



TECHNICAL NOTE: Hydrological Connection Between Septic Tank Discharge and River Avon SAC

PROJECT: Land off Southampton Road, Alderbury, SP5 3AG
REF.: 222-01

DATE: 12th August 2025

Introduction

This technical note accompanies the Shadow Habitat Regulations Assessment (sHRA) and Nutrient Neutrality Assessment & Mitigation Strategy (NNAMS) for land off Southampton Road, Alderbury, SP5 3AG.

The nutrient mitigation strategy for the development is to upgrade an existing septic tank located upstream within the nutrient neutrality catchment. This note demonstrates the hydrological connection between the septic tank and the River Avon Special Area of Conservation (SAC), which is the Designated Site identified within the sHRA Appropriate Assessment.

Location of septic tank

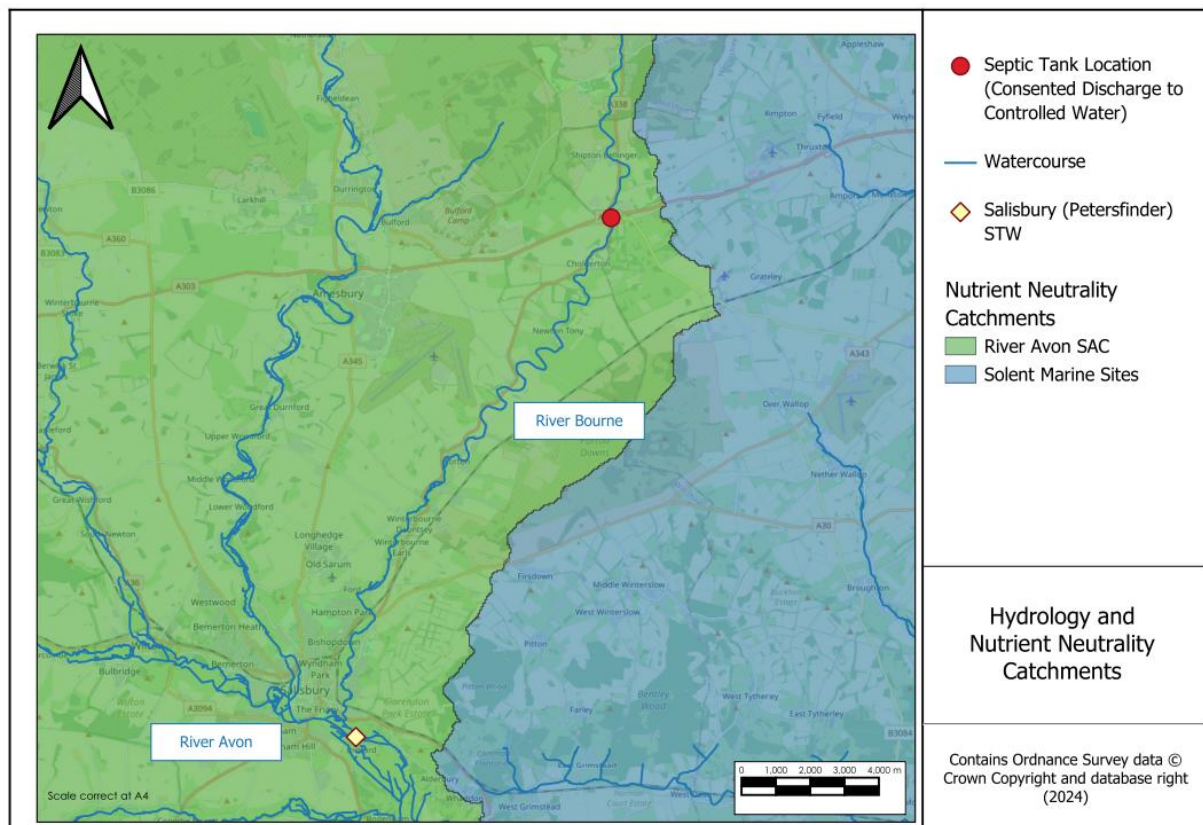
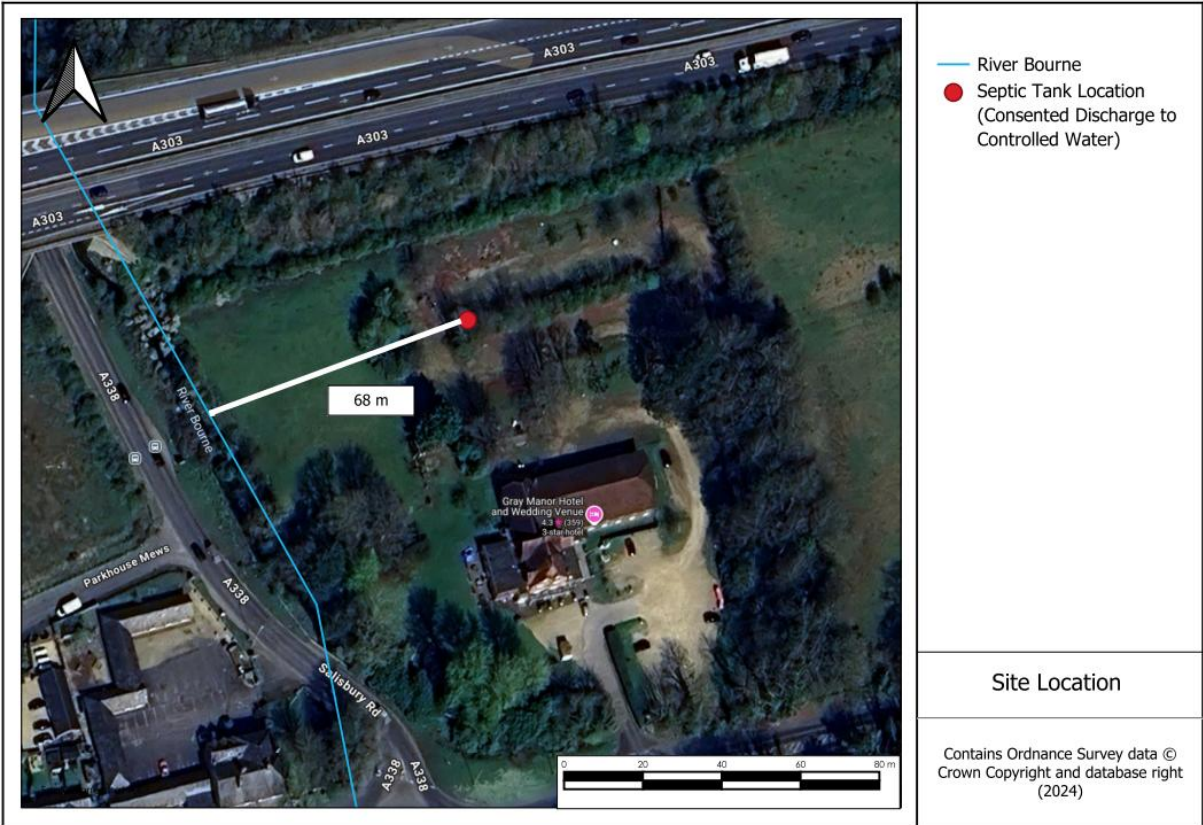
The septic tank serves Gray Manor Hotel and Wedding Venue, Parkhouse Cross, Cholderton, Salisbury, SP4 0EG, located approximately 7.3 km northeast of Amesbury town centre.

