

TECHNICAL NOTE



JBA Project Code	2025s0768
Contract	Stourhead MIOS Detailed Design
Client	National Trust
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Reviewer / Sign off	Natasha Todd-Burley BSc PhD FRGS CGeog (Geomorph)
Subject	Stourhead MIOS Detailed Design WFD Screening Assessment

1 Introduction

1.1 Project Background

JBA Consulting was commissioned by the National Trust to undertake a Detailed Design in relation to works at Garden Lake, within the National Trust Stourhead Estate, to support a planning application. As part of this, a WFD Screening Assessment is required to identify whether any WFD water bodies could be impacted by the proposed works.

1.2 Water Framework Directive (WFD) Overview

The Water Framework Directive (WFD) came into force in 2000 and is the most substantial piece of EU water legislation to date. The Directive imposes legal requirements to protect and improve the water environment. All activities in the water environment need to take the Directive into account. The EU Water Framework Directive was transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The 2003 regulations were consolidated and replaced with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The Floods and Water (Amendment etc.) (EU Exit) Regulations 2019 ensure that floods and water legislation continues to be operable in the United Kingdom following withdrawal from the EU in January 2021. The instrument addresses deficiencies in retained EU law arising from the UK's withdrawal from the EU. The purpose of the instrument is to preserve and protect the existing policy regime rather than to introduce new policy. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, as amended by the Floods and Water (Amendment etc.) (EU exit) Regulations 2019, are hereafter referred to as the WFD Regulations in this technical note.

1.3 Screening Assessment Process

The Screening Assessment aims to exclude any activities where there is no mechanism for affecting the ecological, chemical, or quantitative status (or potential) of a Water Framework Directive (WFD) water body. This initial stage of the WFD compliance assessment screens the proposed activities against the objective of potentially affected water bodies. Any activity which has the potential to have an impact on the WFD components of a surface water body will need consideration in terms of whether it could cause deterioration in its Ecological and/or Chemical Status or Potential. Any activity which has the potential to have an impact on the WFD components of a groundwater water body will need consideration in terms of whether it could cause deterioration in its Quantitative and/or Chemical (GW) Status or Potential. The components for surface water and groundwater water bodies to be considered in this WFD Screening Assessment are outlined in Table 1-1 below.

Table 1-1 WFD components to be considered in this WFD Screening Assessment

Components for Surface Waters	Components for Groundwaters
Ecological Component	Quantitative Component
Biological quality elements	Quantitative status element
Physico-chemical quality elements	
Other Substances	
Specific pollutants	
Supporting elements (surface water)	
Hydromorphological supporting elements	
Chemical Component	Chemical (GW) Component
Priority substances	Chemical status element
Other pollutants	Supporting elements (groundwater)
Priority hazardous substances	

The aim of this process is to determine whether a mechanism exists for the activity to affect the status of any of these WFD components and their elements. In line with the objectives of the WFD, an effect on status refers to a deterioration in the status of the element (i.e., a change across the relevant status class boundary) or an activity that compromises the achievement of an improvement in status class in one or more surface or groundwater bodies. WFD components for which no potential adverse effects are identified will not be considered further in the assessment. Any potential adverse effects will be screened and carried forward to the scoping assessment. In cases of uncertainty, the activity should proceed to the scoping assessment stage.

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2 Site Location

2.1 Overview

The Garden Lake is a reservoir in the headwaters of the River Stour in Stourton, Wiltshire (Figure 2-1). The centre of the site is located at National Grid Reference ST 771 339 and the nearest postcode is BA12 6QB.

