx gas boilers

2 CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality

3 where a heat network is planned but not yet in existence the development should be designed to allow for the cost-effective connection at a later date.

E Heat networks should achieve good practice design and specification standards for primary, secondary and tertiary systems comparable to those set out in the CIBSE/ADE Code of Practice CP1 or equivalent.

Feasibility

After study of the both the London Heat Map, and the Camden energy network map as shown in the Energy Statement, the site sits outside the reach of any existing or proposed district energy centres. There is a new energy network cluster being studied close to the site, however the development site is outside this zone and outside the reach of the proposed and future energy network corridors. Therefore, connecting to an existing DE network is not a feasible solution for this development.

Consideration and comparison of the technical viability, indicative costs, and contribution towards the carbon emissions reduction for the following systems

1. Wind Turbines;
2. Ground Sourced Heating;
3. Air Sourced Heat Pumps;
4. Solar Photovoltaic (PV) panels; and
5. Solar Water Heating Systems,

The proposals for the proposed development include for a central energy centre consisting of air source heat pumps which will provide heat and domestic hot water for all the residential units within the proposed development for a single heat source.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Energy Statement*** document submitted in support of this planning application.

3.3. Policy SI 4 Managing Heat Risk

Policy Details

Planning decisions

A Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.

B Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

1. reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure
2. minimise internal heat generation through energy efficient design
3. manage the heat within the building through exposed internal thermal mass and high ceilings
4. provide passive ventilation
5. provide mechanical ventilation
6. provide active cooling systems

Feasibility

The proposed development has gone through a number of design iterations to minimise the potential of summer heat gains, this included energy efficient design, fabric optimisation, and mechanical ventilation where required.

Minimising Internal Heat Generation through Energy Efficient Design

The servicing infrastructure will be designed to minimise heat gains within occupied spaces, and utilising highly efficient pipe insulation to minimise distribution heat losses.

Reducing the Amount of Heat Entering the Building in Summer

Although the conservation area nature of this development prohibits the inclusion of shading elements to the façade elements being retained, the u-values for the development will be improved significantly as described in the Energy Statement, meeting the target requirements set out by Camden.

Passive Ventilation

The building's façade has been designed to incorporate openable windows to allow a mixed mode ventilation strategy to the residential units

Active Cooling

There will be no active cooling proposed for the building.

Overheating Risk Analysis

Dynamic thermal modelling has been carried out in line with TM59 overheating modelling guidelines (included within the appendix of the Energy Statement).

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Energy Statement*** document and **Overheating Analysis Report** submitted in support of this planning application.

3.4. Policy SI 5 Water Infrastructure

Policy Details

Development proposals should:

A through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)

B achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent (commercial development)

C incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.

Feasibility

Water Efficiency

Low flow and flush sanitary ware will be installed throughout to reduce the need for potable water inside the apartments. The target of 105 l/person/day has been achieved (refer to the ***Appendix of this report*** for water consumption calculations).

Rainwater Harvesting

A simple rainwater harvesting system will be installed to reduce the potable water required for the irrigation of the communal gardens. A number of different options have been investigated ranging from simple water butts to a centralised communal pumped system.

The localised water butt system would be gravity fed by individual downpipes located throughout the gardens to ensure adequate coverage.

Alternatively a centralised communal system would collect all rainwater from roof areas, and store this in an underground buried tank in the garden. This would then be pumped and used to feed a number of taps located throughout the gardens to serve for irrigation only.

Further development of the design will determine which system is the most appropriate option for the proposed development.

Water meters with a pulsed output (to allow linkage to a BMS) will be installed on all mains supplies. The main incoming meter output will be linked to a leak detection system or BMS alarm system to indicated major system leaks.

3.5. Policy SI 12 Flood Risk Management

Policy Details

A A Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.

B Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

D Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor willwork with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

E Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

F Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Unless exceptional circumstances are demonstrated for not doing so, development proposals should be set back from flood defences to allow for any foreseeable future maintenance and upgrades in a sustainable and cost-effective way.

G Natural flood management methods should be employed in development proposals due to their multiple benefits including increasing flood storage and creating recreational areas and habitat.

