

TECHNICAL NOTE

Havant Thicket Reservoir - Pipelines Application

SUBJECT	APPLICATION REF.	DATE
Response to EA Letter 06/09/2024 Ref: HA/2024/126040/01-L01	APP/24/00405	17/09/2024
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Context

This technical note provides our response to the Environment Agency’s (EA) objection to the Havant Thicket Pipelines application on the grounds that insufficient information has been submitted to determine the risks posed to fisheries/physical habitats from the culverting of the Riders Lane stream, specifically the culvert upgrades at Purbrook Way, Dunsbury Way and Middle Park Way.

The culvert upgrade design drawings for each culvert are as follows and our response has been prepared with reference to these and information provided in the Revised Environmental Statement and Construction Environmental Management Plan submitted with the planning application.

- **Purbrook Way**
 - PURBROOK WAY CULVERT UPGRADE SITE COMPOUND LAYOUT (HTR-WAB-PI-W5-DR-T-0004, P02)
 - PURBROOK WAY CULVERT UPGRADE GENERAL ARRANGEMENT (HTR-WAB-PI-W5-DR-T-0003, P03)
- **Dunsbury Way**
 - DUNSBURY WAY CULVERT UPGRADE SITE COMPOUND LAYOUT (HTR-WAB-PI-W6-DR-T-0004, P02)
 - DUNSBURY WAY CULVERT UPGRADE GENERAL ARRANGEMENT (HTR-WAB-PI-W6-DR-T-0003, P03)
- **Middle Park Way**
 - MIDDLE PARK WAY CULVERT UPGRADE SITE COMPOUND LAYOUT (HTR-WAB-PI-W8-DR-T-0004, P02)
 - MIDDLE PARK WAY CULVERT UPGRADE GENERAL ARRANGEMENT (HTR-WAB-PI-W8-DR-T-0003, P03)

Before covering the specifics of the objection in relation to fish passage/physical habitats please note that the ‘APPROVED FOR DETAILED DESIGN’ drawing suitability on each drawing has been added in error. These drawings are ‘FOR INFORMATION’ only and will be updated and reissued to reflect this.

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In relation to the drawings as provided, we acknowledge the EA's interpretation that, in the absence of specific details of the natural bed levels on the drawings, it is not possible to interpret how the pipes (existing or new) interact with either the up or downstream bed levels in the Riders Lane Stream, or natural bed slope through the culvert configuration. We also agree with the EA's comment that the pipes, both existing and new, appear as being set above natural bed level if reviewed against the levels shown for the downstream rip-rap scour protection.

The upgraded design for all three culvert locations will be informed once the operational arrangements of the reservoir has been confirmed.

Please note that various alternatives are currently being explored by the design team in consultation with the Qualified Civil Engineer for the new reservoir. The options to manage the emergency discharge are described in the 'Next Steps' section below.

Assessment of impacts on fisheries/physical habitats

The Environmental Statement Revised Chapter 9 - Biodiversity (HTR-ATK-ZZ-ZZ-RP-Z-0109) states in relation to the culvert works that (paragraph 9.424):

- *Three culvert upgrades are required to increase culvert capacity under Middle Park Way (OSNGR SU 71761 08669), Dunsbury Way (OSNGR SU 71302 08168) and Purbrook Way (OSNGR SU 71179 07781) to facilitate emergency reservoir drawdown should it be required. The design includes the retention of existing culverts with the construction of additional new culverts adjacent to these. All new culverts would be approximately the same length as those that currently exist.*

It goes on to state that (para 9.426):

- *Culvert upgrades will not act to alter the existing culvert structure configuration (beyond widening existing headwalls). However, it is recognised that potential impacts on habitat continuity, in particular the potential for impact on fish passage through these structures, could arise if the proposed new culverts are positioned at the same invert level as the existing culverts. This can be a particular issue at low flows when the partitioning of the discharge between pipes may make them impassable due to inadequate depth provision through the pipe/s.*

Paragraph 9.426 recognises the risk posed to fish passage at low flows which could result from setting the invert of the new pipe/s at (or below) the existing pipe configuration, noting the discrepancy between this statement and the pipe levels as shown in the drawings, and the absence of information on natural levels at the culvert locations at the time of reporting. The statement is concerned with the potential for the new pipe/s to reduce the pass-ability of fish within the culverts at low flow should they be set at the same level (or indeed below) as the existing pipe configuration. The mechanism being the sharing of low flow through more pipes causing a concomitant reduction in depth of flow through both the existing and proposed pipes. By association it is reasonable to consider that setting the new pipe/s at a higher invert level than the existing pipes could act to improve pass-ability of the culverts at low flows by maintaining flow through the existing pipe configuration, as the new pipe/s become operable at medium to high discharges.

Noting the complexities of this issue, the Revised Biodiversity Chapter goes on to state in paragraph 6.610 that:

- *Culvert upgrades will be designed in such a way as to maintain, as far as practically possible, hydrological and ecological connectivity within the system, noting that the primary flow route on these watercourses will remain through the existing culvert arrangement. Culvert upgrades will not act to alter the existing culvert structure configuration. A design configuration shall be developed that avoids detrimental effects on fish passage*

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through appropriate positioning of the new culvert pipes at a level that maintains suitable depths and velocities to facilitate fish passage through the retained existing structures.

