Building Services Engineering
Sustainability Consultants
Low Carbon Design

FOR:

Treehouse Educare
Boldings Brook
Dorking Road
Warnham
West Sussex, RH12 3RZ

BROADVIEW GUILDFORD RD, HORSHAM

WATER NEUTRALITY STATEMENT

Engineering Sustainability

Revision

Version No	Version Date	Status	Summary of Changes
1	14/06/24	DRAFT	-
2	02/07/24	Issue	

Author

Name	Title
R Goard	Associate Director

Distribution

Name	Organisation
Geoff Draper	Treehouse Educare
Lucy Butler	Lytle Associates

Document Control

Authorisation

Originator	RG	Date	02/07/24
Approved	MS	Date	02/07/24

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EXECUTIVE SUMMARY

This statement has been prepared by **FLATT** in support of a planning application for the redevelopment of Broadview, Guilford Road, Broadbridge Heath, Horsham, West Sussex. The proposal consists of internal remodelling of the building to create accommodation for Students and a member of Staff.

This statement responds to Horsham District Council (HDC) guidance, updated in December 2023, regarding concerns over water abstraction from the Pulborough Borehole and its affect on the Arun Valley.

A survey of the existing sanitaryware provision in the house was made. Water flow rates at existing taps and showers were measured and recorded using a flow cup. WC cisterns were measured to determine capacity for flushing and baths were measured to ascertain capacity to overflow.

It was noted that the water mains supply to the existing property is not metered.

The results from the survey were entered into a Building Regulations Part G Water efficiency calculator and determined the usage water usage in litres/person/day for the existing house at 155.41 l/p/day. This gives a resultant daily water usage of 480.92 litres using the occupancy multiplier from the HDC Web site.

The mains water usage for the proposed redevelopment was then modelled using the same methodology and incorporating highly water efficient taps and outlets. This resulted in an estimated water usage of 110.14 l/p/day. Using the HDC multiplier this results in a daily usage of 630 litres.

Rainwater harvesting is proposed to store and provide water for WC flushing. This reduces the daily water usage to 432 litres, to below that of the existing house

Resultant figures are summarised below which show water neutrality for the redevelopment of the House.

Existing House = **480 l/day**
Redeveloped House = **432 l/day**

Therefore, the proposal achieves 'Water Neutrality'.

1.0 INTRODUCTION

This statement has been prepared by **FLATT** in support of a planning application for the development at Broadview, Guilford Road, Broadbridge Heath, Horsham, West Sussex.

The proposal consists of the redevelopment of an existing 5 Bedroom House to create accommodation for Students and Staff.

This Water Neutrality Statement responds to Horsham District Council (HDC) Planning Department which has advised that the site is subject of Natural England's Position Statement for Applications within the Sussex North Water Supply Zone.

The methodology used in this statement is in accordance with Horsham District Council guidance on Water Neutrality and Planning Applications which was last updated December 2023.

