PJR

BUILDING SERVICES
DESIGN ENGINEERS

WATER NEUTRALITY REPORT

FOR

ST MARK'S COURT
CHART WAY
HORSHAM
RH12 1XL

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Date: June 2025
Ref: W19/01/WNR Ver 07

1.0 – EXECUTIVE SUMMARY

PJR Design Services has been appointed to produce a Water Neutrality Report for the proposed St Mark's Court, Horsham development. The planned development is the conversion of an existing occupied office building with an internal floor area of 13,461.30 m^2 to create a residential development comprising of:

58 No. Studio 1 Person Apartments

115 No. 1 Bed 2 Person Apartments

12 No. 2 Bed 3 Person Apartments

10 No. 2 Bed 4 Person Apartments

195 No. Residential Apartments in total.

With the current emphasis placed on water conservation, the Developer is keen to enhance the development's sustainability credentials.

Natural England defines water neutrality as 'the use of water in the supply area before the development being the same or lower after the development is in place', and also requests the following:

- Complete a water budget (based on occupancy)
- All new builds to demonstrate that they can achieve strict water targets

The current use of the building is office accommodation with occupancy advised by the current tenant as an average of 1146 people per day for the period 2022/2023 and 2024, and 1065 for 2024 at the time of consent being granted, which it has been assessed using the BREEAM UK Wat 01 water efficiency calculator would provide a baseline for current water consumption of:

1146 people c. 55,455 L/day
1065 people c. 51,535 L/day

In order to achieve a significant improvement upon Part G performance targets, the Water Efficiency Calculator for New Dwellings for water efficiency by component type was used to estimate the expected flow rates of the sanitaryware fittings for the proposed development.

In accordance with these measures, the proposed development has an estimated expected occupancy of c. 269.72 and an estimated water consumption of:

c. 24,679.26 L/day

Therefore, in comparison with Part G Compliance performance targets for new dwellings of 125 litres/person/day, the proposed development provides an estimated annual water saving of:

c. 9,035.74 L/day

This equates to a c. 26% improvement when compared against the Part G water efficiency performance targets. This can be seen as a significant improvement upon the requirements stated in the Building Regulations Part G water efficiency of new dwellings.

In comparison to the assessed water usage of the existing building operating as providing office accommodation with a canteen, the proposed development provides an estimated water saving of:

c. 30,775.74 L/day with an average occupancy as office accommodation of 1146 people

c. 26,855.74 L/day with an average occupancy as office accommodation of 1065 people

2.0 – INTRODUCTION

PJR Design Services have been appointed to produce a Water Neutrality Report for the proposed St Mark's Court, Horsham development. Natural England defines water neutrality as 'the use of water in the supply area before the development being the same or lower after the development is in place', and also requests the following:

- Complete a water budget (based on occupancy)
- All new builds to demonstrate that they can achieve strict water targets

The planned development is for a change of use for the existing office building to provide residential accommodation, comprising of:

58 No. Studio 1 Person Apartments

115 No. 1 Bed 2 Person Apartments

12 No. 2 Bed 3 Person Apartments

10 No. 2 Bed 4 Person Apartments

195 No. Residential Apartments in total, with an occupancy of 269.72 people based on the Horsham District census data.

This high-level report has been compiled to appraise the estimated water consumption of the proposed St Mark's Court, Horsham development. The Water Efficiency Calculator for new dwellings has been used to assess the efficiency of the domestic water-consuming components against a baseline consumption performance level used in Part G Building Regulations.

To this end, the proposed design shall promote reduced water usage by maximising efficiency through best-practice measures.

A separate planning application will be submitted on behalf of the developer relating to a proposed residential development located at Victoria Street, Horsham which may also reference this report for offsetting of water consumption.