Feasibility

The London Borough of Camden Flood Risk Management Strategy shows the site as not being in a critical drainage area.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Surface Water Drainage Assessment & Outline SUDs Strategy*** submitted in support of this planning application.

3.6. SI 13 Sustainable Drainage

Policy Details

A Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.

B Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)

2) rainwater infiltration to ground at or close to source

3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)

4) rainwater discharge direct to a watercourse (unless not appropriate)

5) controlled rainwater discharge to a surface water sewer or drain

6) controlled rainwater discharge to a combined sewer.

C Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.

D Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation

Feasibility

Infiltration techniques have been considered for surface water discharge. British Geological Survey (BGS) records shows that the site is underlain by London Clay Formation. This suggests that ground conditions are not suitable for infiltration techniques.

Surface water discharge from the roof will be harvested for irrigation of planned planting (refer to section on Water efficiency).

Surface water attenuation has also been considered for the proposed development. Calculations submitted as part of a separate SUDs strategy indicates that 45m^3 of attenuation will be required, and after assessment of the SUDs hierarchy the proposals recommend the inclusion of:

- 200mm thick storage layer, underlying 150m^2 permeable paving, providing 30m^3 of attenuation storage.
- An underground attenuation tank providing 15m^3 of storage

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Surface Water Drainage Assessment & Outline SUDs Strategy*** submitted in support of this planning application.

4. Camden Local Plan Policy

4.1. Policy CC1 Climate Change Mitigation

Policy Details

The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

We will:

a promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;

b require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;

c ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;

d support and encourage sensitive energy efficiency improvements to existing buildings;

e require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and

f expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:

g working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;

h protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and

i requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.

To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

Feasibility

In order to maximise carbon reductions, the design team has followed the "Be Lean, Be Clean, Be Green" energy hierarchy to demonstrate that the development will achieve the 35% improvement in 2013 Part L Building Regulations, to comply with the London Plan and Camden's sustainability requirements and provide offset payments for all outstanding emissions (if any).

This study has recommended that the Proposed Development be supplied with a highly efficient air source heat pump system to provide the space heating, cooling, and domestic hot water for the development.

The technologies described above in combination with low flow/flush fixtures, efficient lighting, high performance glazing, free cooling techniques, green materials, and other sustainable techniques will ensure the development meets the requirements stipulated by Camden Council on Climate Change Mitigation.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Energy Statement*** submitted in support of this planning application.

4.2. Policy CC2 Adaptation to Climate Change

Policy Details

The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:

a the protection of existing green spaces and promoting new appropriate green infrastructure;

b not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;

c incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and

d measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

Sustainable design and construction measures

The Council will promote and measure sustainable design and construction by:

e ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;

f encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;

g encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve "excellent" in BREEAM domestic refurbishment; and expecting non-domestic developments of 500 sqm of floor space or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019.

Feasibility

Green Infrastructure

Due to the sensitive nature of the building and its location within a conservation area, modifications and the extension must be appropriate to this context.

Landscaping across the site will be enhanced working with the existing features so that the density of planting and the capacity to provide privacy screening is enhanced.

In the rear garden the existing lawn and borders will be reinstated with new soft planting in surrounding beds. Existing and new paths will be re-paved with permeable materials.
Lightwells will be paved in high quality materials including permeable paving and external railings will be of traditional design.

However, none of the adjacent green space, trees or planting will be removed as part of the proposed refurbishment. Because the building footprint is not increasing, there is are no increases in run off expected from the development.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Design and Access Statement*** document submitted in support of this planning application.

Surface Water Reduction and SUDS

Infiltration techniques have been considered for surface water discharge. British Geological Survey (BGS) records shows that the site is underlain by London Clay Formation. This suggests that ground conditions are not suitable for infiltration techniques.

Surface water discharge from the roof will be harvested for irrigation of planned planting.

Surface water attenuation has also been considered for the proposed development. Calculations submitted as part of a separate SUDs strategy indicates that 45m^3 of attenuation will be required, and after assessment of the SUDs hierarchy the proposals recommend the inclusion of:

- 200mm thick storage layer, underlying 150m^2 permeable paving, providing 30m^3 of attenuation storage.
- An underground attenuation tank providing 15m^3 of storage

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Surface Water Drainage Assessment & Outline SUDs Strategy*** submitted in support of this planning application.