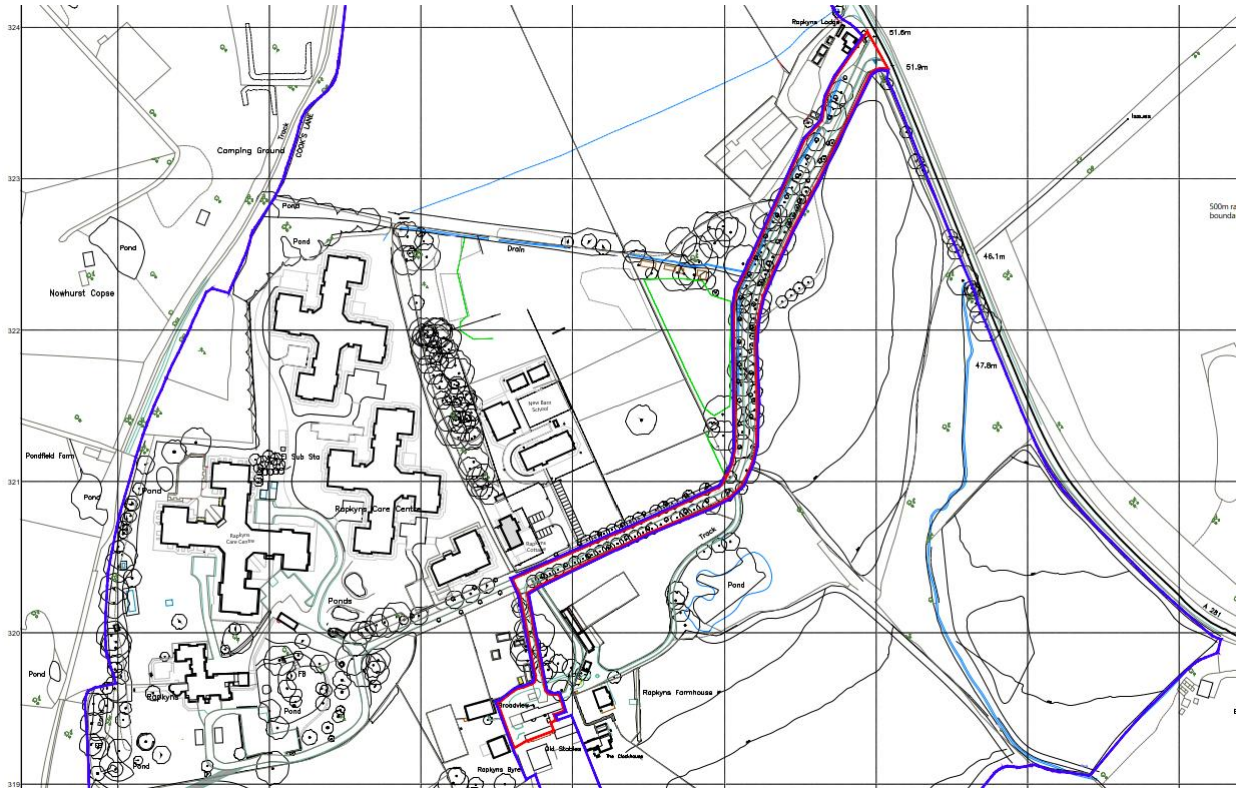


Figure 1. Site Location Plan

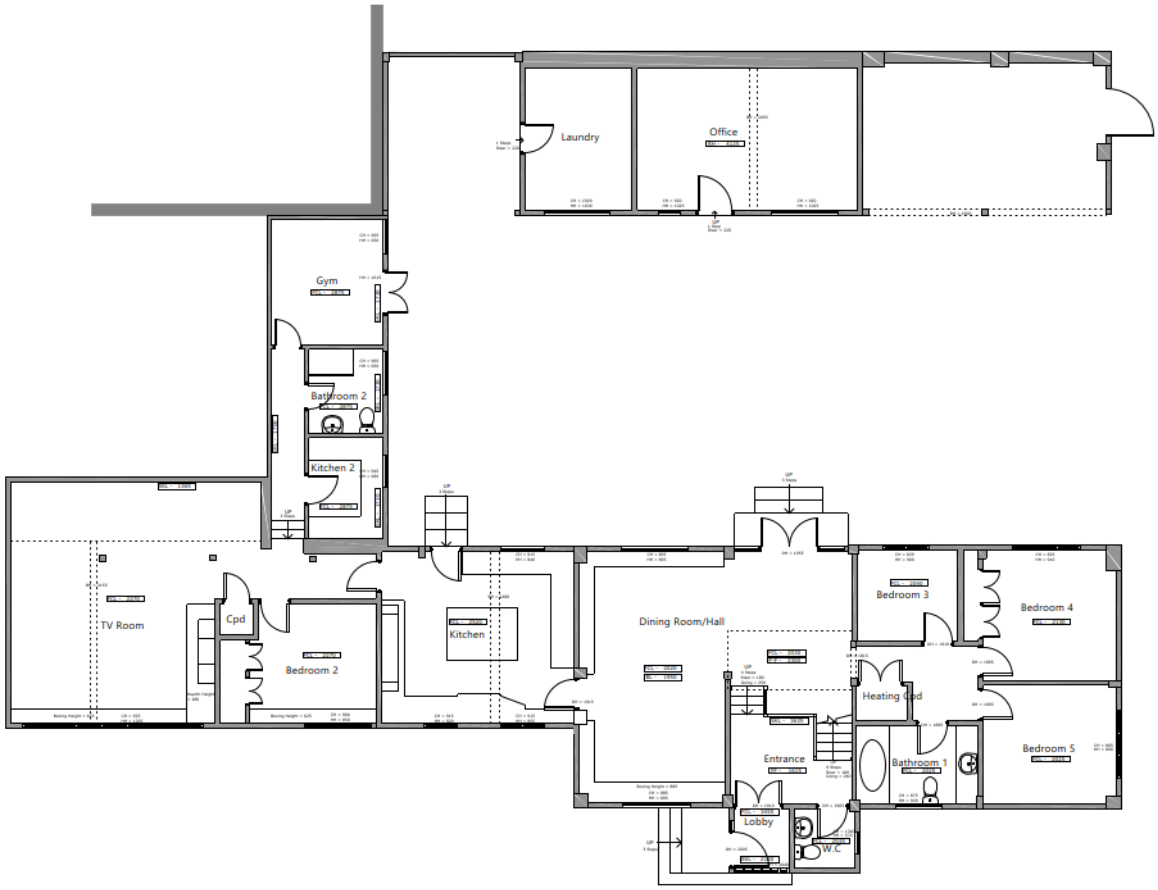


Figure 2: Existing Ground Floor Plan



Figure 3: First Floor Plan

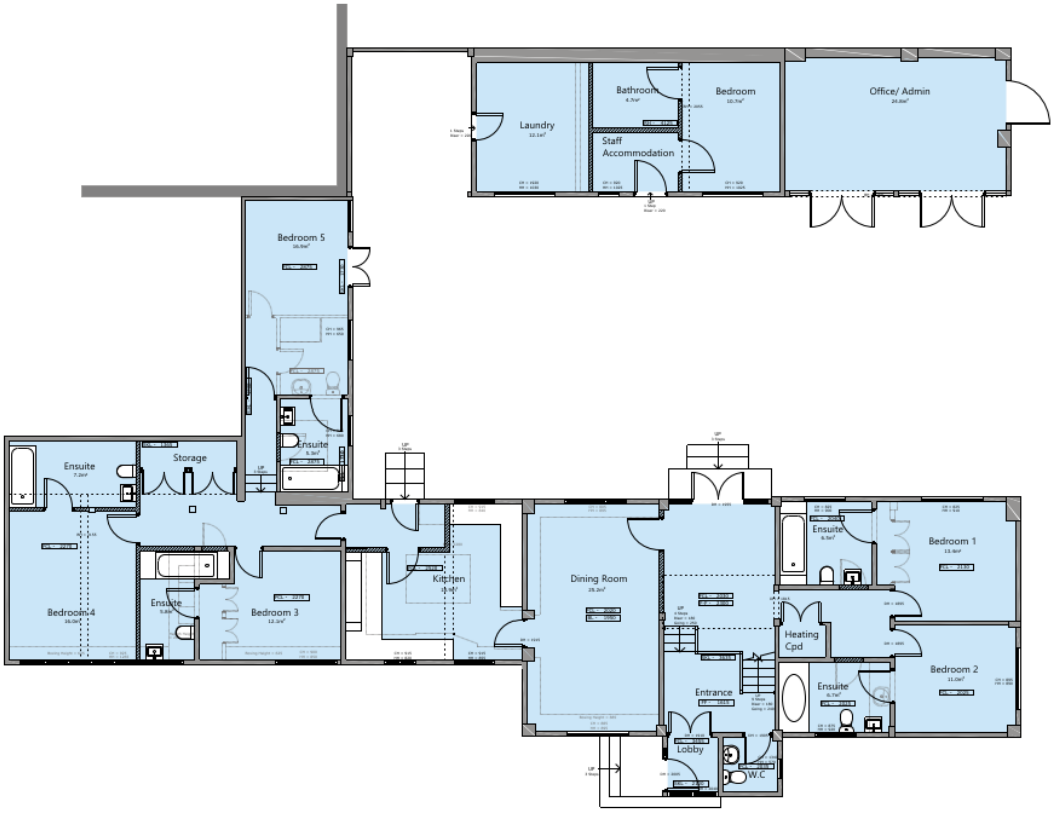


Figure 4: Proposed Ground Floor Plan



Figure 5: Proposed First Floor Plan

2.0 PLANNING POLICY AND CONTEXT

The Sussex North Water Supply Zone includes supplies from a groundwater abstraction which cannot, with certainty, conclude no adverse effect on the integrity of;

- Arun Valley Special Area Conservation (SAC)
- Arun Valley Special Protection Area (SPA)
- Arun Valley Ramsar Site.

As it cannot be concluded that the existing abstraction within Sussex North Water Supply Zone is not having an impact on the Arun Valley site, we advise that developments within this zone must not add to this impact. This is required by recent caselaw, Case C-323/17 People over wind and Sweetman. Ruling of CJEU (often referred to as sweetman II) and Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu Case C-293/17 (often referred to as the Dutch Nitrogen cases).

