Delta Green
environmental design

Water Neutrality Report

St Mary's C of E Primary School, Pulborough
Full Planning Application

Building Engineering Services – Water Neutrality Report
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1.0 EXECUTIVE SUMMARY

1.1 Water Neutrality

The Southeast of England is an area of high-level water stress, due to a high population density, and a water neutrality assessment is a means to measure the impact that a development may have on the water supplies in the area.

It is a condition of planning applications that any new developments in the Sussex North Water Resource Zone demonstrate that they will not have a negative impact on the water resources of the area.

An assessment has been carried out to review the change in water consumption due to the new proposed Nursery development at St Mary's C of E Primary School, located in Pulborough, West Sussex.

This Report demonstrates that the proposed development at St Mary's C of E Primary School achieves water neutrality by using less water than the current existing building does. The new development has a daily water consumption of 11.98 Litres/person/day as compared to the previous building at 16.38 Litres/person/day. This equates to a 28 percent reduction in water consumption per person, saving **16,144.2 litres per annum** and therefore demonstrates that the development will have a positive impact by reducing water consumption of the building compared to its previous use.

2.0 INTRODUCTION

St Mary's C of E (Church of England) Primary School is co-education primary school building located in Pulborough, West Sussex. The school was first opened in 1969 and completed in 1972 and now consist of a pupil size of over 300. The building is located at the following address:

St Mary's C of E Primary School
Link Lane
Pulborough
West Sussex
RH20 2AN



Figure 1: St Mary's C of E Primary School, Pulborough

The development will see the existing Youth Centre, located above the main Primary School building being demolished, and replaced with a two-storey building with nursery provision for younger children on the ground floor, and a community use space on the first floor. The nursery is to be used during the daytime, while the community space will be used outside of nursery hours.

The proposed alternations will see older, inefficient, WC's and taps being replaced by modern, water efficient appliances.

Delta Green have been appointed to carry out a water neutrality report for the development to access the impact of water consumption of the proposed schemes compared to that of the former building use.

3.0 BACKGROUND

Pulborough (located in Horsham District) is situated in an area of serious water stress, as identified by the Environmental Agency Water Stress Areas Classification. Pulborough is supplied with water by Southern Water as indicated on the Southern Water Map below, identifying that the area sits within the Sussex North Water Resource Zone.

