



South East Strategic Reservoir Option
Preliminary Environmental Information Report

Appendix 6.2 - Preliminary assessment of effects for Aquatic ecology

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1 Preliminary assessment of effects

1.1 Introduction

- 1.1.1 This appendix sets out the preliminary assessment of effects for Aquatic ecology receptor by receptor, for the construction and operation stages respectively. This is in accordance with those receptors scoped in to the assessment, as summarised in Table 6.4 of the chapter. The appendix is split into tables that list effects that are initially anticipated to be significant and tables that list effects that are not initially anticipated to be significant. The judgement of significance has been made assuming that embedded design mitigation and standard good practice mitigation relevant to Aquatic ecology is applied (these are summarised in this appendix with further detail provided in the Draft commitments register in Appendix 2.2). Nevertheless, the assessment assumes that additional mitigation is not applied, as the viability, nature and extent of any additional mitigation measures is not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the implementation of all mitigation, including additional mitigation) has not been completed for the PEI Report, and will be reported in the ES.
- 1.1.2 Each receptor assessed for this aspect in the preliminary assessment is listed in the 'Baseline conditions' section of the associated PEI Report chapter, and also within the tables in this appendix. Each receptor has been assigned an Area ID, which relates to the spatial extent of the receptor assessed. Where these have been spatially defined for the PEI Report, these are shown in figures cross-referenced from the 'Baseline conditions' section.
- 1.1.3 Each effect assessed has been assigned a unique identifier, the Effect ID.
- 1.1.4 The tables identify the following for each effect:
- Receptor name, Effect ID and sensitivity category
 - Project components and activities giving rise to the effect
 - Relevant embedded design mitigation and standard good practice mitigation (with unique Commitment ID, which relates to Appendix 2.2: Draft commitments register)
 - Initial category of effect significance, including whether it is adverse, beneficial or neutral (taking account of embedded design mitigation and standard good practice measures)
 - Description and duration of the effect
 - Any additional mitigation and monitoring identified at this stage (with unique Commitment ID, to enable cross reference to the measures noted in Section 6.10: Next steps of applicable aspect chapters).

1.2 Likely significant construction effects

Table 1.1 Initial likely significant effects during construction (with embedded and standard good practice mitigation applied, but prior to additional mitigation)

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Little Wittenham SSSI [AEC-298] (High)	River Thames flood compensation (eastern bank) River Thames erosion protection River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS. (Long-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Aquatic Habitats (Ditches) - River Ock catchment [AEC-192] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-27) Provision of Project Priority Areas for Biodiversity. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Direct habitat loss/gain and/or severance: During the diversion of the watercourses direct habitat loss and severance to existing watercourses, including ditches, could have an adverse impact on the distribution and composition of aquatic species and communities, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Aquatic Habitats (Non-priority rivers and streams) - River Ock catchment [AEC-81] (High)	Temporary watercourse crossings Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Direct habitat loss/gain and/or severance: During the diversion of the watercourses direct habitat loss and severance to existing watercourses will occur which will lead to loss of river habitat during construction, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Aquatic Habitats (Non-priority rivers and streams) - River Thames [AEC-108] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Direct habitat loss/gain and/or severance: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will result in localised loss of marginal habitat for macroinvertebrates, fish, birds and riparian mammals. It will also reduce habitat availability for plants. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.
Aquatic habitats - River Thames [AEC-289] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure,	Most / all project activities (construction)	(SGP-06) Standard good practice measures for managing ecology impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Introduction and Spread of INNS: Construction activities associated with the River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will involve intrusive works within and adjacent to the river including the placement and dewatering of coffer dams to facilitate the construction of infrastructure and permanent land take and modifications to natural habitats. These works carry an inherent risk of introducing and/or spreading INNS to and from the site	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	such as pipes in the base) Intake/outfall structure				from plant and vehicles, personnel, equipment and PPE. (Medium-term)	
Depressed River Mussel - River Thames [AEC-127] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Direct habitat loss/gain and/or severance: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will result in localised loss of marginal habitat for macroinvertebrates. (Long-term)	(AM-75) Species / habitat specific mitigation strategy.
Depressed River Mussel - River Thames [AEC-130] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Species disturbance, injury or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.
