ENVIRONMENTAL STATEMENT

VOLUME 2

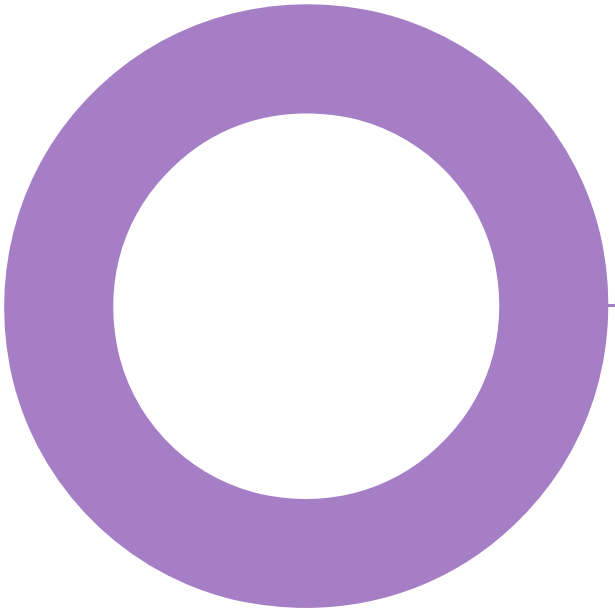
APPENDIX 12.3 – OUTLINE WATER RESOURCES SCOPING NOTE

HOARE LEA

Proposed Great Wolf Lodge. Chesterton, Bicester, Oxfordshire.

Great Lakes UK Ltd.

OUTLINE WATER RESOURCES SCOPING NOTE
NOVEMBER 2019



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
P01	09/08/2019	Draft issue, for Client / design team comment	TK	MM	
P02	13/08/2019	Client and design team feedback incorporated.	TK	MM	AP
P03	25/10/2019	Report updated to reflect current status, and surface water attenuation recycling incorporated to address pre-planning application feedback received from Planning Authority.	TK	MM	AP
P04	01/11/2019	Design team comments incorporated.	TK	MM	AP
P05	11/11/2019	Design team comments incorporated.	TK	MM	AP

Project number: 3103118
Document reference: REP-3103118-08-TK-20190809-DN07-RevP05.docx

Contents.

1. Introduction

Great Lakes UK Limited are proposing a leisure resort (Great Wolf Lodge) on land to the east of the M40 and south of the A4095 in Chesterton Bicester, currently occupied by Bicester Hotel Golf and Spa.

The redevelopment of part of the existing golf course will incorporate an indoor waterpark, family entertainment centre (FEC), hotel, conferencing facilities and restaurants, with associated access, parking and landscaping.

This design note outlines the proposals to address the water resource requirements documented within 'The 'Cherwell Local Plan 2011 – 2031' Part 1 Adopted 20 July 2015'.

2. Cherwell Local Plan Requirements

The Cherwell Local Plan incorporates the following Policies which outline the requirement to reduce the impact of development on water environment, maintain water quality, ensure adequate water resources and promote sustainability in water use:

ESD 1: Mitigating and Adapting to Climate Change

ESD 3: Sustainable Construction

ESD 6: Sustainable Flood Risk Management

ESD 7: Sustainable Drainage Systems

ESD 8: Water Resources

This design note specifically focuses on outlining the proposals to address the water resource consumption requirements of the above policies, with particular focus on the following policy requirements:

a) Policy ESD 3 states:

"*Cherwell District is in an area of water stress".*

"All new non-residential development will be expected to meet at least BREEAM 'Very Good' with immediate effect, subject to review over the plan period to ensure the target remains relevant. The demonstration of the achievement of this standard should be set out in the Energy Statement. The strategic site allocations identified in this Local Plan are expected to provide contributions to carbon emissions reductions and to wider sustainability."

b) Policy ESD 8 states:

"*The Council will seek to maintain water quality, ensure adequate water resources and promote sustainability in water use*".

"*Water quality will be maintained and enhanced by avoiding adverse effects of development on the water environment. Development proposals which would adversely affect the water quality of surface or underground water bodies, including rivers, canals, lakes and reservoirs, as a result of directly attributable factors, will not be permitted. Development will only be permitted where adequate water resources exist, or can be provided without detriment to existing uses. Where appropriate, phasing of development will be used to enable the relevant water infrastructure to be put in place in advance of development commencing.*"

"*Policy ESD 8 will be used to ensure that new development is located in areas where adequate water supply can be provided from existing and potential water supply infrastructure.*"

3. Water Consumption Policy Compliance Measures

Policy ESD 3 states all new non-residential developments will be expected to meet at least BREEAM 'Very Good'.

A preliminary BREEAM 2018 'Pre-Assessment' has been carried out in conjunction with Great Wolf Resorts (GWR) and their design team, which demonstrates that the necessary 'Very Good' rating will be comfortably achieved.

A significant number of sustainability focused measures will be implemented to ensure that the developments sustainability credentials meet and surpass the identified planning requirements, as well as satisfying the requirements of all applicable regulations.