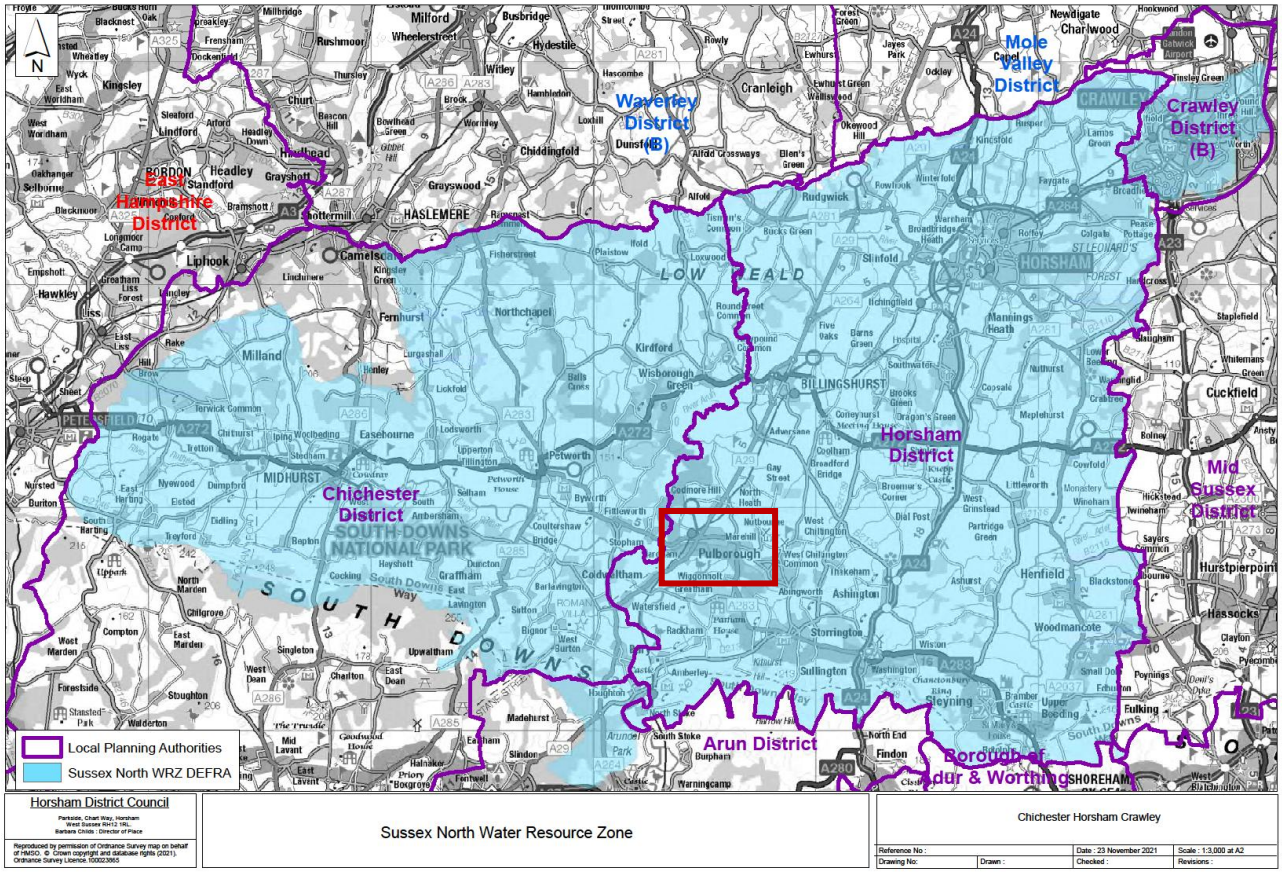


Figure 2: Southern Water Map highlighting the Sussex North Water Resource Zone. St Mary's C of E Primary School is located within the red highlighted area.

In October 2021, Natural England issued a Position Statement to the West Sussex County Council, which stated that the existing abstraction within the Sussex North Water Supply Zone may be having a negative impact on the Arun Valley sites and advised that the new developments must not add to this negative impact.

New developments located within the Sussex North Water Supply Zone are required to demonstrate that they will not increase pressure on water resources, which can be achieved by ensuring that developments are 'water neutral', i.e., the total water use in the region after the development is equal or less than the total water use in the region prior to the new development. This requires that new developments employ water reducing measures such as water efficient fittings and water recycling (I.e. rainwater harvesting or wastewater recovery) and offsetting measures.

4.0 DESIGN PARAMETERS AND ASSUMPTIONS

The following ground and first floor plans have been provided to Delta Green by the client on the 17th September 2025, which show the existing and new proposed layouts for the development, indicating the positions of the new water appliances and the existing site layout.