Between them these cases require Plans and Projects affecting sites where an existing adverse effect is known (i.e., the site is failing its conservation objectives), to demonstrate certainty that they will not contribute further to the existing adverse effect or go through to the latter stages of the Regulations (no alternatives IROPI etc).

Developments within Sussex North must therefore must not add to this impact and one way of achieving this is to demonstrate water neutrality.

In addition, the Gatwick Sub regional Water Cycle Study concluded that water neutrality is required for Sussex North to enable sufficient water to be available to the region.

The definition of water neutrality is the use of water in the supply area before the development is the same or lower after the development is in place.



Figure 6: Water Neutrality Hierarchy

The aim under step 1 and 2 is to reduce water usage per person to 80 – 85l/pp/day. This can be achieved by a fittings approach but would mean no bath (showers only).

In order to achieve this level with baths would require either rainwater or grey water recycling. Grey water is preferred as it will be effective all year round.

Once water usage is brought down to a reasonable level, the remainder of the water is usage is offset by paying for the upgrade water fittings in Council Houses, Schools, Council Offices etc. to more water efficient fittings

3.0 EXISTING BUILDING

The existing house was surveyed and the flow rates of the existing Wash Basin and Sink taps was measured using a flow cup to determine existing flow rates. The Showers were also measured using a funnel and flow cup to get flow rates. The WC cisterns were measured to determine flush volumes. Existing Bath sizes were measured to determine volume to overflow. The house had not been modified in recent times and therfore te installed satitaryware and taps were fairly inefficient in the main although some low flows were recorded, most likely due to the fittings being heavily scaled.

The existing flow rates and capacities were then input into a Building Regulations Part G Water Efficiency Calculator to determine Daily water usage in litres/peron/day. (**Appendix A**). Dishwasher and Washing Machine were included at default values rather than using specific model values. A 5 l/p/d allowance for outside use was also included.

The resultant figure of 155.41 litres/person/day, was then multiplied by the average occupancy rate provided in HDC guidance for a 5 Bedroom House of 3.09 occupants.

This gives a daily water usage figure of **480.2 litres/day**.

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)	9.00	4.42	0.00	39.78
Taps Exc. Kitchen	Flow Rate	16.00	1.58	1.58	26.86
Bath (shower present)	(l/s)	115.00	0.11	0.00	12.65
Shower (bath present)	(l/s)	10.50	4.37	0.00	45.89
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)	13.33	0.44	10.36	16.23
Washing Machines	(l/kgdry)	9.70	2.10	0.00	20.37
Dishwashers	(l/place)	0.98	3.60	0.00	3.51
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)					165.28
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					150.41
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					155.41
Assesment Result					FAIL

Figure 7: Existing House Water Efficiency Calculator

4.0 PROPOSED BUILDING (REDEVELOPED)

The sanitaryware provision for the proposed redeveloped building was then assessed using the same Building Regulations Part G Water Effficiency Calculator.

The Flow rates and capacities used are for efficient fittings. Water usage figures for Washing Machines and Dishwashers were taken as default values and a figure of 5 l/p/d was included for outside use. (**Appendix B**)

The resultant figure of 110.14 litres/person/day, was then multiplied by the average occupancy rate provided in HDC guidance. This was taken as two 4 Bed Houses at 2.86 occupants to get an occupancy of 5.72 as there are 8 Bedrooms proposed and there is no 8 Bed occupancy figure given in the HDC guidance.

This gives a daily water usage figure of **630.0 litres/day** which is in excess of the existing usage.

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)	4.00	4.42	0.00	17.68
Taps Exc. Kitchen	Flow Rate	4.00	1.58	1.58	7.90
Bath (shower present)	(l/s)	125.00	0.11	0.00	13.75
Shower (bath present)	(l/s)	9.00	4.37	0.00	39.33
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)	6.00	0.44	10.36	13.00
Washing Machines	(l/kgdry)	9.70	2.10	0.00	20.37
Dishwashers	(l/place)	0.98	3.60	0.00	3.51
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)					**115.54**
Grey/RainWater Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**105.14**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**110.14**
Assesment Result					PASS

Figure 8: Proposed House Water Efficiency Calculator

To achieve Water Neutrality, Rainwater Harvesting will be included for WC flushing. The maximum daily water usage in l/p/d based on the number of WC's is 38.05 l/p/d from the calculator. Increasing the storage volume will not increase this figure further. There are generally a maximum of 21 days between rainfall incidents in the locale so based on this a minumum storage volume of 799 litres would be required. A storage volume of 1500 litres is therefore proposed. (**Appendix C**)

The roof area to the rear single storey part of the building is sufficient roof area to generate the required volume of rainwater.