The National Grid Reference (NGR) of the tank is SU 23321 43570 according to the Environment Agency's Consented Discharge dataset. The septic tank is situated approximately 40 m north of the hotel.

Hydrology

The septic tank is located approximately 68 m east of the River Bourne at NGR SU 23201 43651. The River Bourne flows southwest for around 17 km before joining the River Avon at NGR SU 15554 29069.

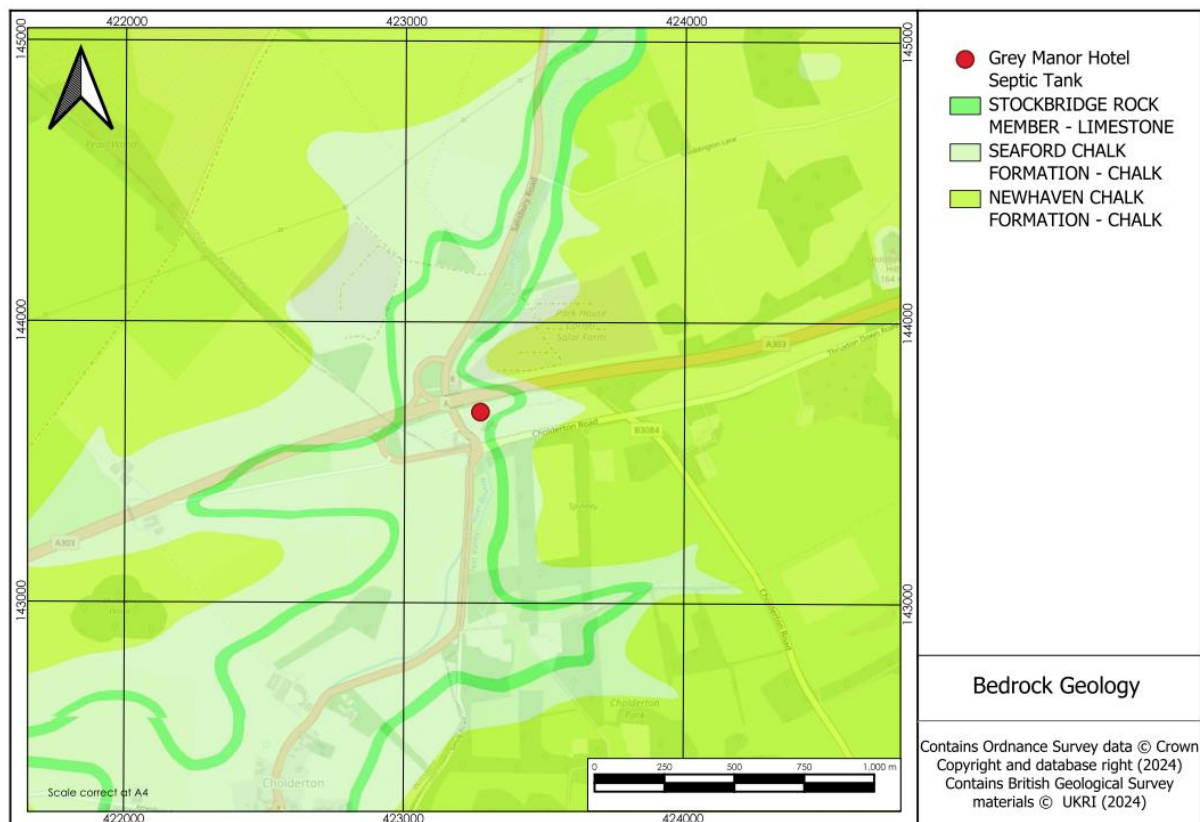
This confluence occurs approximately 600 m upstream of the Salisbury (Petersfinger) Wastewater Treatment Works (WwTW) discharge point. The WwTW is the receiving works for foul water arising from the proposed development at land off Southampton Road, Alderbury.