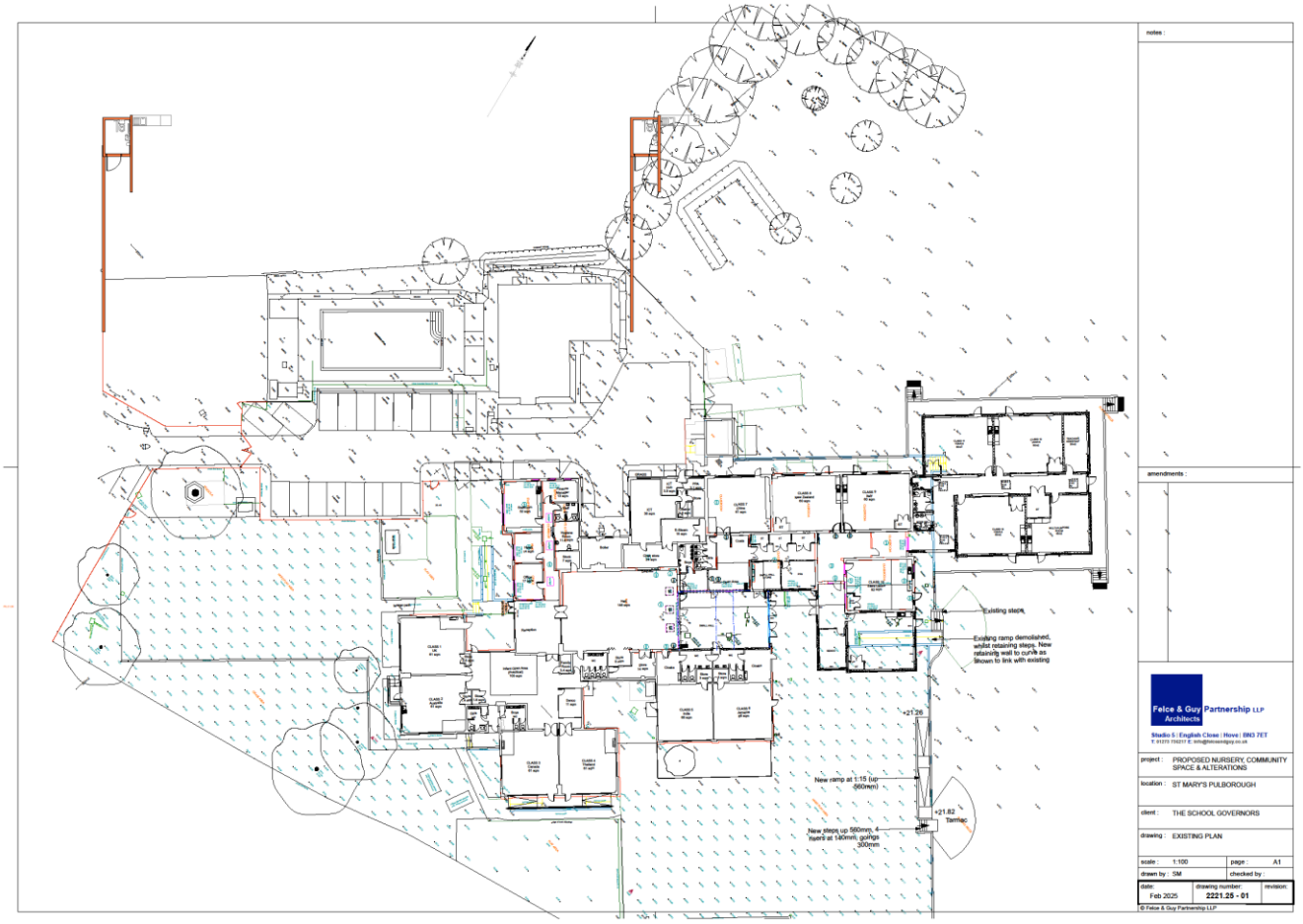


Figure 3: Existing site plan of St Mary's C of E Primary School.