This volume of Rainwater Storage was then input into the water efficiency calculator, resulting in a daily water usage of 75.52 l/p/d. (**Appendix D**)

Again, this figure was mutiplied by the HDC occupancy figures giving a resultant daily water usage of **431.2 litres/day**.

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)	4.00	4.42	0.00	17.68
Taps Exc. Kitchen	Flow Rate	4.00	1.58	1.58	7.90
Bath (shower present)	(l/s)	125.00	0.11	0.00	13.75
Shower (bath present)	(l/s)	9.00	4.37	0.00	39.33
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)	6.00	0.44	10.36	13.00
Washing Machines	(l/kgdry)	9.70	2.10	0.00	20.37
Dishwashers	(l/place)	0.98	3.60	0.00	3.51
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)					**115.54**
Grey/RainWater Reused (l)					38.05
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**70.52**
External Water Use Allowance (l)					5.00
Total Comsumption Part G (l/p/day)					**75.52**
Assesment Result					PASS

Figure 9: Proposed House Water Efficiency Calculator + Rainwater Harvesting

5.0 CONCLUSION

Following the Water Neutrality hierarchy and the HDC guidance on their website, the pre and post development daily water usage has been calculated to demonstrate Water Neutrality.

The assessment identified that 'Water Neutrality' could not be achieved through water efficient fittings and sanitaryware alone, so Rainwater Harvesting, providing recycled rainwater for WC flushing has been introduced.

Water Usage Calculation Results:

Existing building water usage	= **480.2 l/day**
Redeveloped building water usage	= **431.2 l/day**

As is shown above, the inclusion of rainwater harvesting reduces the redeveloped buildings water usage to below that of the existing building and hence the proposals achieve 'Water Neutrality'.

APPENDIX A

WATER EFFICIENCY CALCULATOR
EXISTING HOUSE

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

FLATT Building Services Consulting Engineers

Project Details

Address/Reference	Broadview, Guildford Road	Case Reference	Existing House
Number of Bedrooms	5	Occupancy for Calculation Purposes	6

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin (Cloakroom)	22.00	1	22.00
Basin (Ensuite)	10.00	1	10.00
Basin (Bathroom1)	14.00	1	14.00
Basin (Bathroom 2)	18.00	1	18.00
			0.00
			0.00
Total No. of Fittings (No.)		4	
Total Flow (l/s)			64.00
Maximum Flow (l/s)			22.00
Average Flow (l/s)			16.00
Weighted Average Flow (l/s)			15.40
Flow for Calculations (l/s)			16.00

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting ty
Bathroom 2	13.00	1	13.00
En-suite	8.00	1	8.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			21.00
Maximum Flow (l/s)			13.00
Average Flow (l/s)			10.50
Weighted Average Flow (l/s)			9.10
Flow for Calculations (l/s)			10.50

Baths

Bath Type	Capacity Overflow	Quantity (No.)	Total per Fitting type
Bathroom 1	110.00	1	110.00
En-Suite	120.00	1	120.00
			0.00
			0.00
Total No. of Fittings (No.)		2	
Total Capacity (l)			230.00
Maximum Capacity (l)			120.00
Average Capacity (l)			115.00
Weighted Average Capacity (l)			84.00
Capacity for Calculations (l)			115.00

WCs

WC Type	Full Flush Volume	Part Flus Volume	Quantity (No)
Cloakroom	9.00		1
Bathroom 1	9.00		1
Bathroom 2	9.00		1
En-Suite	9.00		1
Total number of fittings			4
Average effective flushing volume			9.00

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
Dishwasher	0.98	1	0.98
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			0.98
Maximum Consumption (l)			0.98
Average Consumption (l/s)			0.98
Weighted Average Consumption (l)			0.68
Consumption for Calculations (l/s)			0.98

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting ty
Washing Machine	9.70	1	9.70
			0.00
Total No. of Fittings (No.)		1	
Total Consumption (l)			9.70
Maximum Consumption (l)			9.70
Average Consumption (l/s)			9.70
Weighted Average Consumption (l)			6.79
Consumption for Calculations (l/s)			9.70

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink	9.00	1	9.00
Kitchen 2 Sink	17.00	1	17.00
Utility Sink	14.00	1	14.00
Total No. of Fittings (No.)		3	
Total Flow (l/s)			40.00
Maximum Flow (l/s)			17.00
Average Flow (l/s)			13.33
Weighted Average Flow (l/s)			11.90
Flow for Calculations (l/s)			13.33