Eel - River Ock catchment [AEC-217] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common	Most / all project activities (construction)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-41) Construction stage surface water management.	Significant Adverse	Changes in flow: During the construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress, which may reduce the groundwater ingress into the existing channels before the new channels being	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre)		(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.		connected. Additionally, the new channels may affect surface water flow into the existing channels. This could result in reduction to water levels and flow velocities in the existing channels during construction. (Short-term)	
Eel - River Ock catchment [AEC-218] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-04) Control and management of foul water. (SGP-05) Managing construction works within flood zones. (SGP-06) Standard good practice measures for managing ecology impacts.	Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses, which could affect aquatic habitats, species and communities. Construction activities within waterbodies near waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This includes risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Eel - River Ock catchment [AEC-219] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal	Most / all project activities (construction)	(ED-41) Construction stage surface water management. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-35) Design of temporary crossings during construction to maintain function and integrity of watercourses.	Significant Adverse	Direct habitat loss / gain and /or severance: During the diversion of the watercourses, direct habitat loss and severance to existing watercourses could hurt the distribution and composition of aquatic species and communities, for which mitigation will not be fully realised until after construction is completed. (Short-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Recreational lakes centre (including visitors centre)					
Eel - River Ock catchment [AEC-220] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-35) Design of temporary crossings during construction to maintain function and integrity of watercourses.	Significant Adverse	Species disturbance, injury, or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause direct damage, a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Eel - River Thames [AEC-221] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-41) Construction stage surface water management. (ED-51) Measures to reduce new watercourse crossings. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.	Significant Adverse	Species disturbance, injury or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities adjacent to and within the River Thames and associated noise and vibration from construction activities, including piling. Such disturbance could cause direct damage, a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Eel - River Thames [AEC-222] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly	General construction activities	(ED-41) Construction stage surface water management. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Significant Adverse	Changes in flow: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	associated infrastructure, such as pipes in the base) Intake/outfall structure		(SGP-07) Timing of construction works to reduce ecological impacts.			
Eel - River Thames [AEC-223] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(ED-02) Manage water quality at the SESRO intake. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-04) Control and management of foul water. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.	Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and near the River Thames and where a flow pathway from construction activities to the River Thames may be present, may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Eel - River Thames [AEC-224] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(ED-02) Manage water quality at the SESRO intake. (ED-41) Construction stage surface water management. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS. (SGP-35) Design of temporary crossings during construction to maintain function and integrity of watercourses. (SGP-46) Protection of riparian zone during construction.	Significant Adverse	Direct habitat loss / gain and /or severance: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will result in localised loss of marginal habitat for eel. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy. Additional habitat enhancement/creation upstream and downstream on the intake/outfall site to compensate.
Fine-lined pea mussels - River Ock catchment [AEC-91] (High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources.	Significant Adverse	Direct habitat loss/gain and/or severance: During the diversion of the watercourses direct habitat loss and severance to existing watercourses will occur which will lead to loss of river habitat during construction which may affect fine-lined pea mussel, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Fine-lined pea mussels - River Ock catchment [AEC-92] (High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Changes in flow/level: During the diversion of the watercourses direct habitat loss and severance to existing watercourses will occur which will lead to changes in flow/level of affected watercourses during construction, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.
Fine-lined pea mussels - River Ock catchment [AEC-93] (High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses which could affect aquatic habitats, species and communities. Construction activities within waterbodies in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Fine-lined pea mussels - River Ock catchment [AEC-94] (High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Species disturbance, injury or mortality: Fine-lined pea mussel communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Fish - River Ock catchment [AEC-209] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Significant Adverse	Changes in flow: During the construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress which may reduce groundwater ingress into the existing channels before the new channels being connected. Additionally, the new channels may affect surface water flow into the existing channels. (Short-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Fish - River Ock catchment [AEC-211] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies.	Significant Adverse	Direct habitat loss / gain and /or severance: During the diversion of the watercourses, direct habitat loss and severance to existing	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)		(SGP-05) Managing construction works within flood zones. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.		watercourses could have an adverse impact on the distribution and composition of aquatic species and communities, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	
Fish - River Ock catchment [AEC-212] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS. (SGP-25) Apply measures including Best Practicable Means to reduce construction noise and vibration.	Significant Adverse	Species disturbance, injury, or mortality: Aquatic species and communities including fish and eels could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.