The credits which are currently targeted in the BREEAM 'water category' which relate to water consumption (i.e. credit references Wat 01 to Wat 04) are summarised in Table 1 below, together with the associated water consumption mitigation measures that will be adopted:

Credit Reference	Targeted No. of Credits	Notes
Wat 01: Water Consumption	3	Low-flow fittings and water-efficient equipment will be installed, examples include: - Low flow rate shower heads - WCs with 4.5 l effective flush - Wash hand basin taps with flow rate of 8 l/s - Commercial dishwashers 7 l/rack - Commercial washing machines 12 l/kg In addition to the above measures, WCs throughout the development will be provided with recycled surface water to significantly reduce annual water consumption across the development. The adoption of these measures is anticipated to result in a minimum of a 40% improvement over the 'baseline building water consumption' as set by BREEAM for this credit A preliminary copy of the BREEAM Wat 01 calculator output is provided in Appendix 5, which demonstrate that a minimum of 3 No. credits will be achieved.
Wat 02: Water monitoring	1	Mains water metering will be incorporated in the design, as well as sub-meters to water-consuming plant or building areas consuming 10% or more of the building's total water demand. Meters will be connected to the central Building Management System.
Wat 03: Water leak detection	1	A leak detection system capable of detecting a major water leak will be installed on the utilities water supply to detect any major leaks within the building, as well as between the buildings and the utilities water supply (i.e. on the underground service pipe from the water meter/s at the site boundary to the point of entry into the building/s).

Credit Reference	Targeted No. of Credits	Notes
Wat 04: Water efficient equipment	1	Systems and processes will be identified to reduce the relevant water demand of water uses not covered under Wat 01 and establish, through either good practice design or specification, a demonstrable reduction in the total water demand of the building. This will relate principally to the swimming pool, and WC cisterns throughout the development.

Table 1 – Targeted BREEAM 2018 Water Credits

To elaborate on Wat 01 and Wat 04, the following significant mitigation measures will be adopted to considerably reduce the developments water consumption:

Water Park Filtration (BREEAM Wat 04 mitigation measure)

Great Wold Resorts will invest in the adoption of regenerative media filter technology (i.e. 'Defender' filters) in lieu of industry standard 'deep bed medium rate sand filters', in order to considerably reduce the amount of water required for the backwash process.

To illustrate the scale of the saving, large sand vessel filters can typically consume 40 l/s over a 6 to 7 minute backwash period, which typically occurs 3 to 4 times per day (i.e. circa 15,000 litres per backwash).

'Defender filters' require far fewer backwashes, and typically only consume circa 3,000 litres at any one time.

It is estimated that the adoption of 'Defender' filters will reduce the water consumption of the waterpark by 28,800,000 litres per annum.

Toilet/WC Cistern Water Recycling System (BREEAM Wat 01 mitigation measure)

In response to pre-planning application feedback advice provided by Cherwell District Council's 'water resources' consultant (i.e. Tyrens), the provision of a greywater recycling system has been considered to provide recycled water from showers and baths to WC cisterns within the development.

Typically, the implementation of a greywater recycling system in a hotel application requires the implementation of dedicated 'greywater' vertical drainage stacks within guestroom risers, which run into a significant greywater collection tank, via horizontal drainage float/s. Water is pumped from the collection tank, processed/treated via proprietary packaged equipment, and then stored in a treated water tank, prior to being pumped WC cisterns.

The following key initial concerns have been identified with the implementation of such a system for this development:

i. Additional space pressure on vertical risers, potentially negatively impacting on building massing.

ii. No basement located below the hotel to accommodate a collection tank (i.e. 36m^3 minimum storage is anticipated to be required, equivalent to a tank circa 4m x 3m x 3m).

iii. To overcome the lack of basement, collection from the 1st to 4th floors only could be considered. However, given the length runs and associated gradient of the horizontal floats required to connect all of the dedicated vertical shower drains together, the horizontal floats could not be accommodated within the physical constraints of the building, without significantly impacting on building massing.

Following consulting with a water treatment specialist (i.e. SDS Limited) to review alternative options to address the received pre-application feedback, a proprietary surface water recycling system will be adopted to significantly reduce annual water consumption across the development.

The current surface water drainage scheme includes permeable sub-bases, swales, storage ponds and attenuation tanks to control the stormwater run-off from the site.

Water will be pumped from the main below ground surface water attenuation tank to serve toilet/WC cisterns within the development, via a day tank and appropriate water filtration and treatment equipment.

An example of a potentially suitable proprietary system is the 'Intellistorm' system supplied and manufactured by SDS Limited.

In normal use, and under storm conditions, the external buried surface water attenuation tank will fill with rainwater, which will be slowly released through a 'hydrobrake' flow limiter, to the existing stormwater drainage system, at the agreed discharge rate.

The Intellistorm system utilises an automatic control system to regulate the flow of surface water from the attenuation tank based on predicted rainfall data, electronically provided to the system via a continuous link to the Met Office, which provides regular updates on forthcoming predicted rainfall. If the volume of the predicted rainfall exceeds the free capacity in the tank then the outfall valve/s will be opened and the tank level lowered to achieve the calculated required capacity on the day before the rainfall is due. Though the adoption of this philosophy, the outflow from the attenuation tank will not add to the flow rate during a storm event,

The Intellistorm control system software will calculate the storage volume required for surface water attenuation, based on the Met Office weather data, and ensure that sufficient spare capacity is available within the attenuation tank at all times. Once this capacity is met, the outlet valve/s will close, ensuring that surface water is retained within the attenuation tank, for the purposes of providing recycled water to the development.