Other Fittings

Waste Disposal Y/N	N
Water softner	
Consumption beyond 4X l/p/d	

Use of grey water and harvested rainwater

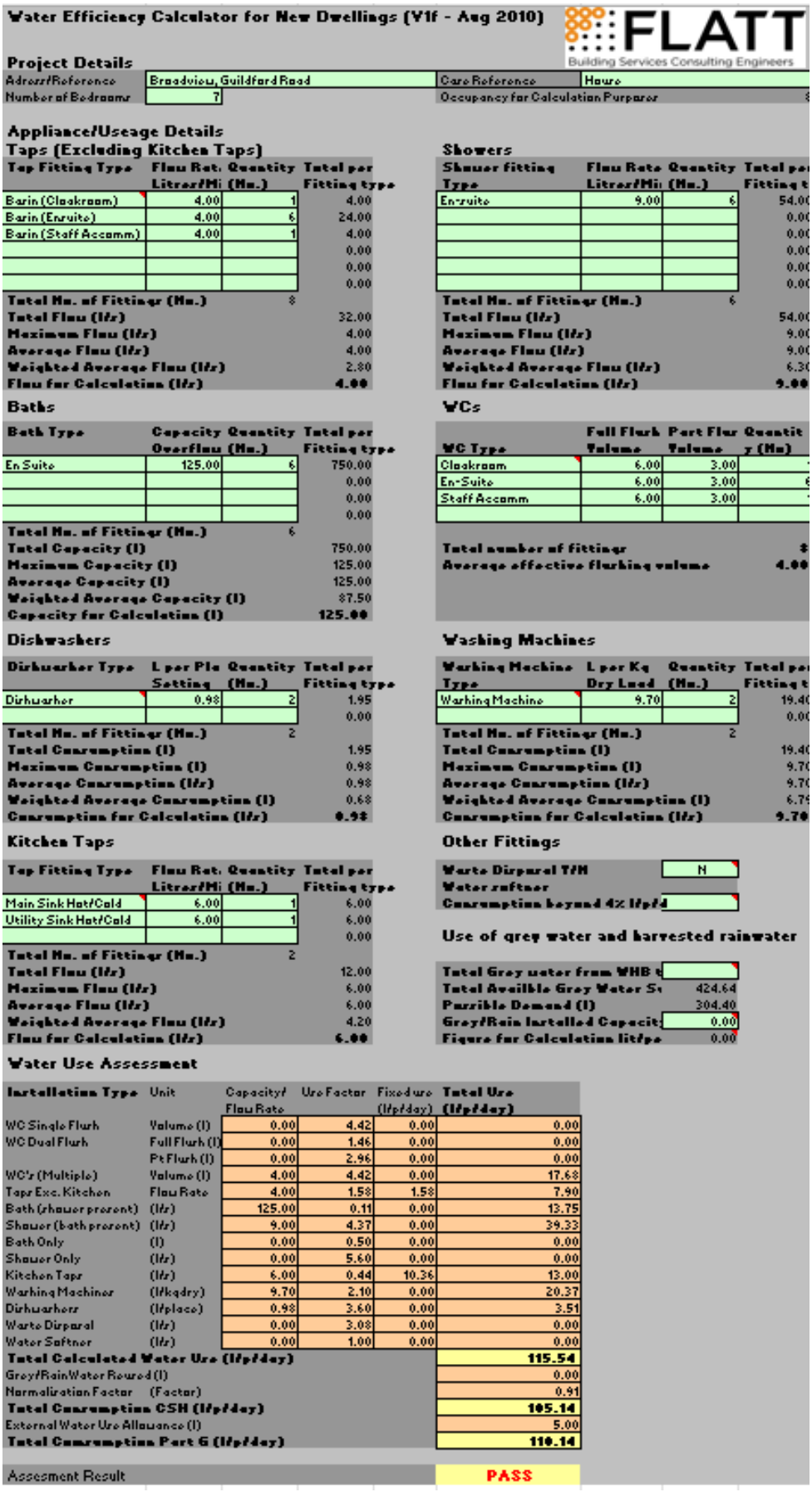
Total Grey water from WHB s	
Total Availble Grey Water Su	351.21
Possible Demand (l)	360.90
Grey/Rain Installed Capacity (l)	
Figure for Calculation litre	0.00