Macroinvertebrates - River Ock catchment [AEC-87] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Significant Adverse	Direct habitat loss/gain and/or severance: During the diversion of the watercourses direct habitat loss and severance to existing watercourses will occur which will lead to loss of river habitat during construction, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Macroinvertebrates - River Thames [AEC-123] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Direct habitat loss/gain and/or severance: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will result in localised loss of marginal habitat for macroinvertebrates. (Long-term)	(AM-75) Species / habitat specific mitigation strategy.
Macroinvertebrates - River Thames [AEC-126] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Species disturbance, injury or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities adjacent to and within the River Thames and associated noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.
Macroinvertebrates - River Thames [AEC-291] (High)	River Thames flood compensation (eastern bank)	Most / all project activities (construction)	(ED-41) Construction stage surface water management.	Significant Adverse	Introduction and Spread of INNS: Several macroinvertebrate INNS species are known to exist in the River Thames. Construction activities associated with the River Thames	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure		(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		erosion protection, flood compensation (eastern bank) and intake/outfall structure will involve intrusive works within and adjacent to the river including the placement and dewatering of coffer dams to facilitate the construction of infrastructure and permanent land take and modifications to natural habitats. These works carry a risk of introducing and/or spreading INNS to and from the site from plant and vehicles, personnel, equipment and PPE. It is possible that macroinvertebrate INNS may be inadvertently moved from one site to another during construction. INNS from other functional groups may also be introduced or spread during construction which may have secondary effects on native macroinvertebrate communities, leading to a degradation in biodiversity value of affected sites. (Long-term)	explored as the design and EIA progresses.
Macrophytes - River Ock catchment [AEC-95] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Significant Adverse	Direct habitat loss/gain and/or severance: During the diversion of the watercourses direct habitat loss and severance to existing watercourses could have an adverse impact on the distribution and composition of aquatic species and communities, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	(AM-75) Species / habitat specific mitigation strategy.
Macrophytes - River Thames [AEC-131] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure.	Significant Adverse	Direct habitat loss/gain and/or severance: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and	No additional mitigation has been confirmed at this stage, however, mitigation measures are being actively explored as the design and EIA progresses.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)		(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		intake/outfall structure will result in localised loss of marginal habitat for macroinvertebrates. (Long-term)	

1.3 Likely significant operation effects

Table 1.2 Initial likely significant effects during operation (with embedded and standard good practice mitigation applied, but prior to additional mitigation)

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Little Wittenham SSSI [AEC-160] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). (Long-term)	(AM-75) Species / habitat specific mitigation strategy. Designated site mitigation may be required – pending further investigation. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Little Wittenham SSSI [AEC-161] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Aquatic Habitats (Ditches) - River Ock catchment [AEC- 202] (Low)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting diverse communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Aquatic Habitats (Non- priority rivers and streams) - River Ock catchment [AEC-142] (High)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals.	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)				(Long-term)	
Aquatic habitats (Ponds) - River Ock catchment [AEC-205] (Low)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Aquatic habitats - River Thames [AEC-320] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Significant Adverse	Introduction and Spread of INNS: During operation of the SESRO scheme, aquatic habitats on the River Thames are at risk of being affected by INNS introduction, spread and/or proliferation. Although INNS are already known to be present within the Thames, it is possible that the reservoir may become colonised by INNS and act as a sink for INNS, which may subsequently be discharged into the River Thames, potentially affecting aquatic habitats. INNS may also be spread to the Thames through the planned recreational activities included in the Project. (Permanent)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-49) Measures to reduce INNS dispersal resulting from abstraction and discharge. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Eel - River Ock catchment [AEC-234] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(SGP-36) Operational management of surface and groundwater quality and quantity at the Water Treatment Works.	Significant Adverse	Changes in flow: The Project may result in changes to the flow regime of watercourses within the study area, including watercourses within the Ock catchment, because of permanent changes to the alignment of watercourses and loss of catchment area. There may be some increases in flow in the Ginge Brook due to increased volumes of sewage treated at Drayton Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-17) Measures to manage and protect water flows in the watercourses. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Eel - River Ock catchment [AEC-235] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-42) Operation stage surface water management.	Significant Beneficial	Changes in water quality: Change to water quality may occur as a result of the change in the catchment area for the Ock catchment because of watercourse diversions. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required. (AM-19) Measures to offset any residual effects on water quality within the Ock Catchment.
