Response to Tyréns planning review issue 01 dated 04/02/2020.

Introduction

This note sets out Hoare Lea's response to the comments made by Tyréns in their planning review report dated 04/02/2020, in respect to the water efficiency measures only.

Tyréns queries and proposed Hoare Lea responses

5.1. Low-use fittings

Section 3 of the Outline Water Resources Scoping Note states that taps to wash basins will be delivering 8 litres/minute but the BREEAM calculator provided as Appendix 5 of the same document is based on taps delivering 4 litres/minute. Four litres/minute would represent current good practice and could be the target value for tap output for wash basins.

Wash basin taps will deliver 4 litres per minute, in line with the BREEAM Calculator. 'Outline Water Resources Scoping Note' to be revised to include this clarification.

Showers are expected to typically consume 12 litres/minute. This is a high value and justification should be provided for this selection. Showers providing 10 litres/minute or less could be selected to further reduce water consumption.

The proposed shower flow rate of 12 litres/minute (0.2 litres per second) is considered efficient in the context of a hotel and leisure sector application. We highlight that 0.2 litres per second is quoted as the shower design flow rate within both BS 806 (Table 2) and BS 8558 (Table 5).

However, opportunities to reduce shower consumption rates will be further embraced as the design progresses and actual equipment selections are made. The continuing innovation associated with products such as aerated showers will be adopted to achieve shower flow rates below 12 litres/minute where feasible.

It should be noted 12 litres/min is the intended specification for hotel guestrooms only. The BREEAM calculation is based on the following differentiated flow rates:

- 12 litres/minute for all hotel guestroom showers (498 No. in total)
- 10 litres/minute for all waterpark showers (39 No. in total)
- 8 litres/minute for the back of house staff showers in staff changing rooms (2 No. in total)

These are proposed as allowable flow rates to achieve the targeted 3 No. credits under Wat 01. If lower flow rates are installed to showers it is possible that further credits may be available.

5.3. Water-saving measures

Leak detection is allowed for; however, the wording of the requirement for it is not written for a site of this scale. BREEAM requirement WAT 03 calls for leak detection within buildings rather than across sites with many buildings. The principle of the credit should be applicable to the entire site with all buildings and plant areas meeting this requirement with any water-consuming plant having a metered connection back to a site-wide water consumption monitoring system. The system should be capable of identifying leaks and raising an alarm if necessary. As a matter of good design, we would advise that all major plant areas using or storing water are metered.

Through liaison with Thames Water, it is understood that 2 No. separate mains cold water utility services will be provided to serve the development, 1 No. to serve the hotel and family entertainment centre, and 1 No. to serve the waterpark. Where mains water services enter the development, separate check meters will be provided with an output to the building management system, for monitoring water consumption. The utility boundary meters and incoming check meters will form part a BREEAM UK New Construction Non-domestic Buildings 2018 credit reference Wat 03 compliant major leak detection system.

In addition, any areas containing significant water storage tanks will be fully bunded, with leak detection probes installed at strategic positions within the tank rooms which shall be connected to the Building Management System. The system will be interlocked with solenoid valves on the incoming water supplies to shut down services in the event of a probe being activated.

Check meters will be fitted on the supply to each storage tank and major appliance (e.g. water softener, water treatment, domestic hot water plant, pressurisation sets, etc.), as well as strategically located throughout the development (e.g. food and beverage facilities, retail units, conference suite, significant ablutions, etc.) which shall provide a digital signal back to the Building Management System, to facilitate monitoring and logging and to raise audible and visual alarms when consumption is determined to be outside of normal operating parameters.

6.1 Groundwater abstraction

Based on the above we would consider that groundwater abstraction on the site may be a viable means of reducing reliance of mains water supply to the development. Current EA abstraction licensing exempts abstractions of less than 20 cubic metre per day although greater volumes may be extracted subject to permitting.