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)	9.00	4.42	0.00	39.78
Taps Exc. Kitchen	Flow Rate	16.00	1.58	1.58	26.86
Bath (shower present)	(l/s)	115.00	0.11	0.00	12.65
Shower (bath present)	(l/s)	10.50	4.37	0.00	45.89
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)	13.33	0.44	10.36	16.23
Washing Machines	(l/kg dry)	9.70	2.10	0.00	20.37
Dishwashers	(l/place)	0.98	3.60	0.00	3.51
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)					165.28
Grey/Rain Water Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					150.41
External Water Use Allowance (l)					5.00
Total Consumption Part G (l/p/day)					155.41
Assessment Result					FAIL

APPENDIX B

WATER EFFICIENCY CALCULATOR
PROPOSED HOUSE



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

FLATT Building Services Consulting Engineers

Project Details

Address/Reference	Broadview, Guildford Road	Care Reference	House
Number of Bedrooms	7	Occupancy for Calculation Purposes	8

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin (Cloakroom)	4.00	1	4.00
Basin (En-suite)	4.00	6	24.00
Basin (Staff Accomm)	4.00	1	4.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		8	
Total Flow (l/s)			32.00
Maximum Flow (l/s)			4.00
Average Flow (l/s)			4.00
Weighted Average Flow (l/s)			2.80
Flow for Calculation (l/s)			4.00

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting t
En-suite	9.00	6	54.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		6	
Total Flow (l/s)			54.00
Maximum Flow (l/s)			9.00
Average Flow (l/s)			9.00
Weighted Average Flow (l/s)			6.30
Flow for Calculation (l/s)			9.00

Baths

Bath Type	Capacity Overflow	Quantity (No.)	Total per Fitting type
En Suite	125.00	6	750.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		6	
Total Capacity (l)			750.00
Maximum Capacity (l)			125.00
Average Capacity (l)			125.00
Weighted Average Capacity (l)			87.50
Capacity for Calculation (l)			125.00

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Cloakroom	6.00	3.00	1
En-Suite	6.00	3.00	6
Staff Accomm	6.00	3.00	1

Total number of fittings	8
Average effective flushing volume	4.00

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
Dishwasher	0.98	2	1.95
			0.00
Total No. of Fittings (No.)		2	
Total Consumption (l)			1.95
Maximum Consumption (l)			0.98
Average Consumption (l/s)			0.98
Weighted Average Consumption (l)			0.68
Consumption for Calculation (l/s)			0.98

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting t
Washing Machine	9.70	2	19.40
			0.00
Total No. of Fittings (No.)		2	
Total Consumption (l)			19.40
Maximum Consumption (l)			9.70
Average Consumption (l/s)			9.70
Weighted Average Consumption (l)			6.79
Consumption for Calculation (l/s)			9.70

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Hot/Cold	6.00	1	6.00
Utility Sink Hot/Cold	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			12.00
Maximum Flow (l/s)			6.00
Average Flow (l/s)			6.00
Weighted Average Flow (l/s)			4.20
Flow for Calculation (l/s)			6.00

Other Fittings

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

Use of grey water and harvested rainwater

Total Grey water from WHB t	
Total Availble Grey Water Su	424.64
Possible Demand (l)	304.40
Grey/Rain Installed Capacit	0.00
Figure for Calculation litres	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)	4.00	4.42	0.00	17.68
Taps Exc. Kitchen	Flow Rate	4.00	1.58	1.58	7.90
Bath (shower present)	(l/s)	125.00	0.11	0.00	13.75
Shower (bath present)	(l/s)	9.00	4.37	0.00	39.33
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)	6.00	0.44	10.36	13.00
Washing Machines	(l/kg dry)	9.70	2.10	0.00	20.37
Dishwashers	(l/place)	0.98	3.60	0.00	3.51
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)					**115.54**
Grey/Rain Water Reused (l)					0.00
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**105.14**
External Water Use Allowance (l)					5.00
Total Consumption Part G (l/p/day)					**110.14**
Assessment Result					**PASS**

APPENDIX C

RAINWATER HARVESTING CALCULATION

TREE HOUSE EDUCARE LTD

BROADVIEW

RAINWATER HARVESTING

Building Services Consulting Engineers

Engineer: SD
Checked: RMG

Date: 14/06/24

AREA OF ROOF	=	60	m2					
RUN OFF COEFFICIENT	=	0.8	Pitched Roof					
ANNUAL RAINFALL AMOUNT	=	650	mm	(From BS 8515 Figure 2)				
SO								
RAINFALL YIELD	=	60	x	0.75	x	600	=	27,000 litres/year
10% LOSS IN FILTRATION	=	27000	-	10 %	=	24,300	Litres/ Year	

Average maximum period between rain is 21 days so take 6% as storage volume (equates to 21 days).