Surface water will be pumped from the attenuation tank to a holding tank (i.e. day tank) within the building, through suitable filtration. Filtered surface water from the day tank will be suitably treated and distributed throughout the building to serve WCs. When there is no surface water available within the surface water attenuation tank, mains cold water will be utilised to fill the day tank, to ensure that there is no break in the supply to WCs within the development.

In the event of a power or data failure, the surface water attenuation tank outlet valve/s will fail open, ensuring that the full attenuation storage volume is available for the next storm event.

SDS Limited estimate that the provision of the described surface water attenuation system could reduce annual water consumption by circa 13,860m^3 per annum (i.e. 13,860,000 litres per annum), which equates to the estimated annual collection volume of the surface water attenuation tank. It is estimated that this represents more than 90% of the annual WC flushing requirements for the development.

Irrigation (BREEAM Wat 01 mitigation measure)

The parkland style to the landscape integrated around much of the site will comprise native trees, woodland, grassland and wildflower meadow that will not require watering once established, as these species will be selected to ensure they are tolerant of natural seasonal conditions. Ornamental planting will be used sparingly but will also largely comprise of native species, along with species tolerant of varying UK weather conditions, to minimise the requirement for watering following establishment.

Occasional watering would be required during the first 5 years of establishment to all areas of new planting, which will be provided by bowser, fed from existing waterbodies in the wider parkland. It is anticipated that no mains cold water will be required for irrigation purposes across the site.

4. Estimated Water Consumption

In advance of any design works or the implementation of any water consumption mitigation measures, Great Wolf Resorts estimated the annual water consumption for the development to be 192,600,000 litres per annum. This estimate was developed by Great Wolf Resorts, and is based on operational data from equivalent operational Great Wolf Resort developments across the USA.

Through the adoption of the identified water consumption mitigation measures, it is estimated that the annual water consumption for the development can be reduced to 141,512,000 litres, which equates to circa 395,285 litres per day. This estimate is considered a worst-case scenario, and is based on 100% occupancy throughout the year, factoring in a one-week maintenance shut down period per annum (i.e. operational for 358 days per annum).

Table 1 below provides a breakdown of the estimated water consumption for the site:

Demise	Estimated Consumption (Litres)
Hotel	168,750 per day
FEC & Conference (excluding Laundry)	15,750 per day
Laundry	154,500 per day
Waterpark	95,000 per day
Total (per day):	**434,000**
Total (per annum):	**155,372,000**
Reduction through adoption of surface water attenuation tank recycling system	-13,860,000 per annum
Total (per annum):	141,512,000
Total (per day):	395,285

This 'worst case scenario' estimate has been generated based on the following documentation:

a) The Hotel and Family Entertainment Centre water consumption has been based on Institute of Plumbing 'Plumbing Engineering Services Design Guide' guidance.
b) The Laundry water consumption has been based actual consumption data for comparable operational Laundry facilities within existing Great Wolf Resort lodges.
c) The Waterpark water consumption has been based on site specific information provided by the waterpark specialist, Neuman Aqua (i.e. 95,000 litres per day).

5. Incoming Water Supply Application Status

A 'pre-planning capacity check enquiry' application was submitted to Thames Water on 29th August 2018 for a new mains cold water service to serve the development, with an estimated annual consumption of 192,600,000 litre per annum and an estimated peak flow rate of 11 litres per second.

The application was based on preliminary estimated water consumption data provided by Great Wolf Resorts in advance of any site-specific design works, or the adoption of site-specific mitigation measures to minimise the developments water consumption.

Following the submittal of the 'pre-planning capacity check enquiry', Thames Water provided a 'Clean Water Budget Estimate' dated 19th September 2018 (refer to Appendix 1), which detailed a new 180mm HPPE water main to serve the development, and associated metering (Thames Water have provisionally proposed 2 No. water meters at the site boundary, 1 No. to serve the waterpark, and 1 No. to serve the rest of the development).

A new mains cold water point of connection to existing Thames Water mains cold water infrastructure was identified by Thames Water circa 512m from the site boundary, as outlined in Figure 1 below:

Figure 1 – Proposed Point of Connection to Existing Mains Water Infrastructure.

Thames Water also confirmed on the 19th September 2018 that based on their initial review, their supply network has sufficient capacity to cater for 50 dwellings of the proposed 500 key hotel. In order to cater for the requested annual consumption, Thames Water advised that they will need to carry out a 'Clean Water Hydraulic Modelling Study' to assess the network capabilities and identify appropriate upgrades or offsite reinforcement requirements (refer to Appendix 2).