3.0 – WATER USAGE

3.1 Assessment Methodology for Current Water Usage

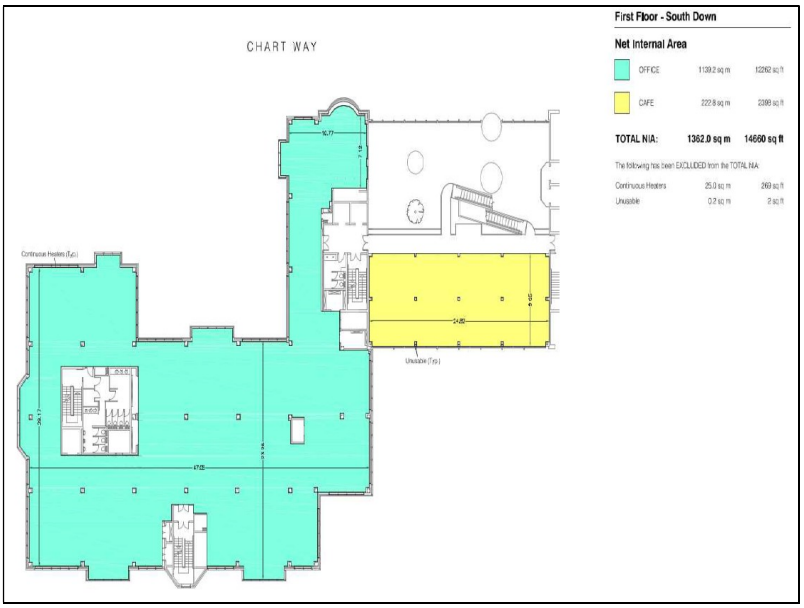
The site is currently occupied by an existing operational building of 13,461.30 m^2 providing office accommodation. The occupancy of the existing building has been advised by the current tenant, Royal Sun Alliance, as average of 1146 people per day for the period 2022/2023 and 2024, and 1065 for 2024 at the time of consent being granted. The table of occupancy provided by Royal Sun Alliance is contained within this report as Appendix 4.

Fig 1. Existing Building



The measured survey drawing of the existing building identifies that it is provided with a Café for staff use.

Fig 2. Existing First Floor Plan



The existing water consumption of the building has been assessed using the BREEAM UK Refurbishment and Fit Out 2014 Wat 01 Water consumption calculator.

The calculator uses the Floor Area of the building for cellular or open office space, which has been derived from the Plowman Craven area measurement report Issue A dated January 2013, which identifies the following office areas.

North Down (m^2)

Lower Ground Floor	647.9
Ground Floor	1641.1
First Floor	1650.3
Second Floor	1398.0
Third Floor	622.2
Total	5959.5 m^2

South Down (m^2)

Basement	1121.2
Lower Ground Floor	933.0
Ground Floor	1118.1
First Floor	1139.2
Second Floor	1354.0
Third Floor	889.5
Total	6555.0 m^2

A separate input is applied to the calculator for office staff canteen dining areas, which is defined within the Plowman Craven report as being 222.8 m^2 at first floor level.

A survey was undertaken on 21st October to establish details of the existing sanitary appliances and water consuming equipment provided within the building to be applied within the calculator, with flow rates at basin and kitchen taps with a water flow cup/weir gauge, capacity of WC cisterns recorded and manufacturers details of appliances recorded to enable water consumption to be determined.

The results from the BREEAM water consumption calculator are that the daily water consumption per person are 48.39 litres, with the contained within Appendix 1.

Based on an occupancy advised by the current tenant this would result in water usage as shown below:

1146 people c. 55,455 L/day

1065 people c. 51,535 L/day

3.2 Assessment Methodology for Proposed Water Usage

The predicted building water consumption for the proposed St Mark's Court, Horsham development has been calculated using the anticipated building occupancy and the estimated type and quantity of sanitaryware fittings.

The developer has advised that the allocation of sanitary appliances based on the different apartment types will comprise of:

58 No. Studio 1 Person Apartments

115 No. 1 Bed 2 Person Apartments

12 No. 2 Bed 3 Person Apartments

10 No. 2 Bed 4 Person Apartments

The base build for the apartments will include a for a washing machine to be provided and also a dishwasher to be provided within each dwelling, and these have been accounted for within the calculations.