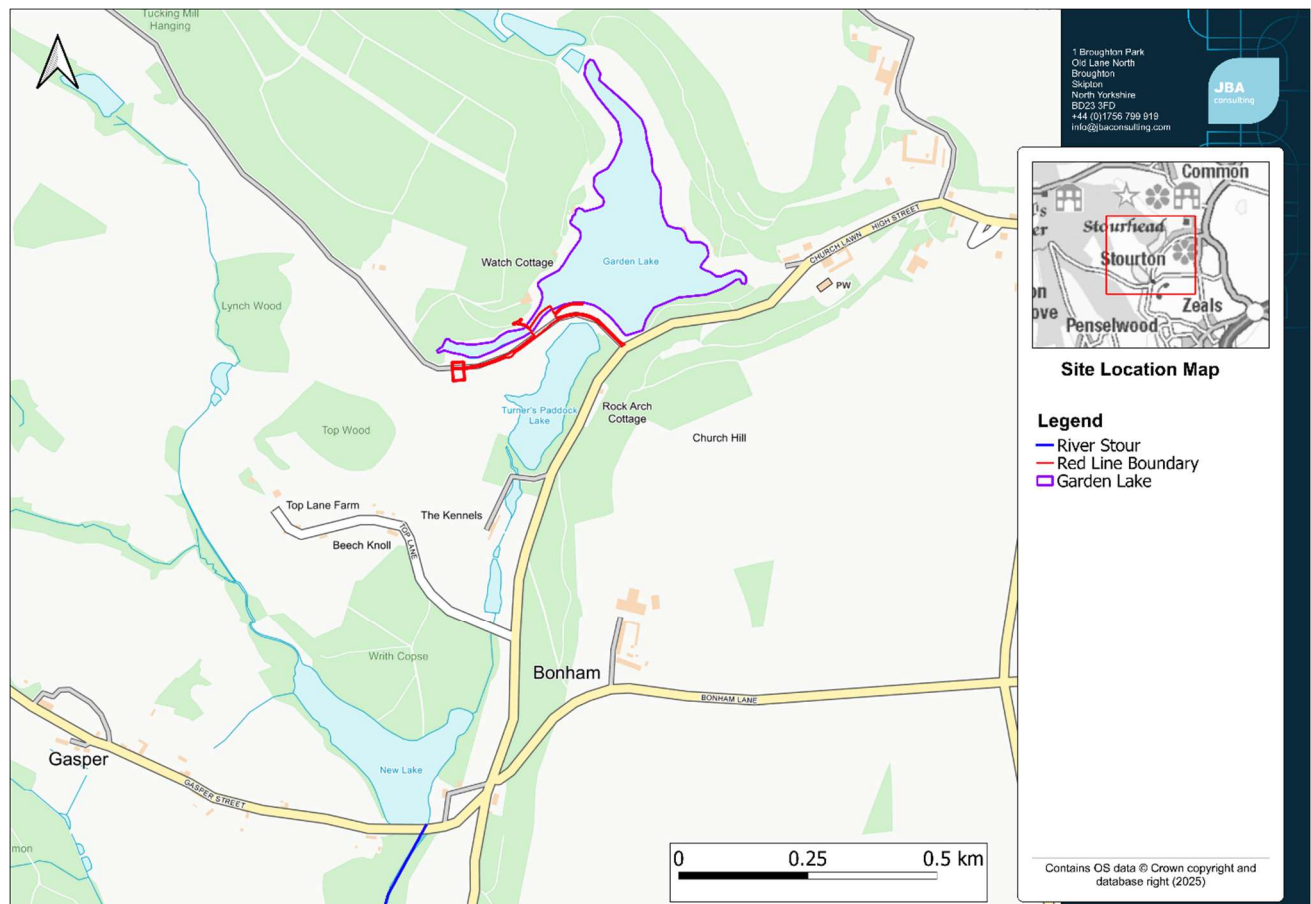


Figure 2-1 Garden Lake site location

3 Proposed Works

The western end of Garden Lake is suffering from seepage (Figure 3-1). To resolve this, the following works are proposed:

- Install a 4m long sheet pile wall for approximately 55m along the crest of the embanked western arm of the Garden Lake.
- Remediate existing sinkholes at the western end of Garden Lake by excavating and backfilling.

Water levels of Garden Lake will be dropped from Top Water Level, 149.34mOD, to 147.97mAOD (the invert level of the outlet pipe). Approximately 1.4m in depth. This is to create a dry working area by draining the shallow western arm off of the main lake body. This will be achieved through the main outlet pipe and spillway. If the required water level drop cannot be achieved through the main drainage network pumps maybe required. The water level of the reservoir will return to its existing level following completion of the temporary works.