Eel - River Ock catchment [AEC-236] (Very High)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Significant Beneficial	Direct habitat loss / gain and /or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches), which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macrophyte communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Eel - River Thames [AEC-237] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Changes in community structure/function caused by primary productivity changes: The combined effects of habitat, flow, and water quality changes within the Study Area, as well as the operation of reservoir water storage and release (including periodic emergency drawn-down testing), have the potential to change primary productivity and food-chain dynamics within affected watercourses. This could include direct effects on phytoplankton/phytobenthic communities, direct and indirect effects on zooplankton communities, and consequent indirect effects on higher trophic levels. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-17) Measures to manage and protect water flows in the watercourses. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Eel - River Thames [AEC-238] (Very High)	River Thames flood compensation (eastern bank)	Most / all project	No embedded design or standard good practice	Significant Adverse	Changes in flow: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows because of	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	activities (operation)	mitigation identified at this stage.		flow releases from the reservoir back into the River Thames. Emergency draw-down testing may also result in short-term, but rapid release of water into the Thames which may affect flow. The Project may result in minor increases in flow in the River Thames due to increased volumes of sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	(AM-75) Species / habitat specific mitigation strategy. Fish refuge provision adjacent to intake/outfall.
Eel - River Thames [AEC-239] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and near the River Thames, and where a flow pathway from construction activities to the River Thames may be present, may result in changes to water quality. This includes risks of contaminants and suspended solids being released into these waterbodies. Emergency draw-down testing may also result in short-term, but rapid release of reservoir water into the Thames, which may carry suspended sediment, or have different temperature/dissolved oxygen, or other physico-chemical parameters. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Eel - River Thames [AEC-240] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Changes to barrier porosity, function of existing fish passes: Existing barrier porosity (i.e. function of existing fish / eel passes) on watercourses within the Study Area may be affected by changes in flow. This may be exacerbated by emergency draw-down testing operations, at a local, short term level at least. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Eel - River Thames [AEC-241] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Direct habitat loss/gain and /or severance: There may be subtle, localised changes in the habitat in the River Thames associated with the operation of the Project. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)					
Eel - River Thames [AEC- 242] (Very High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Entrainment, impingement at intake/outfall: The operation of a new intake / outfall structure on the River Thames, as well as releases from SESRO, enabling existing intakes to operate more frequently and/or for longer durations, may result in increased fish and eel impingement/entrainment (and potential mortality) relative to existing baseline conditions. Emergency draw-down testing may also result in periodic, short-term, rapid releases of water to the Thames, which may result in entrainment/impingement of eels and fish (should they colonise the reservoir) on internal screens, and within the tunnel and turbine infrastructure. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Fine-lined pea mussels - River Ock catchment [AEC- 174] (High)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting fine-lined pea mussels. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Fine-lined pea mussels - River Ock catchment [AEC- 175] (High)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Significant Adverse	Changes in flow/level: Changes in the alignment of watercourses around the reservoir location could affect the flow regime of watercourses within the Ock catchment and result in the loss of catchment area and alteration to groundwater connection to surface waterbodies which could affect aquatic species including fine-lined pea mussel. There may be some increases in flow in the Ginge Brook due to increased volumes of sewage treated at Drayton Sewage Treatment Works, and subsequent discharged of treated sewage effluent entering the watercourse, which could affect the fine-lined pea mussel. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required. (AM-75) Species / habitat specific mitigation strategy.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)					
Fish - River Ock catchment [AEC-227] (Moderate)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Significant Beneficial	Direct habitat loss / gain and /or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macrophyte communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches, and canals. The resulting new watercourse in development aims to not only replace the existing watercourse network but also improve upon it. (Medium-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Fish - River Thames [AEC-228] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Changes in community structure/function caused by primary productivity changes: Flow changes from operation of SESRO (including from emergency draw-down testing) could alter primary productivity, both flow changes and water quality changes. This could affect the food-web and result in a loss of diversity and/or abundance of some species, including fish species. Effects may also be beneficial in supporting primary productivity during certain periods and mitigating the effects of drought e.g. reducing the frequency of algal blooms. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Fish - River Thames [AEC-233] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure,	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Significant Adverse	Entrainment, impingement at intake/outfall: The operation of a new intake / outfall structure on the River Thames, as well as releases from SESRO, enabling existing intakes to operate more frequently and/or for longer duration, may result in increased fish impingement/entrainment (and potential mortality) relative to existing baseline conditions. Emergency draw-down testing may exacerbate these effects. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	such as pipes in the base)					
Fish - River Thames [AEC-321] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Significant Adverse	Introduction and Spread of INNS: During operation of the SESRO scheme, fish communities on the River Thames are at risk of being affected by INNS introduction, spread and/or proliferation. Although INNS are already known to be present within the Thames, it is possible that the reservoir may become colonised by INNS and act as a sink for INNS, which may subsequently be discharged into the River Thames, potentially affecting native fish species, or other functional groups upon which fish may rely for food and shelter. INNS may also be spread to the Thames through the planned recreational activities included in the Project. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-49) Measures to reduce INNS dispersal resulting from abstraction and discharge. (AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Macroinvertebrates - River Ock catchment [AEC-166] (Moderate)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.