Table 1. Proposed Development Sanitaryware Component data

Accommodation Type	Component Types				
	WHB	WC	SINK	SHWR	BATH
Studio (Bath)	33	33	33	0	33
Studio (Shower)	26	26	26	26	0
1 Bed Flat	110	110	110	0	110
2 Bed Flat (Ensuite)	32	32	16	16	16
2 Bed Flat	6	6	6	0	6
2 Bed Flat (2 Bathrooms)	8	8	4	0	8
Totals	215	215	185	42	173

In order to measure the efficiency of the anticipated domestic water-consuming components in the proposed development, the Water Efficiency Calculator for New Dwellings was used which is a Part G calculation methodology. This calculator uses the Government's methodology for assessing the whole house water efficiency of new dwellings. The calculation method is to be used to assess compliance against the water performance targets in Building Regulations Part G (Table 3).

Table 3. Building Regulations Part G performance target

Performance Target	Maximum Consumption (litres/person/day)
Part G Compliance	125

Based on an occupancy of the building with residential use of 269.72 people with the permissible water consumption of 125 litres/person/day this would equate to:

c. 33,715 L/day

The calculation method requires the use of water consumption figures provided from manufacturers' product details. Before the assessment can be carried out, figures will need to be collected from manufacturers' product information to determine the consumption of each terminal fitting.

Given that the specifications of the sanitaryware fittings for the proposed development are yet to be confirmed, the following figures have been applied, and it has been confirmed by the Developer that these will be achieved through the specification of the sanitary fitments.

Type	Description	Flow rates, volumes etc.
Taps	Taps	6 litres/min
Baths	Baths	100 litres to overflow
Dishwashers	Dishwasher	1.25 litres/place
Washing Machines	Washing Machines	7 litres/kg
Showers	Showers	6 litres/min
WC's	Toilets	4/3 litres flush vols.
Kitchen/Utility taps	Taps	6 litres/min

To further enhance the water efficiency of the proposed development consideration has been given to the incorporation of rainwater recovery and greywater recovery. The assessment has indicated that there is no benefit of introducing both systems, and therefore the Water Efficiency Calculator has been based on rainwater recovery being adopted based on the BS8515 Intermediate approach being adopted and applying the MET Office annual rainfall data as Appendix 4, which contributes a saving of 13.3 litres/person/day.

The Water Efficiency Calculator for New Dwellings has indicated a water consumption for dwellings with baths of 92.29 litres/person/day and dwellings with showers of 89.0 litres/person/day.

Based on the accommodation schedule for the proposed development this would result in the following, using the Horsham District 2011 census data:

26 No. Studio apartments with bathrooms – 34.32 occupants @ 92.29 litres/person/day = 3,167.39 l

32 No. Studio apartments with shower rooms – 42.24 occupants @ 89.0 litres/person/day = 3,759.36 l

115 No. 1 Bed Apartments with bathrooms – 151.80 occupants @ 92.29 litres/person/day = 14,009.62 l

12 No. 2 Bed Apartments with ensuites – 22.56 occupants @ 89.0 litres/person/day = 2,007.84 l

10 No. 2 Bed Apartments with 2 bathrooms – 18.8 occupants @ 92.29 litres/person/day = 1735.05 l

Based on an average occupancy of the building with residential use of 269.72 people with the calculated water consumption this would equate to:

c. 24,679.26 L/day

External

Accounting for external maintenance and landscaping, a usage of 5 litres per person per day has been allowed for as per the recommendations of the Part G calculator tool, resulting in an additional 1282.20 L per day. However, an external use allowance of 5 litres per person per day is likely to be a gross overestimation when considering the majority of the external areas are "hard" landscaped. The only "soft" external area is the grassed verge that will not require watering.

The Part G Compliance Reports produced using the Water Efficiency Calculator for New Dwellings methodology are contained within Appendix 2 & 3.

4.0 – CONCLUSION

This high-level report has been compiled to appraise the water consumption efficiency of the proposed St Mark's Court, Horsham development using Part G Calculation Methodology.