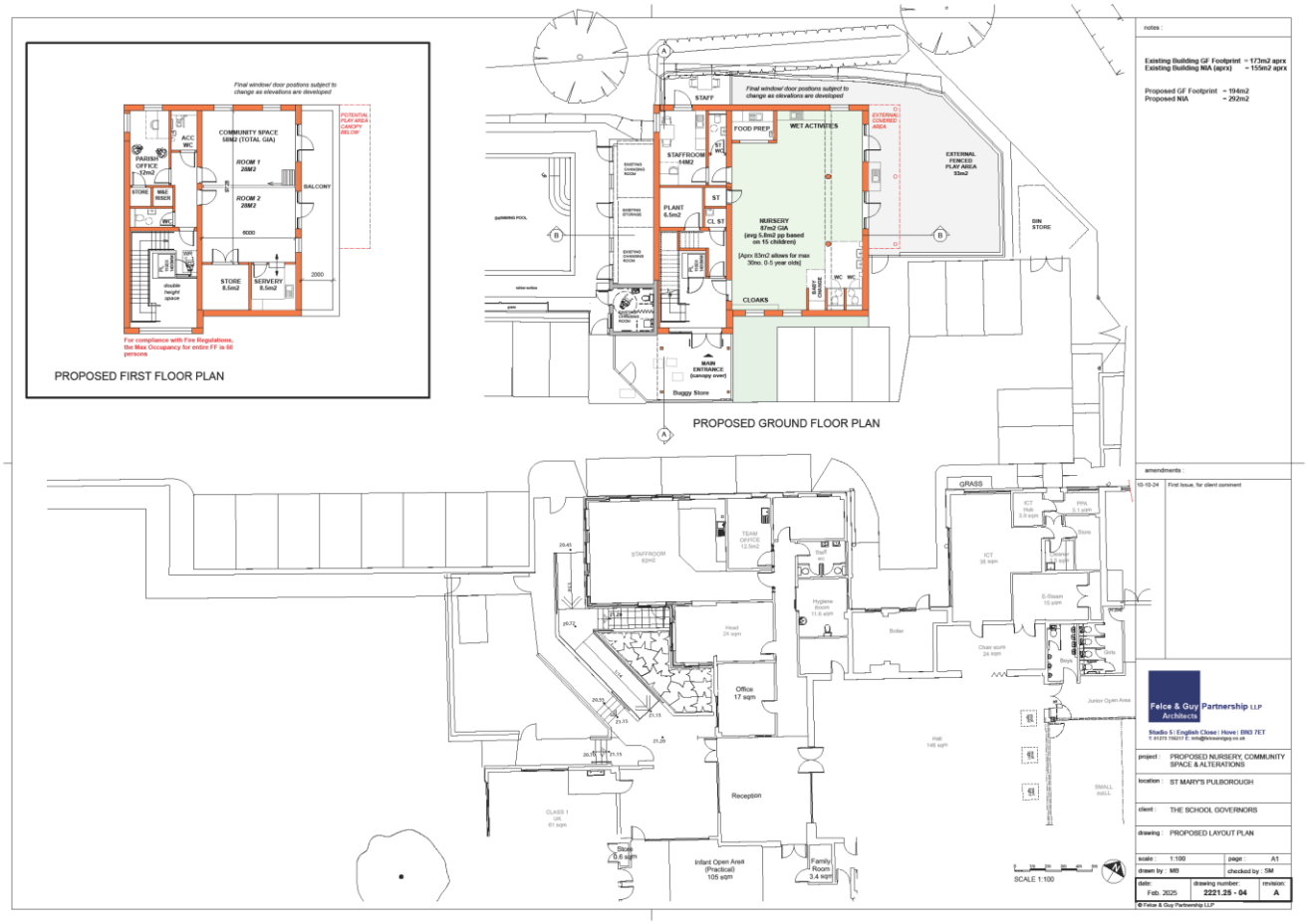


Figure 4: Proposed Ground and First floor layouts

5.0 SITE WATER USAGE

5.1 Historic Water Consumption

The previous building, which intends to be demolished, was originally used as a youth centre. The original building contains the following types and quantities of water consuming appliances:

Type	Quantity	Flow rate (1 Bar) / litre usage
WC (assumed 2005 spec)	5	6 Litres (Single flush)
WHB (assumed 1980's spec)	5	10 l/min
Sinks (assumed 2005 spec)	3	10 l/min

Table 1: List of existing water appliances to be removed from the scheme.

The building to be demolished only contains existing WHBs which were installed in the youth centre in the 1980's and have since not been replaced with more efficient taps. These appliances also cover a provision in the main building which is currently used as a nursery but will be relocated once the proposed development has been completed. The current WCs and sinks were installed in the mid 1990's and later replaced in 2005.

The following BREEAM water consumption calculator has been used to calculate the estimated consumption per person per day of the existing building. Considering the building is a youth centre, the educational building water consumption calculator has been used.

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Water efficiency calculator for new education buildings

BREEAM UK Delivered by bre

Building type	Description of building type	Default building occupancy	Default annual days/operation	Default daily hours of operation
Education - pre-school or primary school	TCP Classification D1: non-residential pre-school and primary schools.	18	195	10

Main building activity areas	Description of activity area	Activity area present in building?	Net Floor Area (m^2)
Education - Classroom areas	Include basic classroom areas only. Exclude halls, specialist practical classrooms, i.e. ICT, and learning resource/library areas.	No	
Education - Staff office and adminstration areas	Cellular or open plan office space, including staff rooms and staff kitchen where present/adjacent and reception areas (including library reception desk areas if present). Exlcudes meeting rooms, visitor waiting or circulation areas and other such spaces not permanently occupied.	No	
Education - Common room	Student common room.	Yes	175
Education - 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 staff to re-heat food, make tea etc.)	No	
Education - Changing facilities with showers	Changing facility with showers to be used by pupils	No	

Figure 5: Area of existing Youth Centre building.