Macroinvertebrates - River Thames [AEC-169] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). The Project may result in minor increases in flow in the River Thames due to increased volumes of sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Macroinvertebrates - River Thames [AEC-322] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Significant Adverse	Introduction and Spread of INNS: During operation of the Project, macroinvertebrate communities on the River Thames are at risk of being affected by INNS introduction, spread and/or proliferation. Although INNS are already known to be present within the Thames, it is possible that the reservoir may become colonised by INNS act as a sink for INNS, which may subsequently be discharged into the River Thames, potentially affecting native macroinvertebrate communities. INNS may also be spread to the Thames through the planned recreational activities included in the Project. (Long-term)	(AM-20) Measures to reduce effects on aquatic ecology during operation. (AM-17) Measures to manage and protect water flows in the watercourses. (AM-49) Measures to reduce INNS dispersal resulting from abstraction and discharge. Study aimed at understanding risks of invertebrate INNS spread from the operation of SESRO to receiving watercourses.
Macrophytes - River Ock catchment [AEC-180] (Moderate)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macrophyte communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	(AM-35) Water quality monitoring and subsequent remedial activities where these are required.

1.4 Likely non-significant construction effects

Table 1.3 Initial likely non-significant effects during construction (with embedded and standard good practice mitigation applied, but prior to additional mitigation)

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Little Wittenham SSSI [AEC-117] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.
Little Wittenham SSSI [AEC-118] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Clifton Hampden Meadows LWS [AEC-113] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.
Clifton Hampden Meadows LWS [AEC-114] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Clifton Hampden Meadows LWS [AEC-297] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS. (Long-term)	No additional mitigation required as the effect is not significant.
Clifton Hampden Woods LWS [AEC-115] (Moderate)	River tunnel and shafts Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Clifton Hampden Woods LWS [AEC-116] (Moderate)	River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.
Cowslip Meadows LWS [AEC-105] (Moderate)	Rail siding and material handling facility Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Direct habitat loss/gain and/or severance: During the main construction works direct loss and severance of aquatic habitats within the LWS are possible, this would risk impacting the integrity of the site. The nature of works in this area is unclear at this stage. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Cowslip Meadows LWS [AEC-106] (Moderate)	Rail siding and material handling facility Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Neutral	Changes in flow/level: During construction changes to surface water and groundwater drainage may affect aquatic features on site including Letcombe Brook. This may affect the integrity and ecological value of these receptors and their capacity to support other species. (Medium-term)	No additional mitigation required as the effect is not significant.
Cowslip Meadows LWS [AEC-107] (Moderate)	Rail siding and material handling facility	General construction activities	(ED-01) Provide floodplain conveyance and compensation	Not Significant Neutral	Changes in water quality: During construction activities within waterbodies, in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present,	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)		before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		deterioration to water quality may occur which may impact aquatic features on site, including Letcombe Brook. This may affect the integrity and ecological value of these receptors and their capacity to support other species. (Medium-term)	
Cowslip Meadows LWS [AEC-294] (Moderate)	Rail siding and material handling facility Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS. (Long-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-08) Standard good practice measures for controlling and treating INNS.			
Dorchester Gravel Pits LWS [AEC-121] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.
Dorchester Gravel Pits LWS [AEC-122] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Dorchester Gravel Pits LWS [AEC-300] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS (Long-term)	No additional mitigation required as the effect is not significant.