The site geology and permeability of groundwater-bearing strata will dictate the viability of abstraction. We would advise that CDC seek assurance from the applicant that such opportunity has been explored and adequately assessed.

The option for groundwater abstraction has not been pursued to date, due to the wording provided within Paragraph B221 of the CDC Local Plan which states "'Cherwell District lies within an area of serious water stress and the Upper Cherwell area has been over abstracted". However, based on the guidance provided by Tyréns it appears that groundwater abstraction may be a possibility. It is therefore proposed to carry out a groundwater extraction feasibility exercise during the detailed design stage, with a view to adopting groundwater extraction if found to be viable, in order to minimise consumption from the mains water infrastructure.

7.0 BREEAM

Our review of the BREEAM pre-assessment shows that there is reference to both the hotel and the water park. It is, however, unclear if both developments are being assessed by BREEAM. From the documentation only a single pre-assessment has been provided which implies that potentially both buildings are being done under the same assessment. This is an area for CDC to seek clarification.

The BREEAM assessment is for the entire development (including the waterpark); this is reflected in the pre-assessment included with the planning submission documentation.

7.1.1. Wat 01: Water consumption

Under this credit it appears that three credits have been targeted in the Outline Water Resources Scoping Note (4), however in the Energy and Sustainability Statement (3) one credit has been targeted under this issue.

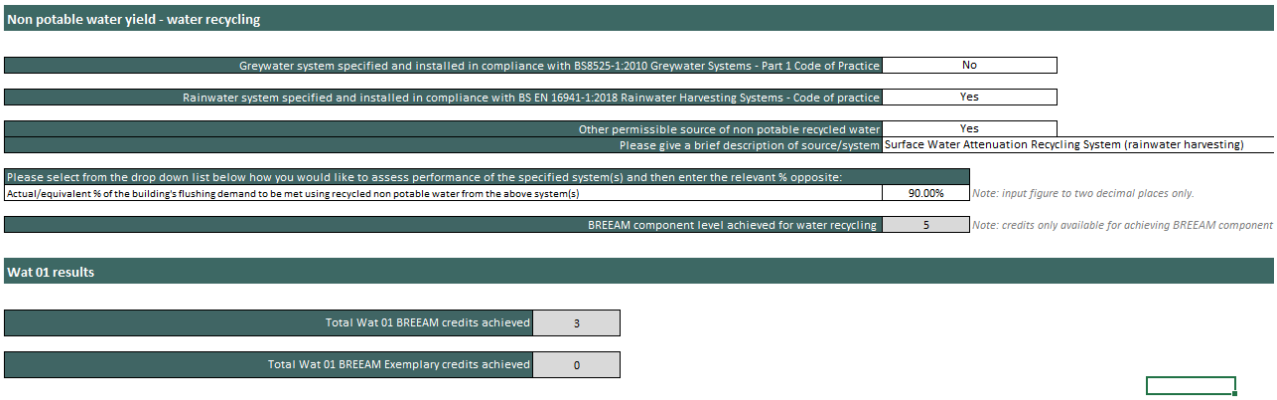
A minimum of 3 No. credits have been targeted for credit reference Wat 01, as identified in the 'Wat 01 Water consumption: Other building type calculator' included within the BREEAM Pre-Assessment, and as appended to the Outline Water Resources Scoping Note (Appendix 5). However, there is an error in 'Table 10: BREEAM Target Summary' within the 'Energy and Sustainability Statement' which incorrectly states 1 No. credit has been targeted for Wat 01; we will revise this document to include this clarification.

We highlight that the 'Energy and Sustainability Statement' does include multiple written references highlighting 'the development is targeting to achieve 3 credits under the BREEAM 'Wat 01' credit issue, equivalent to a 40% saving in regulated water consumption compared to the BREEAM 2018 baseline'. We further note that total target score stated in Table 10 takes into account 3 No. credits for Wat 01; the 1 No. credit identified in Table 10 against Wat 01 is merely a typo, and the overall BREEAM score will remain unchanged.