The predicted water consumption efficiency for the proposed development using the Water Efficiency Calculator for New Dwellings (Building Regulation 17.K) is shown below:

c. 92.29 litres/person/day for dwellings with baths

c. 89.0 litres/person/day for dwellings with showers

Therefore, in comparison with Part G Compliance performance targets for new dwellings, the proposed development provides an estimated annual water saving of:

c. 9,035.74 L/day

This equates to a c. 26% improvement when compared to the Part G Compliance target. This can be seen as a significant improvement upon the requirements stated in the Building Regulations Part G water efficiency of new dwellings.

In comparison to the assessed water usage of the existing building operating as providing office accommodation with a canteen, the proposed development provides an estimated water saving of:

c. 30,775.74 L/day with an average occupancy as office accommodation of 1146 people

c. 26,855.74 L/day with an average occupancy as office accommodation of 1065 people

Appendices

Appendix 1 – BREEAM UK Wat 01 Water Efficiency Calculator

Appendix 2 - Part G Compliance Report A – Dwelling with Bath

Appendix 3 - Part G Compliance Report B – Dwelling with Shower

Appendix 4 – Existing Building Occupancy as advised by Royal Sun Alliance

Appendix 1

BREEAM UK Wat 01 Water Efficiency Calculator

BREEAM UK Wat 01 Water Efficiency Calculator

BREEAM UK Refurbishment and Fit-out 2014 Wat 01 Water consumption: Water efficiency calculator

BREEAM UK

Building details

Building name	St Marks Court Horsham
BRE assessment reference no.	

Building type	Description of building type	Default occupancy	Default annual days/operation	Default daily hours of operation
Office	TCP Classification B1: Offices and workshop business (including those with a basic (category 1) laboratory area)	1399,01654	253	10

Main building activity areas	Description of activity area	Activity area present in building?	Net Floor Area (m^2)
Office - Office areas	Cellular or open plan office space, including staff kitchen where present/adjacent and reception areas. Exlcude meeting rooms, visitor waiting or circulation areas.	Yes	12514,5
Office - Small workshop / laboratory space	Small scale workshop or category 1 laboratory area	No	
Office - Staff canteen dining area	Seated dining areas that accompany a permanently staffed kitchen preparing food for consumption on the premises (excludes small un-staffed kitchen's used by office staff to re-heat food, make tea etc.)	Yes	228,8
Office - Fitness suite/gym (with changing facility and showers)	A fitness suite or gym that is part of the office building/development and used by the building's employees only. The gym will have its own changing facility with showers.	No	

Water consumption - building microcomponent

WC component - all activity areas	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
WC - male (urinals installed)	Effective flush volume (Litres)	9,00	1,00	1,00	4,50
WC - female	Effective flush volume (Litres)	9,00	4,00	1,00	18,00

Urinal component - all activity areas	units	Specification	No. of cisterns	Flushing frequency (flushes/hour)	Consumption (L/person/day)
Automatically operated flushing cistern	Cistern capacity (Litres)	9,00	14,00	4,00	3,60
	No. of urinal bowls	3,00			
	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
Manual/automatic operated pressure flushing valve (all activity areas)	Flush volume (litres)		3,00	1,00	0,00
	No. of urinal bowls				
	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
Waterless urinals (all activity areas)	Flush volume (litres)	Waterless urinals - not specified	3,00	1,00	0,00
	No. of urinal bowls				

	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
Taps components (personal hygiene) - all activity areas					
Wash hand basin taps	Flow rate (litres/min)	16,00	4,00	0,25	10,83
Shower use	Flow rate (litres/min)	11,00	0,030	5,60	1,85
Fixed use - vessel filling	Litres/person/day	-	-	-	1,58
Tap components (cleaning) - staff kitchenette					
Kitchen taps - kitchenette	Flow rate (litres/min)	12,00	1,00	0,67	5,44
Dishwasher	Litres/cycle	10,00	0,04	1,00	0,40
Tap components (cleaning and food preparation) - staff canteen food preparation area					
Kitchen taps - pre-rinse nozzle	Flow rate (litres/min)	12,00	-	60,00	0,51
Dishwasher	Litres/rack	11,00	-	0,217	0,39
Waste disposal unit	Flow rate (litres/min)		-	30,00	0,00
Fixed use - food preparation	Litres/person/day	-	-	-	0,38
Fixed use - kitchen cleaning	Litres/person/day	-	-	-	0,90