Overheating and Cooling Hierarchy

The proposed development has gone through a number of design iterations to minimise the potential of summer heat gains, this included energy efficient design, fabric optimisation, and mechanical ventilation where required.

The requirement for cooling has been completely eliminated, and dynamic thermal modelling has been carried out in line with TM59 overheating modelling guidelines (included within the appendix of the Energy Statement).

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Energy Statement*** document submitted in support of this planning application.

Green & Blue Roofs, Green Walls

Due to the sensitive nature of the building and its inclusion in a conservation zone, modifications and the extension must be appropriate to this context. Opportunities for green areas at upper levels are limited by the nature of the building, however an extensive rear landscape area includes significant green infrastructure.

The SUDs strategy report has also considered the inclusion of blue roofs but has concluded these are not feasible to incorporate to the proposed development.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Design and Access Statement*** and ***Surface Water Drainage Assessment & Outline SUDs Strategy*** submitted in support of this planning application.

Adaptation measures for the development

Due to the sensitive nature of the building and its inclusion in a conservation zone, any future adaptability must be appropriate to this context and be carried out internally. Improved levels of insulation and air-tightness generally improving the fabric efficiency of the building, will help to transform the existing envelope and allow it to adapt better to a changing climate.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Design and Access Statement*** document submitted in support of this planning application.

BREEAM

The proposed development has assessed against the BREEAM domestic refurbishment scheme and achieves a rating of Excellent (72.92%). Camden's requirement for minimum scores for Energy (60%), Water (60%) and Materials (40%) have been achieved.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***BREEAM Pre-Assessment*** document submitted in support of this planning application.

4.3. Policy CC3 Water and Flooding

Policy Details

The Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible.

We will require development to:

a incorporate water efficiency measures;

b avoid harm to the water environment and improve water quality;

c consider the impact of development in areas at risk of flooding (including drainage);

d incorporate flood resilient measures in areas prone to flooding;

e utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and

f not locate vulnerable development in flood-prone areas.

Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.

The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.

Feasibility

Water Efficiency

Water Efficiency

Low flow and flush sanitary ware will be installed throughout to reduce the need for potable water inside the apartments. The target of 105 l/person/day has been achieved (refer to the ***Appendix of this report*** for water consumption calculations).

Rainwater Harvesting

A simple rainwater harvesting system will be installed to reduce the potable water required for the irrigation of the communal gardens. A number of different options have been investigated ranging from simple water butts to a centralised communal pumped system.

The localised water butt system would be gravity fed by individual downpipes located throughout the gardens to ensure adequate coverage.

Alternatively a centralised communal system would collect all rainwater from roof areas, and store this in an underground buried tank in the garden. This would then be pumped and used to feed a number of taps located throughout the gardens to serve for irrigation only.

Further development of the design will determine which system is the most appropriate option for the proposed development.

Water meters with a pulsed output (to allow linkage to a BMS) will be installed on all mains supplies. The main incoming meter output will be linked to a leak detection system or BMS alarm system to indicated major system leaks.

Flooding Risk

The London Borough of Camden Flood Risk Management Strategy shows the site as not being in a critical drainage area.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Surface Water Drainage Assessment & Outline SUDs Strategy*** submitted in support of this planning application.

SUDS

Infiltration techniques have been considered for surface water discharge. British Geological Survey (BGS) records shows that the site is underlain by London Clay Formation. This suggests that ground conditions are not suitable for infiltration techniques.

Surface water discharge from the roof will be harvested for irrigation of planned planting.

Surface water attenuation has also been considered for the proposed development. Calculations submitted as part of a separate SUDs strategy indicates that 45m^3 of attenuation will be required, and after assessment of the SUDs hierarchy the proposals recommend the inclusion of:

- 200mm thick storage layer, underlying 150m^2 permeable paving, providing 30m^3 of attenuation storage.
- An underground attenuation tank providing 15m^3 of storage

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Surface Water Drainage Assessment & Outline SUDs Strategy*** submitted in support of this planning application.

4.4. Policy CC4 Air Quality

Policy Details

The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.