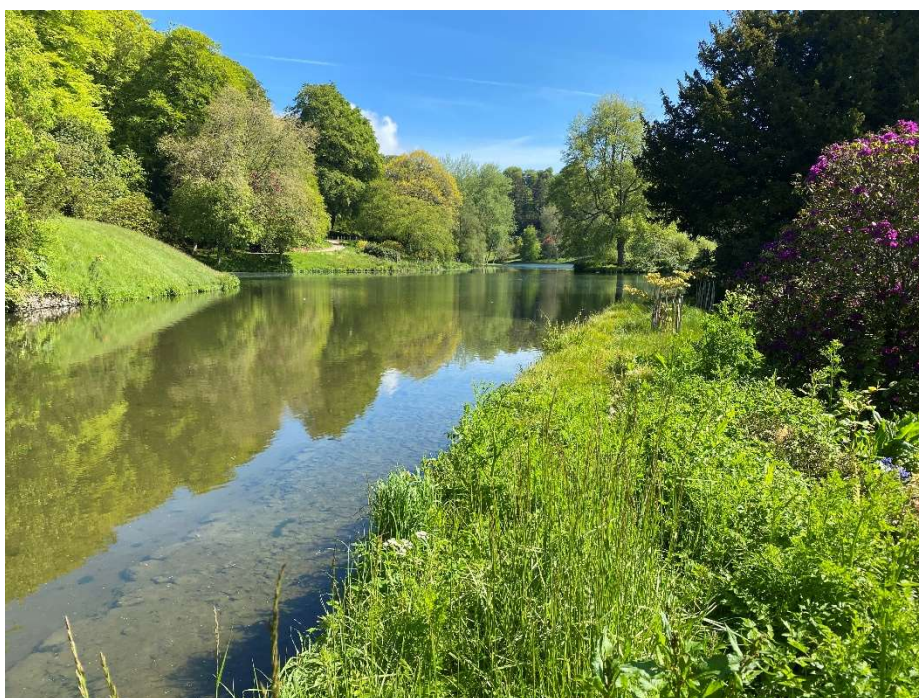


Figure 3-1 View along Garden Lake embankment crest

4 Screening Assessment

4.1 Screened In WFD Water Bodies

The site is located within the Stour (Headwaters) River Water Body (GB108043022490) and is underlain by the Upper Hampshire Avon Groundwater Water Body (GB40801G806900).

4.2 Current WFD Status

Details of the classification, status and objectives, as described by the EA Catchment Data Explorer (EA, 2022), are summarised in Table 4-1 below.

Table 4-1 Current WFD Status of screened in water bodies

Water Body ID	Name of Water Body	Hydromorphological Designation	Current Ecological/ Overall Status	Overall/ Ecological Status Objective
GB108043022490	Stour (Headwaters) Water Body	not designated artificial or heavily modified	Poor (2022)	Moderate by 2027
GB40801G806900	Upper Hampshire Avon Water Body	not applicable	Poor (2019)	Good by 2027

4.3 Baseline Status of Screened In Water Bodies

Table 4-2 below outlines the current status (2022) of the WFD components and elements of the Stour (Headwaters) Water Body.

Table 4-2 WFD Component and Element Status (GB108043022490)

WFD Components and Elements	WFD Cycle 3 Status (2022)
<u>Ecological Component</u>	<u>Poor</u>
Biological quality elements	Poor
Fish	High
Invertebrates	High
Macrophytes and Phytobenthos Combined	Poor

WFD Components and Elements	WFD Cycle 3 Status (2022)
Physico-chemical quality elements	Moderate
Ammonia (Phys-Chem)	High
Dissolved oxygen	High
Phosphate	Poor
Temperature	High
pH	High
Specific pollutants	High
Copper	High
Iron	High
Hydromorphological supporting elements	Not High
Hydrological Regime	Supports Good
Morphology	Not High
<u>Chemical Component</u>	<u>Does Not Require Assessment</u>
Priority substances	Does Not Require Assessment
Other pollutants	Does Not Require Assessment
Priority hazardous substances	Does Not Require Assessment

Table 4-3 below outlines the current status (2019) of the WFD components and elements of the Upper Hampshire Avon Groundwater Water Body.

