



23rd January 2023

Mr Alec Arrol
Planning Director
Hodson Developments
Office 9
55 Park Lane,
London
W1K 1NA

Our Ref: 21139
By Email

Dear Mr Arrol,

Chilmington Green Wastewater Strategy – a summary review of potential effects on the River Beult Site of Special Scientific Interest (SSSI).

Please find set out below a summary opinion on the potential effects of the proposed discharge of treated wastewater from the development at Chilmington Green on the favourable conservation status of the River Beult SSSI. Please note, the following commentary should be considered in conjunction with specialist advice provided by water quality specialists and wastewater engineers.

Background – River Beult SSSI

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1005993>

The R Beult SSSI is located at 10km downstream of the proposed discharge point.

In very broad summary the feature interests or which the river is designated a SSSI relate to:

- Botany
- Invertebrates
- Kingfisher
- Breeding birds

The condition assessment for the entire SSSI is currently *Unfavourable – No Change*. The principal reasons for the current condition relate to:

- Channel modification
- Water quality – principally DO levels and phosphate (sources: development and agriculture)
- Abstraction / impoundment

Natural England's Views About Management (VAM) state that:

- *"Management should minimise pollution of the river from point and diffuse sources, including discharges of domestic and industrial effluent ..."*
- *"Effluents entering the river directly or indirectly should be treated to reduce the levels of phosphorus contained within them to concentrations that will not lead to a proliferation of algae or the disappearance of characteristic plants and animals. Organic pollution should also be controlled to avoid de-oxygenation of the water or any toxic effects on aquatic animals and plants".*

Activities occurring within the SSSI's Impact risk Zone that require Natural England consultation include:

- Residential: Residential development of 100 units or more.
- Rural Residential: Any residential development of 50 or more houses outside existing settlements/urban areas.

Defra. Upper Beult - High Halden and Bethersden Streams Water Body

<https://environment.data.gov.uk/catchment-planning/WaterBody/GB106040018280>

This provides ecological and chemical classifications for operational waterbodies. The upper Halden and Bethersden Streams is the receiving waterbody for the scheme's proposed discharge, but it is not within the SSSI.

Reasons for not achieving good (RNAG) classification and reasons for deterioration (RFD)

Sewage discharge (continuous): fish

Sewage discharge (continuous): dissolved oxygen

Sewage discharge (continuous): Macrophytes and Phytobenthos Combined

Sewage discharge (continuous): phosphate

Standards Comparison

As a means for providing an initial view on the potential effects of the proposed discharge on the quality of the R Beult, the table below summarises applicable Water Framework Directive (WFD) Environmental Quality Standards (EQS) and the R Beult's SSSI Conservation Objectives (English Nature, January 2006. Format Version 2.2) with the anticipated performance parameters of the wastewater treatment works.

WwTW Standards in comparison with WFD Environmental Quality Standards (EQS) and R Beult SSSI Conservation Objectives

Determinand	WFD Typology	Standards (EQS)				R Beult SSSI Cons Objs	WwTW standards
		High	Good	Moderate	Poor		
Flow (l/s)						Maximum acceptable percentage deviations from daily naturalised flows throughout the river: Q_{n50} flows – 20% Q_{n50-95} – 15% >Q_{n95} – 10-15%	38.8 / 67.9
						Ecological flow criteria already laid down for the river (e.g. for passage of migrating salmon) should also be complied with.	
Temp (deg C)							8-20 / 8-20
TSS						Precautionary target of 10mg/l	≤ 10 / ≤ 10
Ammonia (mg/l)	5	0.3	0.6	1.1	2.5		≤ 5 / ≤ 5

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Determinand	WFD Typology	Standards (EQS)				R Beult SSSI Cons Objs	WwTW standards
		High	Good	Moderate	Poor		
Unionised ammonia (mg/l)						<0.021 as a 95-percentile	
Dissolved Oxygen (%)	5	70	60	54	45		
Biochemical Oxygen Demand (mg/l; 90 percentile)	5	4	5	6.5	9		<=10 / <=10
Chemical Oxygen Demand (mg/l)	-		≤30				
Phosphate (mg/l)	-	0.057	0.101	0.233	1.136		Total phosphorus <=1 / <=1 Total P w/ dosing <=0.3 / <=0.3
Total reactive phosphorus (mg/l)						<=0.1	
Nitrate as N (mg/l) (Nitrate Vulnerable Zone standard)	-		≤11.3			10mg/l as NO ₃	Total nitrogen <=10 / <=10
Chloride (mg/l)	Freshwater		188				
Sulphide (µg/l)	Freshwater		50				
Aluminium (µg/l)	-		150				
Cadmium (µg/l)	Inland surface waters (Class 5)		1.5				
Chromium (µg/l)	Freshwater		32				
Copper (µg/l)	Rivers and freshwater lakes		10				
Lead (µg/l)	Inland surface waters		14				
Nickel (µg/l)	Inland surface waters		34				
Zinc (µg/l)	Freshwater		12.9				
Anthracene (µg/l)	Inland surface waters		0.1				
Benzo(a)pyrene (µg/l)	Inland surface waters		0.27				
Benzo(b)fluoranthene	Inland		0.017				

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Determinand	WFD Typology	Standards (EQS)				R Beult SSSI Cons Objs	WwTW standards
		High	Good	Moderate	Poor		
ne (µg/l)	surface waters						
Benzo(ghi)perylene (µg/l)	Inland surface waters		0.0082				
Benzo(k)fluoranthene (µg/l)	Inland surface waters		0.017				
Fluoranthene (µg/l)	Inland surface waters		0.12				
Naphthalene (mg/l)	Inland surface waters		0.13				

Opportunities to contribute to the health of the R Beult SSSI outside the built development

The EA / NE publication 'Improving the River Beult for People and Wildlife' non-technical summary (June 2018 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734380/Improving_the_River_Beult_SSSI_Non-Technical_Summary.pdf) summarises a suite of initiatives proposed for improving the status of the SSSI. As a long-term point for the project to consider, there may be potential to contribute to either the funding and/or direct action to implement one or more of the proposals as a mechanism for ameliorating any potential residual adverse effects arising from the proposed discharge.

Points to consider for the proposed scheme

The performance of the proposed wastewater treatment works needs to be considered with respect to the distance between the point of discharge and the boundary of the SSSI. It is understood that there is potential to install tertiary treatment, e.g. a reedbed, to polish the final effluent prior to discharge. Whilst reedbeds are capable of reducing BOD and nitrogen, efficiency in the removal of phosphates may be reliant on the type of substrate used to construct the reedbed (<https://utilityweek.co.uk/phosphorus-removal-how-low-can-you-go/>).

Subject to Natural England's views, it is currently considered that there the proposed quality of the discharge, in conjunction with the option of installing tertiary treatment, does not raise any specific and/or unsurmountable concerns regarding its potential to adversely impact the R Beult SSSI.

If you would like to discuss any of the information set out above, please do not hesitate to contact me either via email at bill@corylus-ecology.co.uk or on my mobile 07921 663688.

Yours sincerely,

Bill Wadsworth
Associate Ecologist

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