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P2001647 - Brighton 3Ts

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Sustainability Statement Addendum

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**BDP.**

## **Sustainability Statement Addendum**

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# 1 Introduction

1.1 This document has been produced as a supplement to the Sustainability Statement [BDP-ME-SW-RP-0211] developed for planning. It outlines the revised requirements for awarding up to 5 credits based on BREEAM 2011 criteria. The following pages should be read in addition to the Sustainability Statement, and seek to establish whether the necessary standards are achieved to meet the planning condition based on the previous assumptions.

1.2 During the process of developing the Sustainability Statement, the Building Research Establishment (BRE) was in the process of issuing an updated version their BREEAM assessment calculator. The new BREEAM 2011 New Construction methodology requires the use of supplementary calculators to determine the number of credits awarded under both energy and water consumption. The water consumption calculator, however, had not been released at the time of writing the original report and the accuracy of the assumptions made under the new methodology could not be verified. The Wat01 – Water Consumption calculator is now available, and the following report details the inputs required, with the full calculator attached as Appendix A.

1.3 Clarification is required to confirm whether the requirements, as defined in Brighton & Hove County Council planning document SPD08, to achieve 60% in both the water and energy sections of BREEAM 2008 have been revised to account for the introduction of BREEAM 2011. Should this condition remain for the new methodology, a minimum of 6 from 9 credits must be achieved in the Water section to meet the SPD08 requirement.

## 2 Water Consumption Calculator

### METHODOLOGY OUTLINE

2.1 The BREEAM water efficiency method determines water efficiency (measured in l/person/day and m<sup>3</sup>/person/yr) for a building based on the buildings actual component specification and default usage patterns for the building type and its activity areas. This output is compared with the same output for a baseline component specification and the percentage improvement used to determine the number of BREEAM credits achieved.

2.2 Within Wat01 – Water Consumption there are 5 credits available, with the opportunity to achieve one additional exemplary level credit, dependent upon the overall reduction in water consumption achieved through the specification of fittings and the inclusion of grey and rain water harvesting where appropriate (nb. It has been confirmed that neither of these harvesting options are appropriate for Brighton 3Ts for use within the building). This credit has minimum standards associated with it, such that 1 credit must be achieved to award an ‘Excellent rating’, 2 or more credits to achieve ‘Outstanding’.

2.3 The thresholds for awarding credits are as follows:

**Table 2.1 Water Consumption credit breakdown**

% Improvement	No. of BREEAM Credits
12.5%	1
25%	2
40%	3
50%	4
55%	5
65%	Exemplary performance

2.4 The following fittings (where specified) are considered within the Healthcare element of the Wat01 Calculator, and therefore the efficiencies of these must be considered within the detailed design stages (where fittings are present):

- ..... WC
- ..... Urinals
- ..... Wash hand basin taps
- ..... Showers
- ..... Baths
- ..... Kitchen taps (staff/residents kitchen)
- ..... Domestic sized dishwashers
- ..... Kitchen taps: restaurant (pre-rinse nozzles only)
- ..... Waste disposal unit (commercial kitchens only)

- ..... Commercial sized dishwashers
- ..... Commercial sized washing machines
- ..... Grey water harvesting
- ..... Rain water harvesting

2.5 The table below outlines the standards, by component type, used to define the performance levels set in BREEAM. These defined levels of efficiency have been steered by a range of published sources of information and therefore reflect robust levels of typical, good, best and exemplary practice.