On the 10th July 2019, Thames Water were requested to clarify that the budget quotation was based on 192,600,000 litres per annum (equivalent 527,000 litres per day). Thames Water responded on the 11th July 2019 confirming "the increased demand will not impact on the budget estimate provided as the mains services previously indicated are capable of supplying the increased flow rate" (refer to Appendix 3)

On the 17th September 2019, Thames Water were advised that the estimated annual water consumption has reduced to 155,372,000 litres per annum. Thames Water responded on the 24th September 2019 reconfirming that they will need to carry out a 'Clean Water Hydraulic Modelling Study' to assess the network capabilities and identify appropriate upgrades or offsite reinforcement requirements. (refer to Appendix 4).

A formal instruction, together with the associated underwriting agreement, has been submitted to Thames Water enabling them to proceed with their 'Clean Water Hydraulic Modelling Study', based on the reduced estimated annual water consumption requirement.

6. Programme of Works Going Forward.

Thames Water will carry out the necessary modelling works to definitively confirm the extent of the reinforcement works required to cater for the anticipated annual water consumption requirements, and the scope and timescales associated with any offsite improvement works.

As the design process progresses, the Great Wolf Resort design team will continue to explore opportunities to introduce additional measures to improve water consumption efficiency above and beyond compliance, wherever technically feasible and viable.

7. References

1. The Cherwell Local Plan 2011-2031 Part 1 Adopted 20th July 2015 (incorporating Policy Bicester 13 re-adopted on 19 December 2016). Cherwell District Council, North Oxfordshire.

8. Appendices

Appendix 1 - Thames Water 'Clean Water Budget Estimate'

Appendix 2 - Thames Water Existing Network Capacity Correspondence

Appendix 3 - Thames Water Supply Capacity Clarification Email

Appendix 4 - Thames Water Reduced Estimated Annual Consumption Clarification Email

Appendix 5 - Preliminary BREEAM Wat 01 Calculator Output

Appendix 1 – Thames Water 'Clean Water Budget Estimate'

Ms Christina Papaioannou
Hoare Lea
.12-13 Stable Street
London
NC1 4AB

DS reference DS6052519

developer.services@thameswater.co.uk

08000 093 921
Mon-Fri 8am-5pm

thameswater.co.uk/developerservices

19th September 2018

Your clean water budget estimate / point of connection report

Site location: Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Dear Christina

Thank you for your correspondence dated 29th August 2018 regarding the above development consisting of a hotel, conference centre and indoor and outdoor waterpark.

Please note that you are now able to calculate the likely charges involved in your scheme by consulting our guide, 'Charging arrangements for new connection services'.

https://developers.thameswater.co.uk/New-connection-charging

Please be aware that this report is based upon the details and drawings provided. If there are any subsequent changes to the details and information on your drawing, the contents of this report will become invalid and a new assessment will be needed.

We've listed below the approximate costs to serve the site.

Finding your best fit

When arranging supplies for your site, we want you to choose the installer that best suits your needs and timescales. This may or may not be us.

Independent self-lay providers could be able to offer cost-effective terms and fit in better with your construction programme, and might also be able to install multiple utilities. You can find out more about the self-lay option at
developers.thameswater.co.uk/Developing-a-large-site/Using-a-self-lay-provider

NAVs are companies that can become new water and/or wastewater providers within an existing water company's region to serve specific customers or developments. You may be able to use a NAV if you meet criteria defined by Ofwat. To find out more, visit Ofwat's website at ofwat.gov.uk/regulated-companies/markets/nav-market or our website at https://wholesale.thameswater.co.uk/wholesale-services/wholesale-providers

Contaminated land

If our assessment of your full soil report deems the site to be ‘contaminated’, you’ll need to install mains and service connections using barrier pipe, rather than plastic pipe.

What to do next

If you’d like to proceed with your design, you can apply for a formal quotation for water supply to developer.services@thameswater.co.uk for the attention of the self-lay team or design team.

For more information, see developers.thameswater.co.uk/domestic-and-small-commercial/water-supply/new-or-replacement-water-supply/how-to-get-a-quote.

Network capacity

Please find attached the standard network response letter.

Fire hydrant and sprinkler demand

Please note that we aren’t able to confirm whether a fire hydrant or sprinkler demand can be accommodated on a new connection. **You’ll need to contact an independent consultant or specialist company for hydrant testing for fire-fighting purposes.**

Working near our assets

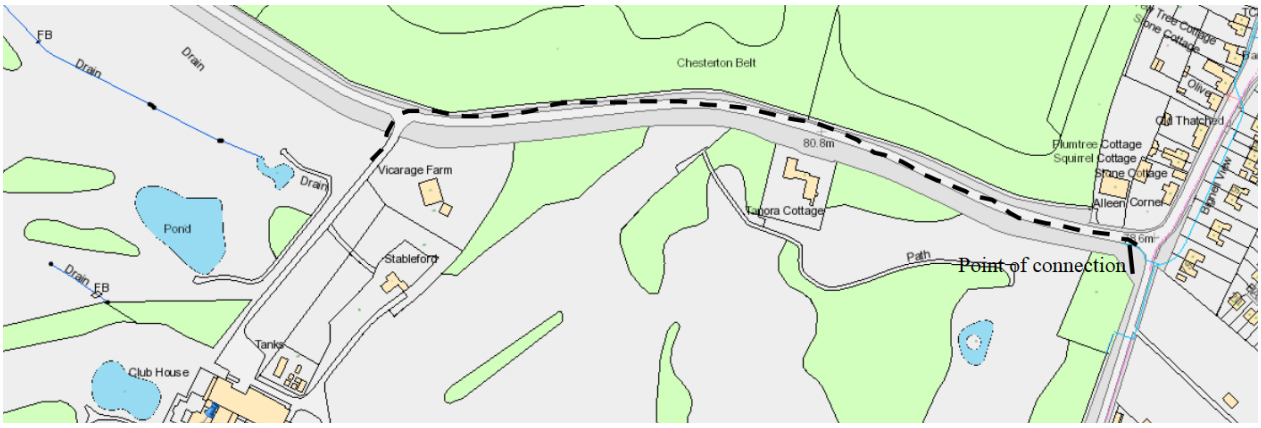
If you're planning significant work near our assets, it's important you minimise the risk of damaging them. You can find more information at developers.thameswater.co.uk/domestic-and-small-commercial/building-near-pipes.

