



## **APPENDIX 2**

### **BREEAM Wat 01 Preliminary Water Consumption Calculator**

**Building details**

Building name	Hinxton A Park for AgriTech
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)	11357.56	253	10

Main building activity areas	Description of activity area	Activity area present in building?	Net Floor Area (m <sup>2</sup> )
Office - Office areas	Cellular or open plan office space, including staff kitchen where present/adjacent and reception areas. Exclude meeting rooms, visitor waiting or circulation areas.	Yes	90000
Office - Small workshop / laboratory space	Small scale workshop or category 1 laboratory area	Yes	16800
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	5200
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.	Yes	

**Potable Demand (baseline assessment) Using Standard Performance Fittings**

**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)	6.00	1.00	1.00	3.00
WC - female	Effective flush volume (Litres)	6.00	4.00	1.00	12.00

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)	7.50	80.00	7.50	3.96
	No. of urinal bowls	180.00			

Manual/automatic operated pressure flushing valve (all activity areas)	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
	Flush volume (litres)	7.50	3.00	1.00	5.63
	No. of urinal bowls	180.00			

Waterless urinals (all activity areas)	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
	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)
<b>Taps components (personal hygiene) - all activity areas</b>					
Wash hand basin taps	Flow rate (litres/min)	12.00	4.00	0.25	8.12
Shower use	Flow rate (litres/min)	18.00	0.154	5.60	15.52
Fixed use - vessel filling	Litres/person/day	-	-	-	1.63
<b>Tap components (cleaning) - staff kitchenette</b>					
Kitchen taps - kitchenette	Flow rate (litres/min)	12.00	1.00	0.67	5.44
Dishwasher	Litres/cycle	17.00	0.04	1.00	0.68
<b>Tap components (cleaning and food preparation) - staff canteen food preparation area</b>					
Kitchen taps - pre-rinse nozzle	Flow rate (litres/min)	10.30	-	60.00	0.05
Dishwasher	Litres/rack	8.00	-	0.217	0.79
Waste disposal unit	Flow rate (litres/min)	12.00	-	30.00	0.03
Fixed use - food preparation	Litres/person/day	-	-	-	1.06
Fixed use - kitchen cleaning	Litres/person/day	-	-	-	2.51

	Microcomponent consumption (L/person/day)
Total	60.44



## Assessment of Potable Demand Applying Best Practice Consumption Figures for Fittings

### 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)	3.00	1.00	1.00	1.50
WC - female	Effective flush volume (Litres)	3.00	4.00	1.00	6.00

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)	3.50	80.00	7.50	1.85
	No. of urinal bowls	180.00			

Manual/automatic operated pressure flushing valve (all activity areas)	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
	Flush volume (litres)	3.50	3.00	1.00	2.63
	No. of urinal bowls	180.00			

Waterless urinals (all activity areas)	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
	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)
<b>Taps components (personal hygiene) - all activity areas</b>					
Wash hand basin taps	Flow rate (litres/min)	3.00	4.00	0.25	2.03
Shower use	Flow rate (litres/min)	5.00	0.154	5.60	4.31
Fixed use - vessel filling	Litres/person/day	-	-	-	1.63
<b>Tap components (cleaning) - staff kitchenette</b>					
Kitchen taps - kitchenette	Flow rate (litres/min)	6.00	1.00	0.67	2.72
Dishwasher	Litres/cycle	10.00	0.04	1.00	0.40
<b>Tap components (cleaning and food preparation) - staff canteen food preparation area</b>					
Kitchen taps - pre-rinse nozzle	Flow rate (litres/min)	6.00	-	60.00	0.03
Dishwasher	Litres/rack	10.00	-	0.217	0.99
Waste disposal unit	Flow rate (litres/min)	-	-	30.00	0.00
Fixed use - food preparation	Litres/person/day	-	-	-	1.06
Fixed use - kitchen cleaning	Litres/person/day	-	-	-	2.51

Total	Microcomponent consumption (L/person/day)	27.67
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### Water consumption calculation results

	Litres/person/day	m <sup>3</sup> /person/yr
Water consumption - modelled baseline performance benchmark (excludes fixed uses)	44.48	11.25
Microcomponent water consumption - modelled performance (excludes fixed uses)	22.46	5.68
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)	22.46	5.68
Percentage improvement	49.50%	
Total Wat 01 BREEAM credits achieved	3 credits	
Total Wat 01 BREEAM Innovation credits achieved	Exemplary level not achieved	
Key performance indicator - use of freshwater resource (includes fixed uses)	27.67	7.00

## Assessment of Potable Demand Applying Best Practice Consumption Figures for Fittings and 40% Greywater and Harvested Rainwater Savings