Table 4-3 WFD Component and Element Status (GB40801G806900)

WFD Components and Elements	WFD Cycle 3 Status (2019)
<u>Overall Water Body</u>	<u>Poor</u>
Quantitative status element	Good
Quantitative Dependent Surface Water Body Status	Good
Quantitative GWDTEs test	Good
Quantitative Saline Intrusion	Good

WFD Components and Elements	WFD Cycle 3 Status (2019)
Quantitative Water Balance	Good
<u>Chemical (GW) Component</u>	<u>Poor</u>
Chemical Status element	Poor
Chemical Dependent Surface Water Body Status	Good
Chemical Drinking Water Protected Area	Poor
Chemical GWDTEs test	Good
Chemical Saline Intrusion	Good
General Chemical Test	Poor
Supporting elements (Groundwater)	-
Prevent and Limit Objective	Active
Trend Assessment	Upward trend

4.4 Protected Areas

The WFD specifies that areas requiring special protection under other retained EC Directive and waters used for the abstraction of drinking water are identified as protected areas. These areas have their own objectives and standards. Article 4 of the WFD requires Member States to achieve compliance with the standards and objectives set for each protected area by 22nd December 2015, unless otherwise specified in the legislation under which the protected area was established.

A Preliminary Ecological Appraisal and Ecological Impact Assessment (PEA & EclA¹) has been undertaken by JBA Consulting for the works. According to the assessment, there are no statutory designated sites within 1 km of the proposed scheme. The Heath Hill Farm SSSI is located to the west of the site within the water body.

¹ PXG-JBA-00-GL-RP-EN-4001-Preliminary_Ecological_Appraisal_and_Ecological_Impact_Assessment

4.4.1 Nitrate Vulnerable Zones (NVZ)

The retained European Commission Nitrates Directive requires areas of land that drain into waters polluted by nitrates to be designated as Nitrate Vulnerable Zones (NVZs).

The site location lies within the Groundwater G151 – South Wessex NVZ

4.4.2 Drinking Water Protected Areas (DrWPA)

Drinking Water Protected Areas (DrWPA) are designated under the Water Framework Directive, with the aim of avoiding deterioration in their quality in order to reduce the level of purification treatment required in the production of drinking water. Drinking Water Groundwater Safeguard Zones (SgZs) are areas where actions will be targeted to address the causes of DrWPA objective failure/risk of failure.

The proposed works are outside any SgZ.

5 Screening Outcome

A proportionate review as part of the WFD screening process of the design proposal at Garden Lake has been undertaken. Installing a sheet pile within the western embankment is not expected to have an impact on the hydromorphology of the lake, as the structure will be buried within an existing embankment and will not be constructed on the bank face. No in-channel structures are proposed, as such, no potential negative impact to longitudinal connectivity is anticipated. No potential negative impact to the underlying groundwater water body has been identified.

A temporary impact to flow quantity and dynamics is anticipated as the water level of the western arm of the lake water body will be lowered. Water levels of the Garden Lake regularly fluctuate with the National Trust often engaging the drainage network to reduce water levels of the main lake body. As such, these works are not anticipated to have a significant impact on the hydromorphological functioning of the Stour (Headwaters) Water Body.

The works are limited to hard engineered structures and terrestrial habitats and will not directly affect ecological habitat within Garden Lake. The works to lower the water level during the construction phase could result in injury or disturbance to fish. To mitigate this risk, mitigation measures have been outlined in PEA and EclA and will be implemented during the works to ensure no impact.

As the proposed works will involve excavation, there is the risk of fine sediment mobilisation or a potential pollution event during the construction works and this could adversely impact the WFD elements, however the working area will be dry. To mitigate this risk, pollution prevention measures and sediment management measures will need to be implemented throughout the works. A Construction Environmental Management Plan (CEMP) should be prepared, which sets out the actions that will be implemented to control construction of the proposed scheme so as to avoid adverse impacts on the screened in water bodies.

To conclude, the proposed works are not anticipated to have a significant negative impact on the WFD components of the Stour (Headwaters) Water Body and the Upper Hampshire Avon Groundwater Water Body, provided the mitigation measures outlined in the PEA and EclA are implemented. The proposal does not involve works within the Garden Lake and will take place to existing bank modifications, including an embankment. Furthermore, the footprints of the works are small relative to the water body scale. As such, the screening assessment concludes that no further WFD Assessment is required.