Diversions

From our records, we don’t anticipate that any clean water assets need to be diverted to accommodate your proposals.

Please note however that any diversions which are needed will be charged at full cost, payable in

New main point of connection location



New main and water supply connections cost

There are two options available for installation of mains and water supply connections:

- Self-lay option, where a self-lay provider carries out the work on our behalf and we adopt the asset once completed. Self-lay providers are independent companies who you can ask to provide competitive quotes, and may be able to offer more flexible timescales, or be able to install multiple utilities.
- Statutory option, where we carry out the work.

Table 1. Budget cost for works undertaken:

Activity required	Self-lay budget cost	Statutory budget cost
Lay approximately 512 metres of 180mm diameter HPPE water main in carriage way. Offsite Mains Reinforcement: This can only be determined by the outcome of the Flow & Pressure Test or a Hydraulic Modelling Study which will be funded by Thames Water from the 1st April 2018.	Total: £328,580.00 Asset Payment: £272,437.00 The above costs are only applicable if the site is requisitioned as one package	Total: £328,580.00 DAD: £50,123.00 The above costs are only applicable if the site is requisitioned as one package
2 x 125mm metered MDPE bulk supply from the proposed main and the supply of 1 internal fit meters which need to be fitted within the riser cupboards in the public spaces on each floor at a height of no more than 1,500mm from the floor level	Total: £816.00 2 x 100mm diameter meter, supply to be laid by the Self Lay Company	Total: £6,000.00

- Total: shows a total cost of the scheme
- DAD: Discounted Aggregate Deficit – shows the lump sum contribution payable by the developer towards the scheme cost
- Asset payment: shows the forecast sum to be paid to self-lay provider for asset installed and adopted by us

Infrastructure and network charges

343.75 x £140 for Water Infrastructure Charges = £48,125.00
343.75 x £210 for Sewerage Infrastructure Charges = £72,187.50

1x Network Charge for waste for the waterpark= £13,440.00

Please note that infrastructure charge credits may be applicable based on the water consumption at the site within the last five years.

Building water

It's important that you contact us before you start using water on your building work. If you don't, we'll base your charges on 0.17 per cent of the contract value. For more details visit developers.thameswater.co.uk/domestic-and-small-commercial/water-supply/water-for-building-work

Water quality and hardness

You can check water quality in your area at secure.thameswater.co.uk/dynamic/cps/rde/xchg/corp/hs.xsl/899.htm

Asset location search

You can contact our Property Searches team to request an asset location search (for which a fee is payable) showing where any nearby mains, sewers and other equipment is situated. Please visit thameswater-propertysearches.co.uk or call 0845 070 9148.

Disconnection

If you'd like to permanently disconnect your existing water supply, please apply at secure.thameswater.co.uk/dynamic/cps/rde/xchg/corp/hs.xsl/15131.htm

Important note about this estimate

Please note all information enclosed in this letter is for budgetary purposes only and should by no means be taken as the actual cost for serving this development site.

I hope you find this information helpful. If you've any further queries, please don't hesitate to contact us.

Yours sincerely,

Sherie Dickman

Thames Water
Developer Services – Customer Experience Team
developer.services@thameswater.co.uk
0800 009 3921

Appendix 2 - Thames Water Network Capacity Correspondence

Ms Christina Papaioannou
Hoare Lea
12-13 Stable Street
London
NC1 4AB

Water pre-planning
Our ref DS6052519

19th September 2018

Pre-planning enquiry: Capacity concerns

Dear Christina

Thank you for providing information on your development at Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE.

We've assessed your proposals and concluded from our initial review that our supply network will have enough capacity to supply the first 50 dwellings of the proposed 500 key hotel and waterpark, but unfortunately we're unable to meet the needs of your **full** development at this time.

In order to ensure we make the appropriate upgrades – or 'off-site reinforcement' – to serve the remainder of your development, we'll need to carry out modelling work and, if required, design a solution and build the necessary improvements. This work is done at our cost.

How long could modelling and reinforcement take?

Typical timescales for a development of your size are

Modelling: 6 months
Design: 6 months
Construction: 6 months
Total: 18 months

If the time you're likely to take from planning and construction through to first occupancy is longer than this, we'll be able to carry out the necessary upgrades in time for your development. If it's shorter, please contact me on the number below to discuss the timing of our activities.

