Teddington Direct River Abstraction

Preliminary Environmental Information Report

Appendix 6.4 – Further Invasive Non-Native Species Assessment

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Appendix 6.4 – Further Invasive Non-Native Species (INNS) Assessment

A.1 Introduction

A.1.1 This appendix supports the Aquatic Ecology assessment in Chapter 6: Aquatic Ecology.

A.1.2 This appendix provides the Invasive Non-Native Species (INNS) assessment for the freshwater River Thames at Teddington in relation to the proposed abstraction of water close to the Teddington Weir for the Teddington Direct River Abstraction (TDRA) Project (hereafter referred to as 'the Project').

A.2 Strategic Resource Option (SRO) Aquatic INNS Risk Assessment Tool

A.2.1 An SRO Aquatic INNS Risk Assessment Tool (SAI-RAT), which considers the risk of transfer of INNS for the raw water transfer element of the Project, is outlined below. SAI-RAT assessments provide a quantitative risk assessment of the likelihood of a raw water transfer transferring INNS through a project's operation.

A.3 SAI-RAT Assessment

A.3.1 The Project consists of raw water abstraction and transfer from the freshwater River Thames to the Lee Valley reservoirs in east London via the already existing Thames Lee Tunnel (TLT) pipeline. The abstraction of water from the freshwater River Thames at Teddington and transfer via the TLT poses a risk in relation to the transfer of INNS, as raw untreated water is being transferred between two waterbodies.

A.3.2 The Project was assessed at the maximum proposed operating capacity of 75Ml/d under both a 1:5 year return frequency with moderate-low flows (model reference A82) and a 1:20 year return frequency with very low flow (model reference M96) scenarios. Also included in this assessment is the current TLT scheme for context. This currently operates to transfer water from the freshwater River Thames at Hampton, roughly 9km upstream of the proposed abstraction location, with an average daily volume between 2010 and 2020 of approximately 195Ml/d.

A.3.3 The SAI-RAT tool requires a number of variables for the calculation of the risk score:

a. The transfer source in all scenarios remains the same, being water that is abstracted from the same Water Framework Directive (WFD) waterbody, Thames (Egham to Teddington). Therefore, the likely pathways that occur at the abstraction point that might distribute INNS to the source remain the same, i.e., boating, water sports and angling.

b. The transfer mechanism remains the same in all scenarios, being a pipeline transfer. The pipeline distance and route remain the same for both variants of Teddington abstractions, with the TLT transfer being longer in distance.

c. The transfer destination, in all scenarios, remains the same.

A.3.4 The SAI-RAT tool assigns a risk value based on the characteristics of the transfer option. Each variable within the tool is input for each transfer option to match the characteristics of the proposed routes as closely as possible, as permitted by the scaling within the tool.

A.3.5 Variables within the tool are weighted differently based on the inherent risk to the distribution of INNS. As part of the Project, factors that contribute heavily to the risk score are as follows:

d. Transferring between management catchments – A difference in the source and receptor catchments of the option resulted in a higher risk score.

e. Activity at source – Due to the source of the option being navigable by boat and having angling and water sports activity, it is assigned a higher risk score. Species may utilise distribution pathways associated with the use of boats and leisure craft at the connection source habitat, where they may be established and further distributed by the Raw Water Transfer (RWT).

f. Functional group scores - Source, pathway and receptor calculations for the functional group scores consider the differences in types of sources, pathways and receptors. As the transfer source is a river and the receptor is an online waterbody, these two categories have higher scores when compared to other types of waterbodies.

A.3.6 Table A.1 shows the results of the SAI-RAT assessment. A description of the results categories is as follows (APEM SAI-RAT Guidebook 2024):

g. Likelihood of spread from source – Score indicates the probability of INNS transfer. This only considers the pathway and does not include INNS presence or absence.

h. Severity of Impact – This is the magnitude of the impact caused by INNS on native habitats and species on either the proposed route or on the receptor. The magnitude is calculated by the number of high/moderate/low WFD UK Technical Advisory Group (UKTAG) priority species.

i. Inherent Risk Score – This combines the likelihood of spread and the severity of impact.

A.3.7 The Project operating under the 1:20 year return frequency (M96) scenario had a slightly higher likelihood of spread from source along with a higher risk score compared to the 1:5 year return frequency (A82) scenario. The existing TLT scheme has a significantly higher likelihood of spread from source as well as a considerably higher inherent risk score when compared with the 1:20 year return frequency (M96) scenario.

A.3.8 The severity of impact upon receptor remained the same for all scenarios, as the inputs for this assessment (number of high/moderate/low WFD UKTAG priority species) remained the same.

A.3.9 The differences in the likelihood of spread scores are due to the increasing values of yearly transfer volume across the three assessed scenarios.

A.3.10 The differences in inherent risk scores are also due to increasing transfer values across the scenarios, as the risk score is calculated using the likelihood of spread and severity of impact upon receptor scores.

A.3.11 It must be noted, though, that the additional transfer of raw water as a result of the Project should not be viewed in isolation, as the extra abstraction from the freshwater River Thames will increase the risk of transfer of INNS to the receptor waterbody. As both abstraction locations (being the proposed abstraction close to Teddington Weir for the Project and the abstraction at Hampton for the TLT scheme) are on the freshwater River Thames in similar geographic locations within the same WFD waterbody, it is unlikely that there will be risks of transferring new INNS species. However, there are increased risks of transferring higher quantities of the same INNS, resulting in a higher chance of establishment and population growth within the receptor waterbody.

Table A.1 SAI-RAT Assessment Scores

RWT Name	Likelihood of spread from source	Likelihood of spread on/off transfer route	Severity (of impact) upon transfer route	Severity (of impact) upon receptor	Inherent Risk Score
The Project 75Ml/d -1:5 (A82) Scenario	33.60%	5.54%	N/A	61.6%	19.57%
The Project 75Ml/d - 1:20 (M96) Scenario	37.57%	6.34%	N/A	61.6%	21.95%
Existing Thames TLT Transfer - 195 Ml/d	67.96%	12.42%	N/A	61.6%	40.19%

A.4 References

APEM (2024). SAI-RAT Guidebook. Available at: https://www.apemltd.com/innovation/sai-rat-assessing-the-risk-of-invasive-species-for-sros/. [Accessed May 2025].