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Water efficiency calculator for new education buildings

WC component - all activity areas	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
WC - male (no urinals installed)	Effective flush volume (Litres)	6.00	2.10	1.00	6.30
WC - female	Effective flush volume (Litres)	6.00	2.10	1.00	6.30

Urinal component - all activity areas	units	Specification	No. of cisterns	Flushing frequency (flushes/hour)	Consumption (L/person/day)

	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)

	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)

	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)	10.00	2.10	0.25	3.55
Shower use	Flow rate (litres/min)		0.001	5.60	0.00
Fixed use - vessel filling	Litres/person/day	-	-	-	1.98
Tap components (cleaning) - staff kitchenette					
Kitchen taps - kitchenette	Flow rate (litres/min)	10.00	0.0500	0.67	0.23
Dishwasher	Litres/cycle		0.0019	1.00	0.00
Tap components (cleaning and food preparation) - school canteen food preparation area					
Fixed use - food preparation		-		-	0.00
Fixed use - kitchen cleaning		-		-	0.00

	Microcomponent consumption (L/person/day)
Total	18.36

Figure 6: Daily water consumption of existing appliances.

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Water efficiency calculator for new education buildings

Water consumption calculation results

	Litres/person/day	m^3/person/yr
Water consumption - modelled baseline performance benchmark (excludes fixed uses)	16.38	3.19
Microcomponent Water consumption - modelled performance (excludes fixed uses)	16.38	3.19
Modelled water demand met via greywater and rainwater sources	0.00	0.00
If greywater/rainwater systems specified has the minimum % efficiency improvement for component specifications been met	System not specified	
Net modelled water consumption (excludes fixed uses)	16.38	3.19
Percentage improvement	0.00%	
Total Wat 01 BREEAM credits achieved	0 credits	
Total Wat 01 BREEAM Exemplary credits achieved	Exemplary level not achieved	
Key performance indicator - use of freshwater resource (includes fixed uses)	18.36	3.58

Figure 7: Water consumption calculation results of existing building.

The results from the water consumption calculation indicate that the existing building uses **16.38 Litres/ person/ day**.

5.2 Water Consumption to the Proposed Development

The new proposed development consists of the following appliances:

ID	Appliance Specification	Quantity	Flow rate (1 bar) / litre usage
WC CT10176R	VAN RIMLESS SHORT PROJECTION OPEN BACK CLOSE COUPLED PAN PACK - INCLUDING CISTERN AND SEAT	2	Dual Flush (full flush 6 litres, part flush 4 litres)
Junior WC RAKJUNPAKST	RAK Junior Back to Wall Toilet Pan – Urea Seat	3	Dual Flush (full flush 6 litres, part flush 4 litres)
WHB taps SF2251CP	SOLA 1/2" NON-CONCUSSIVE TAPS	5	5.3 l/min
Sink taps SL7/CH	Single Lever WRAS approved - chrome	3	5.25 l/min

Table 2: List of proposed Water Appliances.

With the relocation of the nursery comes the removal of two existing WHBs and sinks and the installation of new more water efficient appliances that use considerably less water per use than the existing list of appliances.

The ground floor of the new building contains 3x Junior size toilets, 2x sinks (adjusted to account for the removal of additional sinks in the main primary school building), and 3x WHB.

The first floor of the new building contains 2x adult size toilets, 1x sink, and 2x WHBs

The same educational building water consumption BREEAM calculator has been used to estimate the water consumption of the new proposed development

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Water efficiency calculator for new education buildings

BREEAM UK delivered by bre

Building type	Description of building type	Default building occupancy	Default annual days/operation	Default daily hours of operation
Education - pre-school or primary school	TCP Classification D1: non-residential pre-school and primary schools.	54	195	10

Main building activity areas	Description of activity area	Activity area present in building?	Net Floor Area (m^2)
Education - Classroom areas	Include basic classroom areas only. Exclude halls, specialist practical classrooms, i.e. ICT, and learning resource/library areas.	Yes	87
Education - Staff office and adminstration areas	Cellular or open plan office space, including staff rooms and staff kitchen where present/adjacent and reception areas (including library reception desk areas if present). Exlcudes meeting rooms, visitor waiting or circulation areas and other such spaces not permanently occupied.	Yes	26
Education - Common room	Student common room.	Yes	58
Education - 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 staff to re-heat food, make tea etc.)	No	
Education - Changing facilities with showers	Changing facility with showers to be used by pupils	No	

Figure 8: Area of proposed Nursery & Community Centre building.