**Table 2.2 Component efficiency breakdown**

Component	Baseline	Level 1	Level 2	Level 3	Level 4	Level 5	Unit
WC	6	5	4.5	4	3.75	3	Effective flush volume (litres)
Wash hand basin taps	12	9	7.50	4.50	3.75	3	Volume (litres/min)
Showers	14	10	8	6	4	3.50	Volume (litres/min)
Baths	200	180	160	140	120	100	Volume (litres)
Urinal (2 or more urinals)	7.50	6	3	1.50	0.75	0	Volume (litres/bowl/hour)
Greywater/rainwater system	0%	0%	0%	25%	50%	75%	% of WC/urinal flushing demand met using recycled non potable water
Kitchen tap: kitchenette	12	10	7.50	5	5	5	Volume (litres/min)
Kitchen taps: restaurant (pre-rinse nozzles only)	10.30	9	8.30	7.30	6.30	6	Volume (litres/min)
Domestic sized dishwashers	17	13	13	12	11	10	Volume (litres/cycle)
Waste disposal unit	17	17	0	0	0	0	Volume (litres/min)
Commercial sized dishwashers	8	7	6	5	4	3	Volume (litres/rack)
Commercial/Industrial sized washing machines	14	12	10	7.50	5	4.50	Volume (litres/kg)

### 3 Revision of BREEAM Pre-assessment

#### HEALTHCARE 2008 ASSUMPTIONS

3.1 The 2008 pre-assessment assumes a maximum of 3 credits are achieved under Wat 1 – Water Consumption. The following assumptions were made to contribute to this score:

- ..... all WCs to have an effective flush volume of  $\leq 4.5$  litres
- ..... suitable guidance on appropriate use where dual flush cisterns are specified
- ..... flushing control to be suitable for frail or infirm users
- ..... taps to have a flow rate  $\leq 6$  litres/min and are either auto shut-off or electronic sensor taps
- ..... delayed action inlet valves are fitted on all WCs
- ..... showers have a flow rate of  $\leq 9$  litres/min

3.2 With the addition of water metering, a leak detection system and the specification of a non-mains supplied (rain water harvesting) irrigation system, the required 6 credits from 9 were predicted thus achieving  $>60\%$  as required by SPD08. This does not account for the inclusion of sanitary supply shut-off valves or any water recycling system.

#### 2011 NEW CONSTRUCTION ASSUMPTIONS

3.3 In comparison to the 2008 requirements, to achieve 3 credits in line with the other assumptions, the following fittings would need to be specified to the associated efficiencies, based on the requirement to achieve 60% of the available credits within the Water section:

**Table 3.1 Component efficiency targets**

Component	Level 3	Unit
WC	4	Effective flush volume (litres)
Wash hand basin taps	4.5	Volume (litres/min)
Showers	6	Volume (litres/min)
Baths	140	Volume (litres)
Kitchen tap: kitchenette	5	Volume (litres/min)
Commercial sized dishwashers	5	Volume (litres/rack)

3.4 Where fittings are present, the appropriate efficiency must be at least that as defined above. These efficiencies are significantly higher than those as outlined under the 2008 methodology.

3.5 Clinical areas e.g. scrub facilities, are exempt from the calculations as strict infection control measures are required. Flexibility in specifying which fittings are included within the assessment is permitted where, in some cases, the use of water-efficient fittings and appliances may not be appropriate to

the needs of the patient, and inappropriate specification may adversely affect the incidence and propagation of infections. In such instances, advice will need to be sought from the BRE.

3.6 Additionally, there is a requirement within healthcare facilities for each bath to be fitted with a device that automatically stops the flow from the taps when the bath's maximum capacity is reached, and the flushing control for each WC/urinal must be suitable for operation by patients with frail or infirm hands or activated by electronic sensors.

3.7 Domestic sized dishwashers have not been included in the assessment as all plates and cutlery will be washed centrally in commercially-sized units, and washing machines excluded as all laundry will be processed off-site by. Additionally, NHS facilities are required to implement better practice in food disposal and move away from waste disposal units. It is proposed, that food waste will be collected by a third party for commercial composting. Pre-rinse taps are not specified.

3.8 As mentioned above, clinical areas are exempt from the calculations. Guidance to efficiency savings can be found in *Health Technical Memorandum 07-04: Water management and water efficiency – best practice advice for the healthcare sector*, however, where measures should be employed as far as is practicably possible to reduce water consumption.