Dorchester Meadow LWS [AEC-119] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Dorchester Meadow LWS [AEC-120] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.
Dorchester Meadow LWS [AEC-299] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS (Long-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Hayward's Eyot LWS [AEC-111] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. Impoundment and changes to flow dynamics may interfere with migratory routes for fish and interrupt life cycles of aquatic species. Alterations to flow dynamics may also reduce habitat suitability for aquatic species. (Medium-term)	No additional mitigation required as the effect is not significant.
Hayward's Eyot LWS [AEC-112] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River Thames flood compensation (eastern bank)		(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		suspended solids being released into these waterbodies. Elevated levels of suspended solids can irritate fish gills and smother spawning habitat. Contaminants can negatively impact the health of aquatic species and result in increased stress, sub-lethal effects and mortality. (Medium-term)	
Hayward's Eyot LWS [AEC-296] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS. (Long-term)	No additional mitigation required as the effect is not significant.
Marcham Salt Spring LWS [AEC-136] (Moderate)	Most / all project components	General construction activities	(ED-01) Provide floodplain conveyance and compensation	Not Significant Adverse	Direct habitat loss/gain and/or severance: During the main construction works direct loss and severance of aquatic habitats within the LWS are possible, as the	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		LWS is located within the draft Order limits. This would risk impacting the integrity of the site. (Medium-term)	
Marcham Salt Spring LWS [AEC-138] (Moderate)	Most / all project components	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Neutral	Changes in water quality: During construction activities near or within waterbodies and where there are flow pathways to waterbodies water quality may deteriorate. This has the potential to impact aquatic features of the LWS, including wetland habitats. This could affect the integrity, ecological value, and capacity to support other species. The Project may alter the hydrological regime of wetland habitats due to changes in groundwater or surface water drainage, potentially affecting these receptors' integrity and ecological value. (Long-term)	No additional mitigation required as the effect is not significant.
Marcham Salt Spring LWS [AEC-140] (Moderate)	Most / all project components	Most / all project activities (construction)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-41) Construction stage surface water management.	Not Significant Neutral	Changes in flow/level: The Project could result in change to the hydrological regime within the wetland habitats as a result of any changes to groundwater or surface water drainage. During construction changes to surface water and groundwater drainage may affect aquatic features on site including the wetlands within	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		the LWS. This may affect the integrity and ecological value of these receptors and their capacity to support other species. (Long-term)	
Marcham Salt Spring LWS [AEC-295] (Moderate)	Most / all project components	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS. (Long-term)	No additional mitigation required as the effect is not significant.
The Cuttings and Hutchins Copse LWS [AEC-102] (Moderate)	Steventon to East Hanney road diversion	General construction activities	(ED-01) Provide floodplain conveyance and compensation	Not Significant Neutral	Direct habitat loss/gain and/or severance: During the main construction works direct loss and severance of aquatic habitats within the LWS are possible, this would risk impacting the integrity of the site.	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Rail siding and material handling facility Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)		before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		(Medium-term)	
The Cuttings and Hutchins Copse LWS [AEC-103] (Moderate)	Steventon to East Hanney road diversion Rail siding and material handling facility Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Neutral	Changes in flow/level: During construction changes to surface water and groundwater drainage may affect aquatic features on site, including ponds, ditches and swamp. This may affect the integrity and ecological value of these receptors and their capacity to support other species. (Medium-term)	No additional mitigation required as the effect is not significant.