What do you need to tell us before we start modelling?

We're responsible for funding any modelling and reinforcement work. We need, though, to spend our customers' money wisely, so we'll only carry out modelling once we're confident that your development will proceed.

In order to have this confidence, we'll need to know that you **own the land and have either outline or full planning permission**. Please email this information to us as soon as you have it.

If you'd like us to start modelling work ahead of this point, we can do this if you agree to underwrite the cost of modelling and design. That means we'll fund the work – but you agree to pay the cost if you don't achieve first occupancy within five years.

I've attached an **example** of our underwriting agreement. Please call me on the number below if you'd like to discuss this or want to request a copy of the agreement to complete.

If the modelling shows we need to carry out reinforcement work, then before we start construction we'll need you to supply us with notification that you've confirmed your 'nominated competent person' (NCP) submission to the Health and Safety Executive.

What do I need to do next?

If you've satisfied the points above, then you should compare your own timeline with the typical timescales we've suggested for our activities. If the time you're likely to take from planning and construction through to first occupancy is **more** than the total time we're likely to take, we'll be able to carry out the necessary upgrades in time for your development.

If it's **less** than this, you might want to ask us to start modelling earlier – in which case we'll require you to underwrite the cost, as noted above.

Please note that you must keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient supply capacity.

If you've any further questions, please contact me on 0800 009 3921.

Yours sincerely

Sherie Dickman

Thames Water

Appendix 3 - Thames Water Supply Capacity Clarification Email

Tim Knights

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 16 July 2019 15:06
To: Christina Papaioannou
Subject: RE: RE: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

[External email]

Dear Christina,

There will be no increase on the budget estimate even though there is an increase in load, as the pipe sizes indicated on the budget estimate are sufficient to deal with the increased load.

Many Thanks

Claire Gould

Developer Services - Network Co-Ordinator

Mobile: 07747 640 806

claire.gould@thameswater.co.uk

Original Text

From: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
To: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>;Claire Gould <Claire.Gould@thameswater.co.uk>
CC:
Sent: 12.07.19 12:10:55
Subject: RE: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Hello Claire,

Thank you for your response. Does this mean that there will not be any increase on the budget estimate cost even though there is an increase in the load?

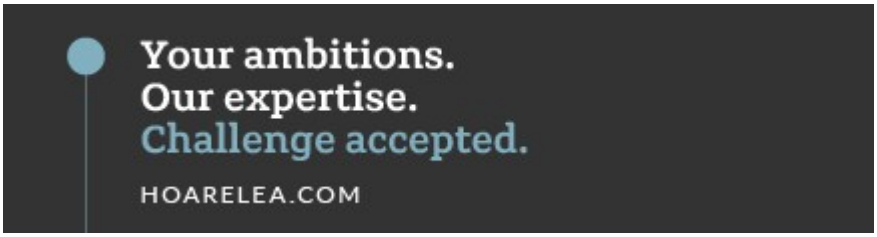
Regards,

Christina Papaioannou
Engineer

DDI +44 20 3668 7146

Tel +44 20 3668 7100
Email christinapapaioannou@hoarelea.com

HOARE LEA



From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 11 July 2019 16:34
To: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
Subject: RE: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

[External email]

Dear Christina,

The increased demand will not have an impact on the budget estimate provided as the mains and services previously indicated are capable of supplying the increased flow rate.

Many Thanks

Claire Gould

Developer Services - Network Co-Ordinator

Mobile: 07747 640 806

claire.gould@thameswater.co.uk

Original Text

From: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
To: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
CC:
Sent: 10.07.19 11:49:32
Subject: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Hello,

Thank you for your time on the phone today. As discussed, could you please revise the quotation based on the correct consumption per day?

192600 m3/yr which results to**527 m3 per day**

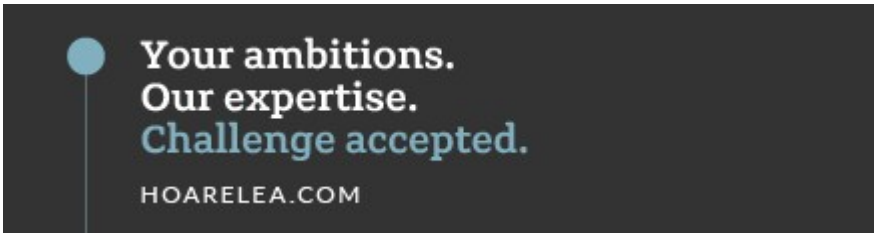
Could you please advise when we will have the revised quote back?

Regards,

Christina Papaioannou
Engineer

DDI +44 20 3668 7146
Tel +44 20 3668 7100
Email christinapapaioannou@hoarelea.com

HOARE LEA



Appendix 4 - Thames Water Reduced Estimated Annual Consumption Clarification Email

Tim Knights

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 24 September 2019 12:06
To: Christina Papaioannou
Subject: RE: RE: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

[External email]

Dear Christina,

We are unable to confirm that there is sufficient capacity within the existing network to supply your full development. This was outlined in the letter sent on 19th September 2018. We will need to undertake a clean water hydraulic modelling study to further assess the impact of the development on the existing network, and to identify whether any offsite reinforcement is required.