	Micro-component consumption (L/person/day)
Total	48,39

Appendix 2

Part G Compliance Report A – Dwelling with Bath

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PART G COMPLIANCE REPORT A

PROJECT DETAILS

Project Reference:	**ST MARKS COURT** DWELLING WITH BATH
Client:	WeBuild Sussex Ltd
Property:	St Marks Court Chart Way Horsham RH12 1XL
Local Authority:	Horsham District Council
Date:	June 2025

RESULT SUMMARY

By following the Government's national calculation methodology for assessing water efficiency in new dwellings this dwelling, as designed, achieves a water consumption of 92.29 litres per person per day.

Compliance with Building Regulation 36(1) has been demonstrated.

Table 1: The Water Calculator for New Dwellings

Installation Type	Unit of measure	Value	Use factor	Fixed use	litres/person/day
WC(single flush)	Flush volume (litres)		4.42	0.00	0
WC(dual flush)	Full flush vol.	4.5	1.46	0.00	6.57
	Part flush vol.	3	2.96	0.00	8.88
WC(multiple fittings)	Average effective Flush vol. (litres)		4.42	0.00	0
Taps(excl. Kitchen)	Flow rate (litres/min)	6	1.58	1.58	11.06
Bath (shower also present)	Capacity to overflow (litres)	100	0.11	0.00	11
Shower (bath also present)	Flow rate (litres/min)	6	4.37	0.00	26.22
Bath only	Capacity to overflow (litres)	0	0.50	0.00	0
Shower only	Flow rate (litres/minute)	0	5.6	0.00	0
Kitchen sink taps	Flow rate (litres/minute)	6	0.44	10.36	13
Washing Machine	litres/kg dry load	7	2.1	0.0	14.7
Dishwasher	litres/place setting	1.25	3.6	0.0	4.5
Waste disposal	litres/use	0	3.08	0.0	0
Water softener	litres/person/day	0	1.0	0.0	0

Total calculated use (litres/person/day)	95.93
Contribution from greywater (litres/person/day)	-
Contribution from rainwater (litres/person/day)	-
Normalisation factor	0.91
Total Water Consumption. Code for Sustainable Homes (litres/person/day)	**87.29**
External water use	5.0
Total Water Consumption. (36(1)) (litres/person/day)	**92.29**

Summary of fitting types "As Designed"			
Type	Description	Flow rates, volumes etc.	Qty
Taps		6 litres/min	1
Baths		100 litres to overflow	1
Dishwashers		1.25 litres/place	1
Washing Machines		7 litres/kg	1
Showers		6 litres/min	1
WC's		4.5 / 3 litres flush vols.	1
Kitchen/Utility taps		6 litres/min	1

Appendix 3

Part G Compliance Report B – Dwelling with Shower

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PART G COMPLIANCE REPORT B

PROJECT DETAILS

Project Reference:	**ST MARKS COURT** DWELLING WITH SHOWER
Client:	WeBuild Sussex Ltd
Property:	St Marks Court Chart Way Horsham RH12 1XL
Local Authority:	Horsham District Council
Date:	June 2025

RESULT SUMMARY

By following the Government's national calculation methodology for assessing water efficiency in new dwellings this dwelling, as designed, achieves a water consumption of 89.0 litres per person per day.

Compliance with Building Regulation 36(1) has been demonstrated.

Table 1: The Water Calculator for New Dwellings

Installation Type	Unit of measure	Value	Use factor	Fixed use	litres/person/day
WC(single flush)	Flush volume (litres)		4.42	0.00	
WC(dual flush)	Full flush vol.	4.5	1.46	0.00	6.57
	Part flush vol.	3	2.96	0.00	8.88
WC(multiple fittings)	Average effective Flush vol. (litres)		4.42	0.00	
Taps(excl. Kitchen)	Flow rate (litres/min)	6	1.58	1.58	11.06
Bath (shower also present)	Capacity to overflow (litres)	0	0.11	0.00	0
Shower (bath also present)	Flow rate (litres/min)	0	4.37	0.00	0
Bath only	Capacity to overflow (litres)	0	0.50	0.00	0
Shower only	Flow rate (litres/minute)	6	5.6	0.00	33.6
Kitchen sink taps	Flow rate (litres/minute)	6	0.44	10.36	13
Washing Machine	litres/kg dry load	7	2.1	0.0	14.7
Dishwasher	litres/place setting	1.25	3.6	0.0	4.5
Waste disposal	litres/use	0	3.08	0.0	0
Water softener	litres/person/day	0	1.0	0.0	0