The Cuttings and Hutchins Copse LWS [AEC-104] (Moderate)	Steventon to East Hanney road diversion Rail siding and material handling facility	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to	Not Significant Neutral	Changes in water quality: During construction activities within waterbodies, in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present, deterioration to water quality may occur which may impact aquatic features on site, including ponds,	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)		surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		ditches and swamp. This may affect the integrity and ecological value of these receptors and their capacity to support other species. (Medium-term)	
The Cuttings and Hutchins Copse LWS [AEC-293] (Moderate)	Steventon to East Hanney road diversion Rail siding and material handling facility Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (ED-48) Designated ecological site protection from direct disturbance. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction of INNS: Several INNS species are reported within SESRO draft Order limits, so there is a risk that during the construction phase, INNS may be introduced or spread to the LWS. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (priority rivers) - River Ock catchment [AEC-84] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure.	Not Significant Neutral	Direct habitat loss/gain and/or severance: There are currently no planned works on Letcombe Brook as part of this Project. It is expected that some habitat enhancements may occur in the land to the east of Letcombe Brook, south of East Hanney, this may include woodland and grassland	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		creation/enhancement. However, the detail of this is not confirmed and the effect this may have on Letcombe Brook is not possible to evaluate at this stage. (Short-term)	
Aquatic Habitats (priority rivers) - River Ock catchment [AEC-85] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Neutral	Changes in flow/level: There are currently no planned works on Letcombe Brook as part of this Project. It is expected that some habitat enhancements may occur in the land to the east of Letcombe Brook, south of East Hanney, this may include woodland and grassland creation/enhancement. However, the detail of this is not confirmed and the effect this may have on Letcombe Brook is not possible to evaluate at this stage. Consequently it is not expected there will be any construction related changes to flow/level in Letcombe Brook. (Short-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (priority rivers) - River Ock catchment [AEC-86] (Very High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation	Not Significant Neutral	Changes in water quality: There are currently no planned works on Letcombe Brook as part of this Project. It is expected that some habitat enhancements may occur in the land to the east of	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		Letcombe Brook, south of East Hanney, this may include woodland and grassland creation/enhancement. However, the detail of this is not confirmed and the effect this may have on Letcombe Brook is not possible to evaluate at this stage. Consequently it is not expected there will be any construction related changes to water quality in Letcombe Brook. (Short-term)	
Aquatic Habitats (Ditches) - River Ock catchment [AEC-193] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: During construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress which may reduce groundwater ingress into the existing channels prior to the new channels being connected. Additionally, the new channels may affect surface water flow ingress into the existing channels. This could result in reduction to water levels and flow velocities in the existing channels during construction. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Ditches) - River Ock catchment [AEC-194] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (construction)	(ED-41) Construction stage surface water management.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses which could affect aquatic habitats, species and communities. Construction activities	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)		(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-04) Control and management of foul water. (SGP-05) Managing construction works within flood zones. (SGP-06) Standard good practice measures for managing ecology impacts.		within waterbodies in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	
Aquatic Habitats (Ditches) - River Ock catchment [AEC-195] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction and spread of INNS: The Project could introduce INNS into aquatic habitats which could affect the conservation value of the ditches. Diversion of existing watercourses into new channels, and construction activities to create new channels could provide opportunities for INNS to colonise. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Non-priority rivers and streams) - River Ock catchment [AEC-82] (High)	Temporary watercourse crossings Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies.	Not Significant Adverse	Changes in flow/level: During construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress which may reduce groundwater ingress into the existing channels prior to the new channels being connected. Additionally, the new channels may affect surface water flow ingress into the existing channels. This could result in reduction to water levels and flow velocities in the existing channels during construction. Reduced water levels could concentrate pollutants in the watercourse, which could impact health and lifecycles of aquatic species in the watercourse. Reduced water levels may also directly reduce habitat availability and quality for aquatic species. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Bridges and culverts (over/under watercourses and canal)		(SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Aquatic Habitats (Non-priority rivers and streams) - River Ock catchment [AEC-83] (High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses which could affect aquatic habitats, species and communities. Construction activities within waterbodies in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. Elevated levels of suspended sediments can clog gills of aquatic fauna and smother spawning habitat. Contaminants can negatively impact the health of aquatic species and result in increased mortality. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Non-priority rivers and streams) - River Thames [AEC-109] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics within the vicinity of the works. Impoundment and changes to flow dynamics may affect migratory routes for fish and interfere with life cycles of aquatic species. Alterations to flow dynamics may also reduce habitat suitability for aquatic species. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Aquatic Habitats (Non-priority rivers and streams) - River Thames [AEC-110] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic habitats (Ponds) - River Ock catchment [AEC-197] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-27) Provision of Project Priority Areas for Biodiversity. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.	Not Significant Adverse	Direct habitat loss/gain and/or severance: During the construction phase there will be direct habitat loss of the ponds present within the development area, for which mitigation will not be fully realised until after construction is completed. Enhancement to aquatic habitats is considered within operational effects as the benefits would largely take effect once the project is in operation, however the construction and establishment of the waterbodies and watercourses will take place prior to scheme operation, so ecological benefits may also be realised during the construction phase. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic habitats (Ponds) - River Ock catchment [AEC-198] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure.	Not Significant Adverse	Changes in flow/level: During construction phase of the Project, work may affect surface water / groundwater levels and flow ingress into the aquatic environments. This could result in reduction to water levels in ponds. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)		(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-05) Managing construction works within flood zones. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts.			