The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.

Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.

Feasibility

The proposed development has been assessed within an Air Quality Assessment that has investigated construction impact as well as operational air quality and has concluded that the development is considered to be 'neutral' in terms of Air Quality.

For further detail demonstrating how the proposed development complies with this specific policy please refer to the ***Air Quality Assessment*** document submitted in support of this planning application.

5. Appendix 1 – Water Consumption Calculations

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	LG01
Number of Bedrooms	3	Occupancy for Calculation Purposes	4

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	2	11.20
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			11.20
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	1	6.50
Bath 2	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			13.00
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	1	180.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Capacity (l)			180.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	2
Total number of fittings			**2**
Average effective flushing volume			**3.50**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	192.82
Possible Demand (l)	112.28
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	0.00	1.46	0.00	0.00
	Pt Flush (l)	0.00	2.96	0.00	0.00
WC's (Multiple)	Volume (l)	3.50	4.42	0.00	15.47
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.02**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.75**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.75**

Assesment Result **PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	LG02
Number of Bedrooms	3	Occupancy for Calculation Purposes	4

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	3	16.80
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		3	
Total Flow (l/s)			16.80
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	2	13.00
Bath 2	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		3	
Total Flow (l/s)			19.50
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	2	360.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Capacity (l)			360.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	3
Total number of fittings			**3**
Average effective flushing volume			**3.50**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	192.82
Possible Demand (l)	112.28
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	0.00	1.46	0.00	0.00
	Pt Flush (l)	0.00	2.96	0.00	0.00
WC's (Multiple)	Volume (l)	3.50	4.42	0.00	15.47
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.02**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.75**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.75**

Assesment Result **PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	LG03
Number of Bedrooms	2	Occupancy for Calculation Purposes	3

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	2	11.20
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			11.20
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	1	6.50
Bath 2	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			13.00
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	1	180.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Capacity (l)			180.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	2
Total number of fittings			**2**
Average effective flushing volume			**3.50**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	144.62
Possible Demand (l)	84.21
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	0.00	1.46	0.00	0.00
	Pt Flush (l)	0.00	2.96	0.00	0.00
WC's (Multiple)	Volume (l)	3.50	4.42	0.00	15.47
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.02**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.75**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.75**

Assesment Result	**PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	LG04
Number of Bedrooms	1	Occupancy for Calculation Purposes	2

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	1	5.60
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Flow (l/s)			5.60
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Flow (l/s)			6.50
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	1	180.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Capacity (l)			180.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	1
Total number of fittings			**1**
Average effective flushing volume			**N/a**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	96.41
Possible Demand (l)	56.10
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	4.50	1.46	0.00	6.57
	Pt Flush (l)	3.00	2.96	0.00	8.88
WC's (Multiple)	Volume (l)	0.00	4.42	0.00	0.00
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.00**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.73**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.73**

Assesment Result	**PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	LG05
Number of Bedrooms	1	Occupancy for Calculation Purposes	2

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	2	11.20
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			11.20
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Flow (l/s)			6.50
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	1	180.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Capacity (l)			180.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	2
Total number of fittings			**2**
Average effective flushing volume			**3.50**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	96.41
Possible Demand (l)	56.14
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	0.00	1.46	0.00	0.00
	Pt Flush (l)	0.00	2.96	0.00	0.00
WC's (Multiple)	Volume (l)	3.50	4.42	0.00	15.47
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.02**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.75**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.75**

Assesment Result	**PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	TF01
Number of Bedrooms	4	Occupancy for Calculation Purposes	5

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	3	16.80
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		3	
Total Flow (l/s)			16.80
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	2	13.00
Bath 2	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		3	
Total Flow (l/s)			19.50
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	2	360.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Capacity (l)			360.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	3
Total number of fittings			**3**
Average effective flushing volume			**3.50**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	241.03
Possible Demand (l)	140.35
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	0.00	1.46	0.00	0.00
	Pt Flush (l)	0.00	2.96	0.00	0.00
WC's (Multiple)	Volume (l)	3.50	4.42	0.00	15.47
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.02**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.75**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.75**

Assesment Result	**PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	GF01
Number of Bedrooms	3	Occupancy for Calculation Purposes	4