Total calculated use (litres/person/day)	92.31
Contribution from greywater (litres/person/day)	-
Contribution from rainwater (litres/person/day)	-
Normalisation factor	0.91
Total Water Consumption. Code for Sustainable Homes (litres/person/day)	**84.0**
External water use	5.0
Total Water Consumption. (36(1)) (litres/person/day)	**89.0**

Summary of fitting types "As Designed"			
Type	Description	Flow rates, volumes etc.	Qty
Taps		6 litres/min	1
Dishwashers		1.25 litres/place	1
Washing Machines		7 litres/kg	1
Showers		6 litres/min	1
WC's		4.5 / 3 litres flush vols.	1
Kitchen/Utility taps		6 litres/min	1

Appendix 4

Existing Occupancy as advised by Royal Sun Alliance

Site	St. Mark's Court, Horsham			
	2022	2023	2024	2025
Attendees (Per Day)	1 182	1 191	1 065	919

Week	AVG per DAY
2022-37	1 261
2022-38	1 167
2022-39	1 088
2022-40	1 251
2022-41	1 221
2022-42	1 380
2022-43	1 266
2022-44	1 018
2022-45	1 346
2022-46	1 145
2022-47	1 238
2022-48	1 241
2022-49	1 214
2022-50	1 427
2022-51	978
2022-52	666
2023-01	148
2023-02	775
2023-03	1 398
2023-04	1 337
2023-05	1 525
2023-06	1 273
2023-07	1 333
2023-08	1 184
2023-09	1 488
2023-10	1 373
2023-11	1 270
2023-12	1 269
2023-13	1 355
2023-14	1 386
2023-15	934
2023-16	925
2023-17	1 450
2023-18	1 383
2023-19	1 105
2023-20	1 078
2023-21	1 268
2023-22	1 308
2023-23	836
2023-24	1 201
2023-25	1 216
2023-26	1 390
2023-30	1 321
2023-31	1 286
2023-32	1 121
2023-33	1 083
2023-34	1 117
2023-36	898
2023-35	1 116
2023-37	1 212
2023-38	1 466
2023-39	1 217
2023-40	1 269
2023-41	1 208
2023-42	1 243
2023-43	1 191
2023-44	1 120
2023-45	1 213
2023-46	1 231
2023-47	1 197
2023-48	1 236
2023-49	1 113
2023-50	1 268
2023-51	1 279
2023-52	744

2024-01	1 140
2024-02	1 165
2024-03	1273
2024-04	1230
2024-05	1301
2024-06	1221
2024-07	1166
2024-08	1184
2024-09	1061
2024-10	1083
2024-11	1104
2024-12	1056
2024-13	1023
2024-14	1089
2024-15	1114
2024-16	1093
2024-17	1034
2024-18	1064
2024-19	1041
2024-20	1097
2024-21	1103
2024-22	1134
2024-23	1125
2024-24	1114
2024-25	1077
2024-26	1063
2024-27	1022
2024-28	1001
2024-29	996
2024-30	1023
2024-31	1076
2024-32	1103
2024-33	1007
2024-34	1102
2024-35	1035
2024-36	1022
2024-37	1014
2024-38	1090
2024-39	1043
2024-40	994
2024-41	1006
2024-42	1031
2024-43	1052
2024-44	1022
2024-45	987
2024-46	988
2024-47	991
2024-48	973
2024-49	950
2024-50	965
2024-51	901
2024-52	843
2025-01	873
2025-02	965
2025-03	944
2025-04	974
2025-05	943
2025-06	901
2025-07	924
2025-08	936
2025-09	911
2025-10	884
2025-11	898
2025-12	875

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