The hydraulic modelling study will only be raised on instruction of the developer. This will either be once land ownership and planning permission has been granted, or the developer can choose to carry out the modelling study ahead of this by entering into an underwriting agreement.

The budget estimate you have been provided is an estimated cost of connecting the site to our network based on the information provided in the pre-planning application. It does not guarantee that we will be able to serve the development. This will only be known once a hydraulic modelling study has been carried out.

Thames Water has the right to refuse any commercial development where there is insufficient capacity to supply the development.

Many Thanks

Claire Gould

Developer Services - Network Co-Ordinator

Mobile: 07747 640 806

claire.gould@thameswater.co.uk

Original Text

From: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
To: Claire Gould <Claire.Gould@thameswater.co.uk>
CC: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 17.09.19 15:15:14

Subject: RE: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Afternoon Claire,

Thank you for the phone call today. As discussed, we are about to submit a planning application by the end of this month and we have received the first pre-planning advice from the planners around the water in the area.

Based on the information that we had received form you we provided the below statement:

Details of correspondence with Thames Water have been included in the Outline Water Strategy. Thames Water has confirmed capacity can be expanded (at cost to the developer) to meet the requested need for 192,600m^3/year (equivalent to 527m^3/day). However, this is below the stated volumes of water required for the proposed development.
Feedback received from the planners:
Can this discrepancy be clarified please?

We would like to see how compliance with this policy requirement will be achieved in the planning application – e.g. through a Flood Risk Assessment and/or Water Resources Impact Assessment, including an assessment of potential impacts to groundwater.

Correspondence details with Thames Water regarding capacity constraints have been included in the Outline Water Strategy. However, the volumes quoted are lower than those put forward as total volumes required for the proposed development.
Feedback received from the planners:
We would like clarification on this discrepancy and confirmation that capacity demands can be met.

Claire, could you please provide us with a statement that will cover all the above concerns raised by the planners and confirm that the estimate can meet the estimated daily and annual consumption figures provided in the table below?

Demise	Estimated Annual Consumption (Litres)
Hotel	168,750
FEC & Conference (excluding Laundry)	15,750
Laundry	154,500
Waterpark	95,000
Total (per day):	**434,000**
Total (per annum):	**155,372,000**

As discussed on the phone, we need a statement from you with the actions that Thames Water have done until today for the project, the outcome and what we need to do going forward in more details. Thank you.

Any enquiries please call me.

Regards,

Christina Papaioannou
Engineer

DDI +44 20 3668 7146
Tel +44 20 3668 7100
Email christinapapaioannou@hoarelea.com

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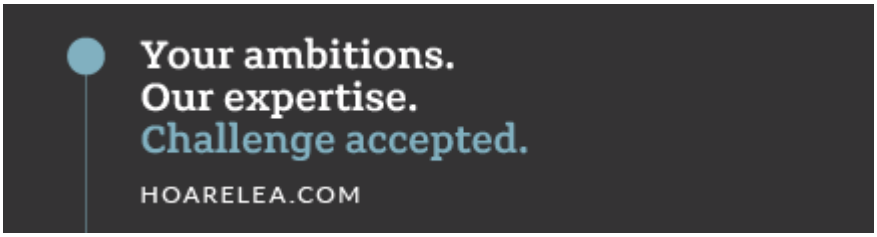

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 11 July 2019 16:34
To: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
Subject: RE: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

[External email]

Dear Christina,

The increased demand will not have an impact on the budget estimate provided as the mains and services previously indicated are capable of supplying the increased flow rate.

Many Thanks

Claire Gould

Developer Services - Network Co-Ordinator

Mobile: 07747 640 806

claire.gould@thameswater.co.uk

Original Text

From: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
To: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
CC:
Sent: 10.07.19 11:49:32

Subject: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Hello,

Thank you for your time on the phone today. As discussed, could you please revise the quotation based on the correct consumption per day?

192600 m3/yr which results to**527 m3 per day**

Could you please advise when we will have the revised quote back?

Regards,

Christina Papaioannou
Engineer

DDI +44 20 3668 7146
Tel +44 20 3668 7100
Email christinapapaioannou@hoarelea.com

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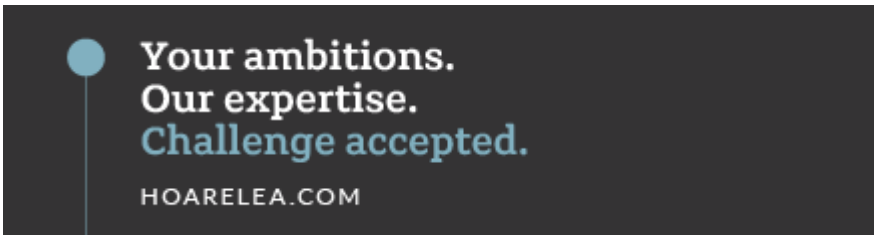

From:DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 19 September 2018 10:04
To: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
Subject: RE: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Good Morning

Please find correspondence with regards to the above site.