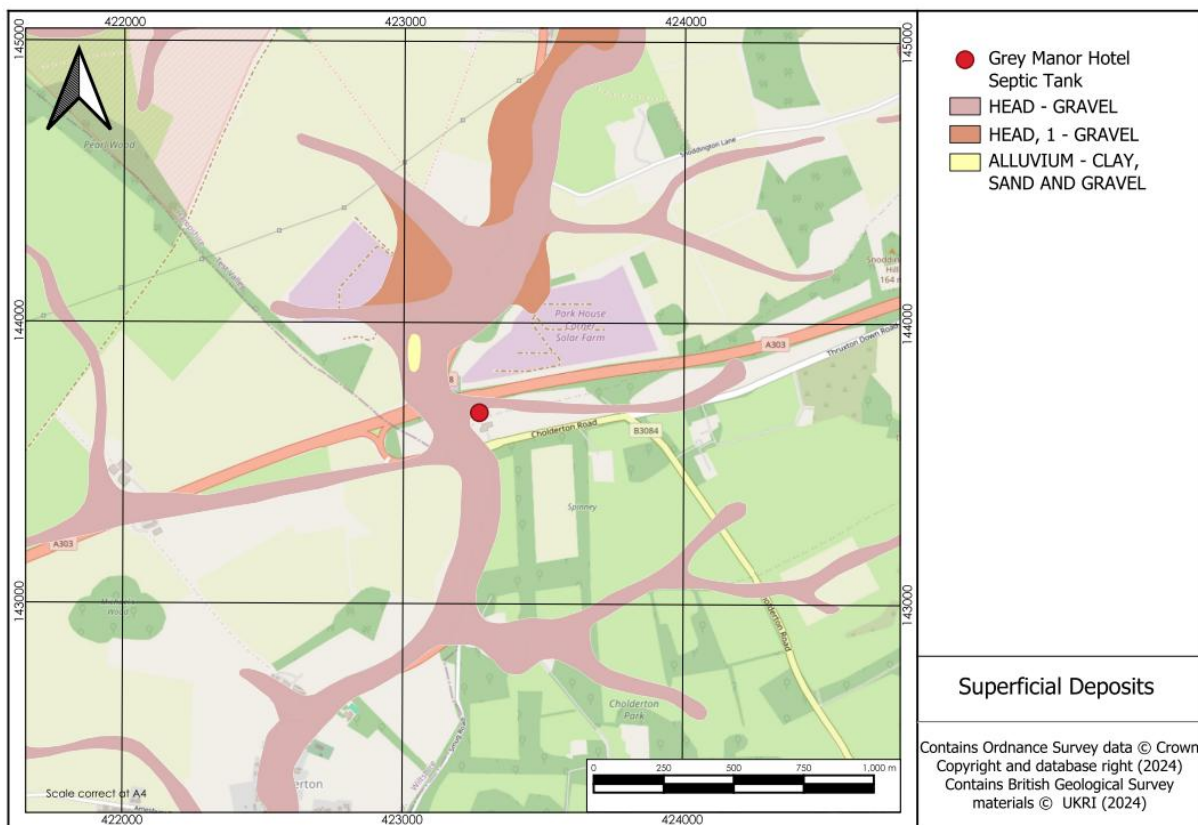


Geology

The septic tank is underlain by Seaford Chalk Formation bedrock. Superficial deposits are also present and comprise Head deposits, consisting of clay, silt, sand, and gravel.

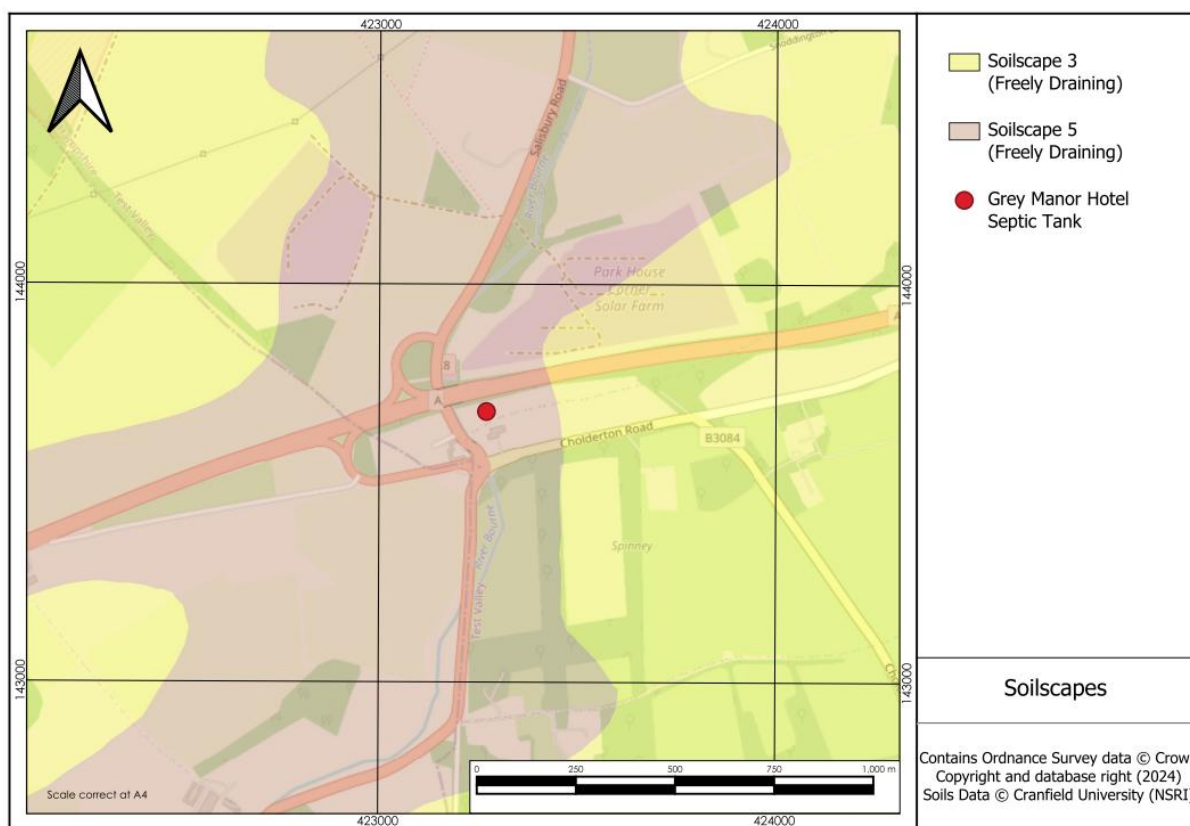
The likely high permeability of the underlying chalk provides a direct pathway for effluent infiltrating from the septic tank to enter the groundwater system. The presence of Head deposits, while locally variable, does not provide an impermeable barrier and therefore is unlikely to prevent downward percolation. Together, these geological characteristics support the likelihood of a strong hydrological connection between septic tank discharges and the River Avon SAC.