3.9 Rainwater and grey water harvesting for WC flushing is not seen as a feasible due infection control requirements. Further information is provided in Appendix C of the Sustainability Statement. Sufficient rainwater will be harvested for irrigation of the landscaped areas, but this does not contribute to this BREEAM credit.

3.10 With the addition of water metering, a leak detection system and the specification of a non-mains supplied irrigation system, the required 6 credits from 9 can be achieved if the above levels are achieved.

## Additional Information

### Relevant definitions

**Clinical areas:** Areas of the building in which medical functions are carried out that require specific restricted environmental conditions such as humidity, daylighting, temperature, etc. (e.g. X-ray, operating department, delivery room, etc).



## 4 Alternative Strategy

4.11 To achieve the required 60% as defined by planning document SPD08, the facility must achieve at least 6 from 9 credits in the Water section. In the Sustainability Statement, this is suggested through:

- ..... 3/5 credits under Wat01 – Water consumption
- ..... 1/1 credit under Wat02 – Water monitoring
- ..... 1/2 credit under Wat03 – Water leak detection and prevention
- ..... 1/1 credit under Wat04 – Water efficient equipment

4.12 Pursuing this strategy would require the higher specification of fittings to the increase efficiencies. This is likely to raise clinical facilities maintenance costs to maintain systems, in addition to raising supply chain and procurement costs. To assess the real impact, additional studies would need to be conducted to ensure that fittings remain fit for purpose.

### REDUCED SANITARYWARES SPECIFICATION

4.13 Alternatively, the Level-2 fittings could be specified, which are more in-line with the 2008 assessment, thus achieving 2 credits under Wat01. This option would, however, require the installation of flow-control devices to each WC area/facility to ensure water is supplied only when needed, giving 2 credits under Wat02. This would meet the required 6 credits. This is achieved by fitting one of the following devices:

- ..... A time controller i.e. an automatic time switch device to switch off the water supply after a predetermined interval.
- ..... A programmed time controller i.e. an automatic time switch device to switch water on and/or off at predetermined times.
- ..... A volume controller i.e. an automatic control device to turn off the water supply once the maximum preset volume is reached.
- ..... A presence detector and controller i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed.
- ..... A central control unit i.e. a dedicated computer-based control unit for an overall man-aged water control system, utilising some or all of the types of control elements listed above.

4.14 Most commonly, this is achieved through the specification of a solenoid valve linked to PIR sensors for the majority of the toilet facilities within the hospital. The criteria for this issue do not apply to toilet facilities in clinical areas. Again, this strategy will raise supply chain and procurement costs, though shut-off valves could be linked to PIRs specified for lighting.

## 5 Conclusion

5.1 Following the release of the 2011 New Construction Wat01 – Water Consumption calculator, we are presented with two options to meet the planning requirement to achieve 60% of the available Water credits. If the assessment is taken forward based on the current specification then 5 from 9 credits will be achieved within the Water section, equating to a section percentage of 55.5%. Therefore, an additional credit must be sought. There are two options outlined below to achieve this.

5.2 It must be noted that clinical areas and fittings are not included within the Wat01 assessment.

### OPTION 1

5.3 Achieve 3 credits through the specification of fittings using the Wat01 calculator. This would require an increase in fitting efficiencies to meet the more onerous requirements over the initial 2008 assessment as outlined above, such as 5/3 dual-flush cisterns (4l effective flush volume). This would introduce supply-chain and procurements costs, and the affect of reduced water consumption across these areas would need to be assessed to establish appropriateness.

### OPTION 2

5.4 Maintain sanitary fittings in line with the 2008 assessment (though minor improvements will likely be required to meet the Level-2 requirements), and seek to achieve the second credit under Wat02 – Water leak detection and prevention to achieve 6 credits. This will require the installation of flow control device to each WC area/facility; most commonly achieved through the installation of solenoid valves linked to PIR sensors. Again, this would introduce supply-chain and procurements costs.