It should be noted the BREEAM targets were updated post-planning as part of the Stage 2 issue, and the baseline target has now increased to 65.7%.

Further review suggests that a rain water system will be implemented although it does not appear to be accounted for in the calculations. The Scoping Note states that this system should offset 90% of the WC flushes, however the figures would need to be incorporated into the BREEAM water calculator to establish what advancement this may have on the number of credits achieved under this section.

The credit score for Wat 01 accounts for 90% of WC flushing volume being met by the surface water attenuation recycling system (rainwater harvesting). Please see screenshot from the current water calculation tool below, which is included within the 'BREEAM New Construction 2018 Pre-Assessment Report' (revision 02) included within the planning submission documentation, copy below:



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 BS EN 16941-1:2018 Rainwater Harvesting Systems - Code of practice	Yes	
Other permissible source of non potable recycled water	Yes	
Please give a brief description of source/system	Surface Water Attenuation Recycling System (rainwater harvesting)	
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:		
Actual/equivalent % of the building's flushing demand to be met using recycled non potable water from the above system(s)	90.00%	*Note: input figure to two decimal places only.*
BREEAM component level achieved for water recycling	5	*Note: credits only available for achieving BREEAM component*

Wat 01 results	
Total Wat 01 BREEAM credits achieved	3
Total Wat 01 BREEAM Exemplary credits achieved	0

The water calculator screenshot incorporated into Appendix 5 of the 'Outline Water Resources Scoping Note' was superseded by the final planning submission version; the 'Outline Water Resources Scoping Note' will be revised to include this clarification.

7.1.2. Wat 02: Water monitoring

The credit is targeted through the provision of mains water metering and sub-metering to water-consuming plant. Due to the large scale of this development, some areas housing water-consuming plant may fall outside of the BREEAM assessment scope. As per the comment in Section 5.3 above, we would advise that all major plant areas using or storing water are metered

Refer to response to item 5.3 above which documents proposed extent of water metering, which address this query.

7.1.3. Wat 03: Water leak detection

The credit for a BREEAM-compliant system has been targeted, however its implementation seems to be restricted to checking the underground pipe work between the utilities meter and the incoming mains water meter. Given the amount of water which may be used on the development it stands to reason that the system should be extended to cover underground pipe work for the water park. This is an area for CDC to seek clarification.

Refer to response to item 5.3 above which documents proposed extent of water metering, which address this query.

The Wat 03 credit also considered flow control devices. The implementation of PIR sanitary supply shut-off valves has not been targeted. Given the that the sanitary fittings on the development are likely to be used by members of the public, insisting on such measures would be prudent to ensure that water is not wasted in the case of one of the fittings failing in an open position. If these are not to be installed then adequate reasoning should be provided.

The Wat 03 flow control devices credit has not been targeted within the BREEAM Pre-Assessment, as the scope of coverage to meet BREEAM requirements would include all guestroom WCs, which we consider not to be a suitable application for flow control devices. Based on experience, such devices are unreliable, and have an unacceptable failure rate, which would be problematic from an operational perspective. However, the principle of providing flow control devices on the cold-water supplies to all publicly accessible non-guestroom

WC areas will be considered throughout the development. This approach will not enable the credit to be awarded for BREEAM, therefore the score would remain aligned with the previous target.

We highlight also that it is not feasible to provide sanitary shut off valves on domestic hot water supplies, due to the associated risk of pathogenic bacteria (e.g. Legionella).

7.1.5. Pol 03: Flood and surface water management

The current pre-assessment shows that only two credits are targeted (covering flood resilience), with a further two credits noted as potential (covering surface run-off). Given that rain water attenuation and harvesting systems are proposed, it would seem that all four credits could be targeted. It may even be possible for the design to achieve a further fifth credit (covering minimising watercourse pollution). The applicant should provide commentary as to why this is not targeted.

Please refer to response from Curtins provided within their separate response document.