This commitment to ensuring fish passage is maintained at the three culverts is captured in the Main Pipeline Works Construction Environmental Management Plan (HTR-WAB-PI-XX-HS-W-0006), which includes the following items:

- (section 5.14.1, para 117) Fish Populations: *A fish management plan will be implemented in any scenarios where fish removal is required under Environment Agency FR2 Consents and appropriate screened pumping equipment will be used where necessary. Where culvert upgrades are to be carried out, specific culvert design will avoid detrimental effects on fish passage through appropriate positioning of the new culvert pipes at a level that maintains suitable depths and velocities to facilitate fish passage through the retained existing structures. Any other construction works requiring any temporary dewatering will also be carried out under Environment Agency FR2 Consents for fish removal.*
- Appendix A: REAC Table, Ref. Pipeline B12 (p69) - *A culvert design configuration will be developed that avoids detrimental effects on fish passage through appropriate positioning of the new culvert pipes at a level that maintains suitable depths and velocities to facilitate fish passage through the retained existing structures.*

The EA has stated that the Environmental Statement Revised Appendix A9.3 - Aquatic Ecology, makes no reference to fish passage at the culverts, and that it is unclear if the depth and velocity through the upgraded culverts have been assessed in the context of fish passage. We can confirm that at this stage, neither depth nor velocity through the upgraded culverts have been assessed in the context of fish passage during normal flows. This assessment shall be undertaken alongside the development of the detailed configuration to ensure that the proposed works do not adversely affect fish passage. Again, we signpost the EA to the Revised Biodiversity Chapter for the impact assessment that covers fish passage at the structures based on the mitigation provided above.

Noise and Vibration

We can confirm that the documents you refer to do not contain an assessment of the impact of noise and vibration on the aquatic environment. Both documents, Appendix A9.16 - Pipeline Ecological Update (HTR-ATK-XX-XX-RP-Z-0088) and Revised Appendix A9.3 - Aquatic Ecology (HTR-ATK-ZZ-ZZ-RP-Z-0147), are technical appendices and as such contain information on the baseline ecological condition of receptors and define the criteria applied in determining their nature conservation value of said receptors only. We refer the EA to the Revised Biodiversity Chapter which assesses disturbance to fish species from noise.

The Revised Biodiversity Chapter includes the details of the assessment of effects of general construction noise, piling activities and tunnelling of the pipeline beneath the watercourse lengths. We signpost the EA to the following sections in that chapter that specifically cover noise impacts of the pipeline construction on fish:

- Riders Lane Stream
 - Paras 9.421, 9.422, 9.425
- Hermitage Stream
 - Paras 9.545, 9.457

Due to the low sensitivity of the fish species recorded (bullhead, European eel and three-spined stickleback), the assessment concludes that noise disturbance will have a negligible effect on the fish population. This conclusion is framed around the nature and duration of the works, with works predominantly set back and adjacent to the watercourse, or at the existing culvert locations. The exception is piling in the Riders Lane Stream to install new sheet piles at the shaft 6 Site Compound. Specific details to mitigate for impacts on fish are provided in the Mitigation & Compensation relating to the Pipeline section of the Revised Biodiversity Chapter.

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Mitigation measures include development of a fish management plan for the culvert works (as described in para 9.607) to reduce risk of fish entrainment in the working area, and mitigation for noise generated from piling works at the shaft 6 compound (para 9.608), including measures to reduce the suitability of the area for fish prior to piling, avoidance of percussive piling where possible and the use of soft start-start piling procedures.

Commitment to these measures is captured in the Main Pipeline Works Construction Environmental Management Plan (HTR-WAB-PI-XX-HS-W-0006), which includes the following items specific to noise mitigation on the aquatic environment:

- Appendix A: REAC Table, Ref. Pipeline W3 (p103) - *Noise, vibration and light spill will be minimised by working back from the watercourses where practicable. Construction lighting will be angled away from the watercourse to reduce the potential for disturbance Where practicably practicable percussive (hammer) piling shall be avoided in favour of softer alternatives (e.g. silent sheet piling, vibratory sheet piling). Where this is not practicable, soft start piling procedures will be utilised to provide time for fish to locate away from the source of disturbance prior to full exposure. It is advised that the soft-start duration should be a period of not less than 20 minutes. All piling activities should ideally be of a period no greater than 20 minutes. Following the cessation of piling activities, the soft start procedure should be repeated.*

Next Steps

We will re-issue the relevant drawings to confirm they are 'For Information only' and add an annotation stating: *"The culvert arrangement as shown is indicative. The final configuration of the culverts shall be agreed in consultation with the Environment Agency and Hampshire County Council Highways."*

Once the operational arrangements of the reservoir have been confirmed we shall finalise the final configuration of the culverts, increasing their conveyance capacity through the installation of additional pipes/culverts (this forms the basis of the current proposed development included in the planning application).

Any detailed configuration shall include assessments to ensure that the proposed works do not adversely affect fish passage. The final configuration shall be agreed in consultation with the EA and Hampshire County Council Highways.

It should be noted that we are also exploring the option of diverting additional flows via the pipeline directly to the Hermitage stream to reduce or eliminate the requirement to upgrade the capacity of the existing culverts.

Planning condition

We would seek a planning condition to any planning permission for the pipelines application which requires approval of the culvert configuration and construction methodology as part of the Flood Risk Activities Permit **prior to commencement of the culvert upgrades.**