5.5 Both strategies outlined above need to incorporate a device that automatically stops the flow from the taps when the bath's maximum capacity is reached, and the flushing control for each WC must be suitable for operation by patients with frail or infirm hands or activated by electronic sensors. These are additional requirements specific to healthcare facilities.

An additional factor to explore is whether the 60% planning target remains applicable to a 2011 assessment.

# Appendix A Example Wat01 Water Consumption Calculator

Please select the option that best defines the building type being assessed	Healthcare - Hospital
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**Water Consumption - Building Microcomponents**

		WC	Urinals	Wash hand basin taps	Showers	Baths	Kitchen taps (staff/residents kitchen)	Domestic sized washing machines	Domestic sized dishwashers	Kitchen taps: restaurant (pre-rinse nozzles only)	Waste disposal unit (commercial kitchens only)	Commercial sized dishwashers	Commercial sized washing machines
Component assessed for building type (if specified)		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Please confirm if this component type is specified in the building and will be installed		Specified	Not Specified	Specified	Specified	Specified	Specified		Not Specified	Specified	Not Specified	Specified	Not Specified
Please select the number of different types of specification that you wish to enter for this component type?		1		1	1	1	1			1		1	
Type 1	Please confirm the BREEAM water efficient component level achieved for this component - type 1	3		3	3	3	3			3		3	
	Please confirm the no. of type 1 components specified												
	Type 1 - aggregate component level	3.00		3.00	3.00	3.00	3.00			3.00		3.00	
Type 2	Please confirm the BREEAM water efficient component level achieved for this component - type 2												
	Please confirm the no. of type 1 components specified												
	Type 2 - aggregate component level												
Type 3	Please confirm the BREEAM water efficient component level achieved for this component - type 3												
	Please confirm the no. of type 1 components specified												
	Type 3 - aggregate component level												
Type 4	Please confirm the BREEAM water efficient component level achieved for this component - type 4												
	Please confirm the no. of type 1 components specified												
	Type 4 - aggregate component level												
Type 5	Please confirm the BREEAM water efficient component level achieved for this component - type 5												
	Please confirm the no. of type 1 components specified												
	Type 5 - aggregate component level												
Type 6	Please confirm the BREEAM water efficient component level achieved for this component - type 6												
	Please confirm the no. of type 1 components specified												
	Type 6 - aggregate component level												
Type 7	Please confirm the BREEAM water efficient component level achieved for this component - type 7												
	Please confirm the no. of type 1 components specified												
	Type 7 - aggregate component level												
Type 8	Please confirm the BREEAM water efficient component level achieved for this component - type 8												
	Please confirm the no. of type 1 components specified												
	Type 8 - aggregate component level												
Total number of fittings for component													
Level achieved for component type		3.00		3.00	3.00	3.00	3.00			3.00		3.00	
Component weighting factor for building type		24.65%		10.46%	28.48%	24.41%	3.23%			3.35%		5.42%	
Contribution to overall component level achieved		0.74		0.31	0.85	0.73	0.10			0.10		0.16	
Overall component level achieved		3.00	Note: for the purpose of awarding credits this figure is rounded down to the nearest whole component level, e.g. if the total from the individual component levels is 0.7, then the component level achieved is 'Basel'										

**Non-Potable Water Yield - Water Recycling**

Greywater system specified and installed in compliance with BS8525-1:2010 Greywater Systems - Part 1 Code of Practice	No
Rainwater system specified and installed in compliance with BS8515:2009 Rainwater Harvesting Systems - Code of practice	No
Other permissible source of non potable recycled water Please give a brief description of source/system	No e.g. waste water from building process

Please select from the drop down list below how you would like to assess performance of the specified system(s) and then enter the relevant % opposite:

*Note: input figure to two decimal places only.*

BREEAM component level achieved for water recycling	Baseline
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*Note: credits only available for achieving BREEAM component level 4 or 5 in the elemental method.*

**Wat01 Results**

Total Wat01 BREEAM credits achieved	3
Total Wat01 BREEAM Innovation credits achieved	0