Soils

According to the Cranfield University Soilscales webtool, soils at the septic tank site are classified as “Soilscales 5.” These are described as shallow, lime-rich soils over chalk or limestone, and are freely draining.

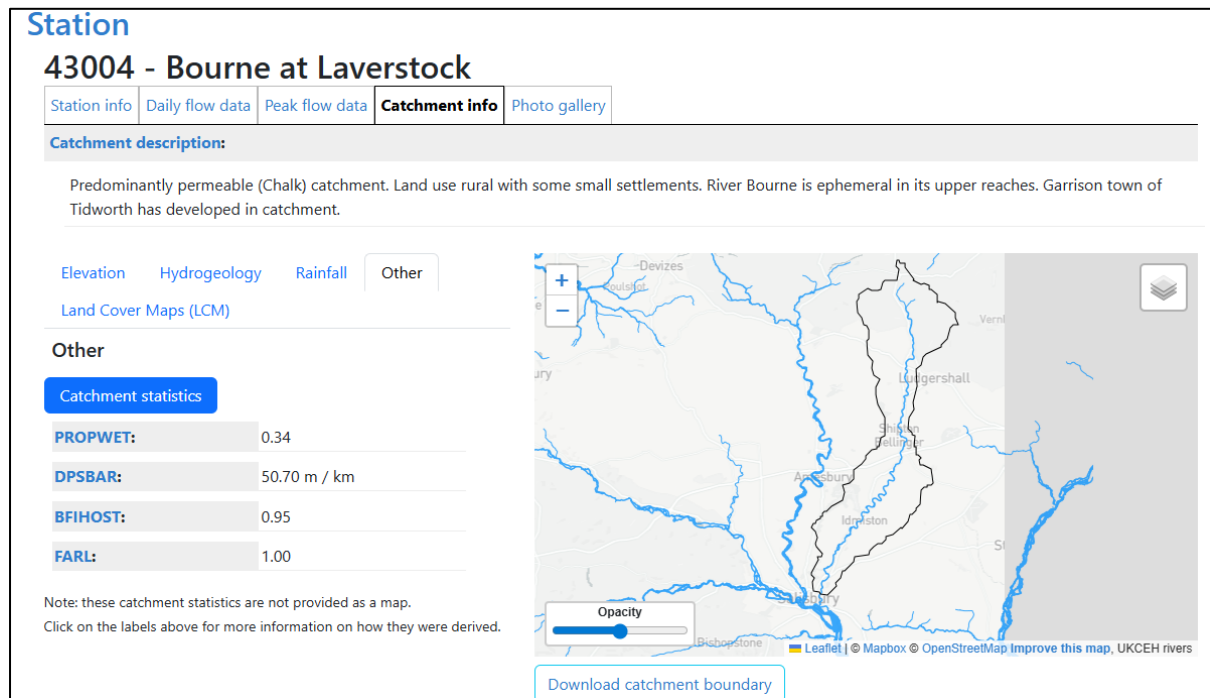


Base Flow Index

The National River Flow Archive (station 43004 – Bourne at Laverstock) ([NRFA station catchment information for 43004 - Bourne at Laverstock](#)) records a Base Flow Index (BFI) of 0.95. The BFI is the ratio of baseflow—primarily sustained by groundwater—to total river flow, on a scale from 0 (no groundwater contribution) to 1 (entirely groundwater fed). A value of 0.95 therefore indicates an exceptionally high groundwater component in the river's discharge.

A value of 0.95 indicates an exceptionally high groundwater component in the river's discharge. In such a groundwater-dominated catchment, effluent from a septic tank that infiltrates into the ground is highly likely to enter the groundwater system and subsequently discharge into the river. This demonstrates a strong hydrological connection between the septic tank discharge at Gray Manor Hotel and the River Avon SAC.

NFRA extract of Station 43004



Conclusion

The septic tank serving Gray Manor Hotel is located in close proximity to the River Bourne, within a groundwater-dominated catchment that flows directly into the River Avon SAC. The combination of freely draining soils, chalk geology, and a high Base Flow Index (0.95) confirms that effluent infiltrating from the septic tank will reach the river system and contribute to nutrient loading within the SAC.

Upgrading this septic tank will therefore provide a direct and measurable water quality benefit within the nutrient neutrality catchment, confirming its suitability as a mitigation measure for the proposed development at Southampton Road, Alderbury.