### 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)	3.00	1.00	1.00	1.50
WC - female	Effective flush volume (Litres)	3.00	4.00	1.00	6.00

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)	3.50	80.00	3.50	0.86
	No. of urinal bowls	180.00			

Manual/automatic operated pressure flushing valve (all activity areas)	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
	Flush volume (litres)	3.50	3.00	1.00	2.63
	No. of urinal bowls	180.00			

Waterless urinals (all activity areas)	units	Specification	Usage/person/day	Usage factor	Consumption (L/person/day)
	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)
<b>Taps components (personal hygiene) - all activity areas</b>					
Wash hand basin taps	Flow rate (litres/min)	3.00	4.00	0.25	2.03
Shower use	Flow rate (litres/min)	5.00	0.154	5.60	4.31
Fixed use - vessel filling	Litres/person/day	-	-	-	1.63
<b>Tap components (cleaning) - staff kitchenette</b>					
Kitchen taps - kitchenette	Flow rate (litres/min)	6.00	1.00	0.67	2.72
Dishwasher	Litres/cycle	10.00	0.04	1.00	0.40
<b>Tap components (cleaning and food preparation) - staff canteen food preparation area</b>					
Kitchen taps - pre-rinse nozzle	Flow rate (litres/min)	6.00	-	60.00	0.03
Dishwasher	Litres/rack	10.00	-	0.217	0.99
Waste disposal unit	Flow rate (litres/min)	0.00	-	30.00	0.00
Fixed use - food preparation	Litres/person/day	-	-	-	1.06
Fixed use - kitchen cleaning	Litres/person/day	-	-	-	2.51

Total	Microcomponent consumption (L/person/day)	26.68
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### Non potable water yield - greywater system

Has, or will, the greywater system be specified and installed in compliance with BS8525-1:2010 Greywater Systems - Part 1 Code of Practice	Yes
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Greywater source (building components)	Greywater collected	Proportion of components collected from (%)	Greywater yield (L/person/day)
Wash hand basin taps	Yes	40%	0.81
Showers	Yes	40%	1.72
Kitchen taps - kitchenette	Yes	40%	1.09
Dishwasher - staff kitchenette	Yes	40%	0.16
Kitchen taps - pre-rinse nozzle	Yes	40%	0.01
Dishwasher - food preparation area	Yes	40%	0.40
Greywater source (other components)	Typical greywater yield (litres)	Frequency of yield (days)	Greywater yield (litres/day)
Other source of greywater	25	1	25.00

Total	Greywater yield (L/person/day)	4.20
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### Non potable water yield - rainwater system

Has, or will, the rainwater system be specified and installed in compliance with BS8515:2009 Rainwater Harvesting Systems - Code of practice	Yes
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How has the storage capacity for the proposed system been calculated?	BS8515 Intermediate approach
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#### Rainwater yield if intermediate:

Collection area (m2)	Rainfall (average mm/yr)	Hydraulic filter efficiency (%)	Yield co-efficient (%)	Annual rainwater yield (Litres)	Rainwater yield (L/person/day)
112,000	650	0.90%	0.50%	3276	0.00

#### Rainwater yield if detailed:

Daily rainfall collection (litres)	Rainwater yield (L/person/day)
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## Non Potable Water Demand - Building Components

			Greywater and/or rainwater yield (L/person/day)
Total			4.20
Component	Greywater and/or rainwater utilised for component	Proportion of components using greywater and/or rainwater yield (%)	Maximum permissible demand (L/person/day)
WC flushing	Yes	40%	3.00
Urinal flushing	Yes	40%	1.40
Total			Demand met by yield (L/person/day) 4.20
<i>Other permissible components</i>			
Are there other permissible components present which demand greywater and/or rainwater yield?			No
			Maximum permissible demand (L/day)
			0
Proportion of maximum permissible demand utilised by other permissible components (%)			
			Demand met by yield (L/person/day)
Total			0.00
			Greywater and/or rainwater demand met by yield (L/person/day)
Total			4.20

## Water consumption calculation results

	Litres/person/day	m <sup>3</sup> /person/yr
Water consumption - modelled baseline performance benchmark (excludes fixed uses)	44.53	11.27
Microcomponent water consumption - modelled performance (excludes fixed uses)	21.48	5.43
Modelled water demand met via greywater and rainwater sources	4.20	1.06
If greywater/rainwater systems specified has the minimum % efficiency improvement for component specifications been met	Yes	
Net modelled water consumption (excludes fixed uses)	17.28	4.37
Percentage improvement	61.20%	
Total Wat 01 BREEAM credits achieved	5 credits	
Total Wat 01 BREEAM Innovation credits achieved	Exemplary level not achieved	
Key performance indicator - use of freshwater resource (includes fixed uses)	22.48	5.69