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Water efficiency calculator for new education buildings

BREEAM UK delivered by bre

WC component - all activity areas	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
WC - male (no urinals installed)	Effective flush volume (Litres)	4.66	2.10	1.00	4.89
WC - female	Effective flush volume (Litres)	4.66	2.10	1.00	4.89

Urinal component - all activity areas	units	Specification	No. of cisterns	Flushing frequency (flushes/hour)	Consumption (L/person/day)

	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)

	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)

	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)	5.30	2.10	0.25	1.88
Shower use	Flow rate (litres/min)		0.001	5.60	0.00
Fixed use - vessel filling	Litres/person/day	-	-	-	1.98
Tap components (cleaning) - staff kitchenette					
Kitchen taps - kitchenette	Flow rate (litres/min)	5.25	0.0500	0.67	0.12
Dishwasher	Litres/cycle		0.0019	1.00	0.00
Tap components (cleaning and food preparation) - school canteen food preparation area					
Fixed use - food preparation		-		-	0.00
Fixed use - kitchen cleaning		-		-	0.00

	Microcomponent consumption (L/person/day)
Total	13.77

Figure 9: Daily water consumption of Proposed appliances.

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Water efficiency calculator for new education buildings		
	Litres/person/day	m^3/person/yr
Water consumption - modelled baseline performance benchmark (excludes fixed uses)	16.38	3.19
Microcomponent Water consumption - modelled performance (excludes fixed uses)	11.79	2.30
Modelled water demand met via greywater and rainwater sources	0.00	0.00
If greywater/rainwater systems specified has the minimum % efficiency improvement for component specifications been met	System not specified	
Net modelled water consumption (excludes fixed uses)	11.79	2.30
Percentage improvement	28.03%	
Total Wat 01 BREEAM credits achieved	2 credits	
Total Wat 01 BREEAM Exemplary credits achieved	Exemplary level not achieved	
Key performance indicator - use of freshwater resource (includes fixed uses)	13.77	2.68

Figure 10: Water consumption calculation results

The results from the water consumption calculator indicate that the proposed building will use **11.79 Litres/ person/ day**.

5.3 Water Consumption Comparison

The following table indicates the estimated total annual water consumption for both the existing and proposed buildings, based on the number of occupants within the building and number of days per year that the areas have/ will be used for. Occupant values based on information provided by the client.

Building	Daily consumption/ person/ day	Number of occupants	Days in use per year	Annual water consumption	Total Annual water consumption
Existing Building (Youth centre)	16.38	30	208	102,211.2	102,211.2
Proposed Building (Nursery)	11.79	20	261	61,543.8	86,067
Proposed Building (Community Centre)	11.79	20	104	24,523.2	

Table 3: Annual water consumption

When considerations are made to when both the Nursery and Community Centre will be in operation, the total annual water consumption for the new development equates to **86,067 Litres per annum**, which is considerably less than the existing Youth Centre at **102,211.2 Litres per annum**. This youth centre is assumed to be open 4 times per week with a maximum capacity of 60 people. However, an average capacity of 30 people has been used as this aligns more accurately with typical attendance of youth centres.

6.0 CONCLUSION

6.1 Water Budget

The assessment of the existing water consumption for St Mary's C of E primary School for the Youth Centre estimated the water consumption to be **102,211.2 Litres per annum**, based on 4 days of use per week with occupancy levels at 30 people.

The anticipated water consumption for the planned new development has been calculated to be **86,067 Litres per annum.**

The above assessment suggests that, due to the change in occupancy figures, and the specification of higher efficiency fittings, it is estimated that the new development will use **16,144.2 litres per annum** less than the same area under consideration and therefore demonstrates that the scheme achieves water neutrality.