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	4	22.40
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		4	
Total Flow (l/s)			22.40
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	3	19.50
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		3	
Total Flow (l/s)			19.50
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	3	540.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		3	
Total Capacity (l)			540.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	5
Total number of fittings			**5**
Average effective flushing volume			**3.50**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	192.82
Possible Demand (l)	112.28
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	0.00	1.46	0.00	0.00
	Pt Flush (l)	0.00	2.96	0.00	0.00
WC's (Multiple)	Volume (l)	3.50	4.42	0.00	15.47
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.02**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.75**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.75**

Assesment Result **PASS**

Water Efficiency Calculator for New Dwellings (V1f - Aug 2010)

Project Details

Adress/Reference	39 Fitzjohns Avenue NW3	Case Reference	FF01
Number of Bedrooms	2	Occupancy for Calculation Purposes	3

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin Type 1	5.60	1	5.60
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Flow (l/s)			5.60
Maximum Flow (l/s)			5.60
Average Flow (l/s)			5.60
Weighted Average Flow (l/s)			3.92
Flow for Calculation (l/s)			**5.60**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Bath 1	6.50	1	6.50
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Flow (l/s)			6.50
Maximum Flow (l/s)			6.50
Average Flow (l/s)			6.50
Weighted Average Flow (l/s)			4.55
Flow for Calculation (l/s)			**6.50**

Baths

Bath Type	Capacity to Overflow	Quantity (No.)	Total per Fitting type
Bath 1	180.00	1	180.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		1	
Total Capacity (l)			180.00
Maximum Capacity (l)			180.00
Average Capacity (l)			180.00
Weighted Average Capacity (l)			126.00
Capacity for Calculation (l)			**180.00**

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.50	3.00	1
Total number of fittings			**1**
Average effective flushing volume			**N/a**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
TBC	0.80	1	0.80
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.80
Maximum Consumption (l)			0.80
Average Consumption (l/s)			0.80
Weighted Average Consumption (l)			0.56
Consumption for Calculation (l/s)			**0.80**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting type
TBC	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			6.00
Maximum Consumption (l)			6.00
Average Consumption (l/s)			6.00
Weighted Average Consumption (l)			4.20
Consumption for Calculation (l/s)			**6.00**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Cold	8.00	1	8.00
Main Sink Hot	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			14.00
Maximum Flow (l/s)			8.00
Average Flow (l/s)			7.00
Weighted Average Flow (l/s)			5.60
Flow for Calculation (l/s)			**7.00**

Other Fittings

Waste Disposal Y/N	0
Water softner	
Consumption beyond 4% l/p/d	0.00

Use of grey water and harvested rainwater

Total Grey water from WHB taps (l)	0
Total Availble Grey Water Supply (l)	144.62
Possible Demand (l)	84.15
Grey/Rain Installed Capacity (l)	0.00
Figure for Calculation lit/person/day	0.00

Water Use Assessment

Installation Type	Unit	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush	Volume (l)	0.00	4.42	0.00	0.00
WC Dual Flush	Full Flush (l)	4.50	1.46	0.00	6.57
	Pt Flush (l)	3.00	2.96	0.00	8.88
WC's (Multiple)	Volume (l)	0.00	4.42	0.00	0.00
Taps Exc. Kitchen	Flow Rate	5.60	1.58	1.58	10.43
Bath (shower present)	(l/s)	180.00	0.11	0.00	19.80
Shower (bath present)	(l/s)	6.50	4.37	0.00	28.41
Bath Only	(l)	0.00	0.50	0.00	0.00
Shower Only	(l/s)	0.00	5.60	0.00	0.00
Kitchen Taps	(l/s)	7.00	0.44	10.36	13.44
Washing Machines	(l/kgdry)	6.00	2.10	0.00	12.60
Dishwashers	(l/place)	0.80	3.60	0.00	2.88
Waste Disposal	(l/s)	0.00	3.08	0.00	0.00
Water Softner	(l/s)	0.00	1.00	0.00	0.00
Total Calculated Water Use (l/p/day)					**103.00**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**93.73**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**98.73**

Assesment Result **PASS**