Regards

Sherie

Original Text

From: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
To: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
CC:
Sent: 10.09.18 17:14:27

Subject: RE: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Hello,

Ref: **DS6052519**

Thank you for providing this information in that short notice. Do you have all the requested information in order to proceed with our budget estimate application?

- The annually water consumption load is 192600 m3/yr (1.06 m3 per day).

Additionally, after a meeting with the client, we have decided to proceed with a budget estimate for waste water, could that be included in this application or should I submit a new one?

Regards,

Christina Papaioannou
Graduate Utility & Energy Infrastructure Consultant

DDI +44 20 3668 7146
Tel +44 20 3668 7100
Email christinapapaioannou@hoarelea.com

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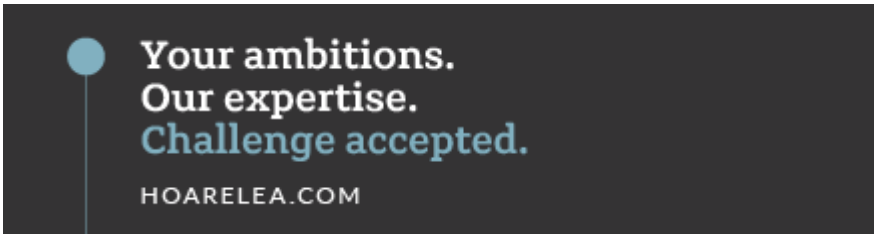

From:DEVELOPER.SERVICES@THAMESWATER.CO.U [mailto:DEVELOPER.SERVICES@THAMESWATER.CO.UK]
Sent: 06 September 2018 14:43
To: Christina Papaioannou <ChristinaPapaioannou@hoarelea.com>
Subject: DS6052519 Great Wolf Resort A4095 Bicester Oxfordshire OX26 1TE

Afternoon Christina

Thank you for your email today. The closest main that we will have to use is to the East of the development, which is approx. 512 meters away.

Regards

Sherie

Appendix 5 – Preliminary BREEAM Wat 01 Calculator Output

BREEAM 2018 Wat 01 Water consumption: Other building type calculator

BREEAM UK delivered by bre

Please select the option that best defines the building type being assessed	Residential Institution - Hotel

Water consumption - building microcomponents

		WC	Urinal (2 or more urinals)	Urinal (1 urinal only)	Wash hand basin taps	Showers	Baths	Kitchen taps: kitchenette	Domestic sized washing machines	Domestic sized dishwashers	Kitchen taps: restaurant (pre-rinse nozzles only)	Waste disposal unit (commercial kitchens only)	Commercial sized dishwashers	Commercial or industrial sized washing machines
Component assessed for building type (if specified)		Yes	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	Specified	Specified	Specified	Specified	Specified	Specified		Specified	Specified	Not Specified	Specified	Specified
Please select the number of different types of specification that you wish to enter for this component type?		4	3	1	4	3	1	1		1	1		1	2
Type 1	Water component performance - Type 1	4.50	6.00	8.00	4.00	12.00	180.00	6.00		13.00	9.00		6.00	10.30
	Units	litres	litres/bowl/hr	litres/bowl/hr	litres/min	litres/min	litres	litres/min		litres/cycle	litres/min		litres/rack	litres/kg
	Please confirm the no. of type 1 components specified	498	8	1	498	498	498	1		2	6		7	5
Type 2	Water component performance - Type 2	4.5	6		4	10								9.5
	Units	litres	litres/bowl/hour		litres/min	litres/min								litres/kg
	Please confirm the no. of type 2 components specified	33	4		29	39								1
Type 3	Water component perfomance - Type 3	4.5	6		4	8								
	Units	litres	litres/bowl/hour		litres/min	litres/min								
	Please confirm the no. of type 3 components specified	15	4		15	2								
Type 4	Water component performance - Type 4	4.5			4									
	Units	litres			litres/min									
	Please confirm the no. of type 4 components specified	10			10									
Type 5	Water component performance - Type 5													
	Units													
	Please confirm the no. of type 5 components specified													
Type 6	Water component performance - Type 6													
	Units													
	Please confirm the no. of type 6 components specified													
Type 7	Water component performance - Type 7													
	Units													
	Please confirm the no. of type 7 components specified													
Type 8	Water component performance - Type 8													
	Units													
	Please confirm the no. of type 8 components specified													
Total number of fittings for water component		556	16	1	552	539	498	1	-	2	6	-	7	6
Averaged water components performance		4.50	6.00	8.00	4.00	11.84	180.00	6.00	0.00	13.00	9.00	0.00	7.53	10.17
Level achieved for water component type		1	1	1	4	Baseline	1	3	-	2	1	-	Baseline	1
Component weighting factor for building type		18%	1.71%	1.71%	7.54%	20.52%	17.59%	2.33%		0.17%	2.41%		3.91%	24.35%
Contribution to overall component level achieved		0.18	0.02	0.02	0.30	-	0.18	0.07		0.00	0.02		-	0.24

Overall component level achieved	1.03	*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 'Baseline', not Level 1.*

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	No
Other permissible source of non potable recycled water	No
Please give a brief description of source/system	Surface Water Attenuation Recycling System

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:		
	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 level 4 or 5 in the elemental method.*

Wat 01 results

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

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