Therefore storage volume

24,300	x	6%	=	1,458 litres	**1.5**	**m^3**

APPENDIX D

WATER EFFICIENCY CALCULATOR PROPOSED HOUSE & RAINWATER HARVESTING

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

FLATT Building Services Consulting Engineers

Project Details

Address/Reference	Broadview, Guildford Road	Care Reference	House
Number of Bedrooms	7	Occupancy for Calculation Purposes	8

Appliance/Useage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Basin (Cloakroom)	4.00	1	4.00
Basin (En-suite)	4.00	6	24.00
Basin (Staff Accomm)	4.00	1	4.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		8	
Total Flow (l/s)			32.00
Maximum Flow (l/s)			4.00
Average Flow (l/s)			4.00
Weighted Average Flow (l/s)			2.80
Flow for Calculation (l/s)			**4.00**

Showers

Shower fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting ty
En-suite	9.00	6	54.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		6	
Total Flow (l/s)			54.00
Maximum Flow (l/s)			9.00
Average Flow (l/s)			9.00
Weighted Average Flow (l/s)			6.30
Flow for Calculation (l/s)			**9.00**

Baths

Bath Type	Capacity Overflow	Quantity (No.)	Total per Fitting type
En Suite	125.00	6	750.00
			0.00
			0.00
			0.00
Total No. of Fittings (No.)		6	
Total Capacity (l)			750.00
Maximum Capacity (l)			125.00
Average Capacity (l)			125.00
Weighted Average Capacity (l)			87.50
Capacity for Calculation (l)			**125.00**

WCs

WC Type	Full Flush Volume	Part Flus Volume	Quantit y (No)
Cloakroom	6.00	3.00	1
En-Suite	6.00	3.00	6
Staff Accomm	6.00	3.00	1
Total number of fittings			**8**
Average effective flushing volume			**4.00**

Dishwashers

Dishwasher Type	L per Place Setting	Quantity (No.)	Total per Fitting type
Dishwasher	0.98	2	1.95
			0.00
Total No. of Fittings (No.)		2	
Total Consumption (l)			1.95
Maximum Consumption (l)			0.98
Average Consumption (l/s)			0.98
Weighted Average Consumption (l)			0.68
Consumption for Calculation (l/s)			**0.98**

Washing Machines

Washing Machine Type	L per Kg Dry Load	Quantity (No.)	Total per Fitting ty
Washing Machine	9.70	2	19.40
			0.00
Total No. of Fittings (No.)		2	
Total Consumption (l)			19.40
Maximum Consumption (l)			9.70
Average Consumption (l/s)			9.70
Weighted Average Consumption (l)			6.79
Consumption for Calculation (l/s)			**9.70**

Kitchen Taps

Tap Fitting Type	Flow Rate Litres/Min	Quantity (No.)	Total per Fitting type
Main Sink Hot/Cold	6.00	1	6.00
Utility Sink Hot/Cold	6.00	1	6.00
			0.00
Total No. of Fittings (No.)		2	
Total Flow (l/s)			12.00
Maximum Flow (l/s)			6.00
Average Flow (l/s)			6.00
Weighted Average Flow (l/s)			4.20
Flow for Calculation (l/s)			**6.00**

Other Fittings

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

Use of grey water and harvested rainwater

Total Grey water from WHB t	
Total Availble Grey Water Su	424.64
Possible Demand (l)	304.40
Grey/Rain Installed Capacit	1000.00
Figure for Calculation l/p/d	38.05

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)	4.00	4.42	0.00	17.68
Taps Exc. Kitchen	Flow Rate	4.00	1.58	1.58	7.90
Bath (shower present)	(l/s)	125.00	0.11	0.00	13.75
Shower (bath present)	(l/s)	9.00	4.37	0.00	39.33
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)	6.00	0.44	10.36	13.00
Washing Machines	(l/kg dry)	9.70	2.10	0.00	20.37
Dishwashers	(l/place)	0.98	3.60	0.00	3.51
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)					**115.54**
Grey/Rain Water Reused (l)					38.05
Normalisation Factor	(Factor)				0.91
Total Consumption CSH (l/p/day)					**70.52**
External Water Use Allowance (l)					5.00
Total Consumption Part G (l/p/day)					**75.52**
Assessment Result					**PASS**