Aquatic habitats (Ponds) - River Ock catchment [AEC-199] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-04) Control and management of foul water. (SGP-05) Managing construction works within flood zones. (SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of ponds which could affect aquatic habitats, species and communities. Construction activities within waterbodies in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic habitats (Ponds) - River Ock catchment [AEC-200] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Neutral	Introduction and spread of INNS: The Project could introduce INNS into aquatic habitats could affect the conservational value of ponds. Construction activities to create new aquatic habitats could provide opportunities for INNS to colonise. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)					
Aquatic habitats - River Ock catchment [AEC-285] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction and Spread of INNS: Several INNS species are reported within the Ock catchment. Therefore, pathways to facilitate the introduction and/or spread of INNS exist, and through construction, new pathways will be created. Due to the planned development of SESRO and associated effects on aquatic habitats such as realignment, redirecting and removal of watercourses, ditches and ponds as well as the creation of aquatic habitats, there is an increased risk that, through construction activities, INNS may be introduced and/or spread throughout aquatic habitats. There may also be opportunities to remove/reduce INNS from certain areas through construction activities. (Long-term)	No additional mitigation required as the effect is not significant.
Depressed River Mussel - River Thames [AEC-128] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Depressed River Mussel - River Thames [AEC-129] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.
Fish - River Ock catchment [AEC-210] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)	Most / all project activities (construction)	(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-05) Managing construction works within flood zones. (SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses, which could affect aquatic habitats, species and communities. Construction activities within waterbodies near waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This includes risks of contaminants and suspended solids being released into these waterbodies. (Short-term)	No additional mitigation required as the effect is not significant.
Fish - River Ock catchment [AEC-286] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello	Most / all project activities (construction)	(ED-41) Construction stage surface water management. (SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Introduction and Spread of INNS: Several INNS species are reported within the Ock catchment, therefore pathways already exist and will also be created to either facilitate the introduction and/or further spread of INNS. Due to the planned development of SESRO and associated effects on fish habitat such as the	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)		(SGP-08) Standard good practice measures for controlling and treating INNS.		realignment, redirection and removal of watercourses, ditches and ponds, as well as the creation of new aquatic habitats, there is a risk that INNS may become established in newly created watercourses/waterbodies, or that they may be spread to receptor sites as part of planned fish movements from dewatered habitats. Fish INNS may have detrimental effects on native fish communities, through competition for resources and habitats, as well as potential exposure to pathogens and parasites. Furthermore, other INNS species from other functional groups may be introduced or spread through construction activities associated with the SESRO development. (Medium-term)	
Fish - River Thames [AEC-213] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-25) Apply measures including Best Practicable Means to reduce construction noise and vibration.	Not Significant Adverse	Species disturbance, injury or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities adjacent to and within the River Thames and associated noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Long-term)	No additional mitigation required as the effect is not significant.
Fish - River Thames [AEC-214] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate a dry works area, which may constrict and impound flow within the River Thames, altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-25) Apply measures including Best Practicable Means to reduce construction noise and vibration.			
Fish - River Thames [AEC-215] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS. (SGP-35) Design of temporary crossings during construction to maintain function and integrity of watercourses. (SGP-46) Protection of riparian zone during construction.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and near the River Thames and where a flow pathway from construction activities to the River Thames may be present, may result in changes to water quality. This includes risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.
Fish - River Thames [AEC-216] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS. (SGP-51) Reduce light spill from construction	Not Significant Adverse	Direct habitat loss / gain and /or severance: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will result in localised loss of marginal habitat for fish species. The construction area will be dewatered, leading to a temporary loss of aquatic habitat within this location and the dispersal of fish species utilising this marginal habitat. This dispersal is likely to include, but not be limited to, the following effects on the localised fish population: an increase in short-term disturbance of localised fish population, which will then likely seek adjacent habitats. (Medium-term)	No additional mitigation required as the effect is not significant.
Fish - River Thames [AEC-290] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts	Most / all project activities (construction)	(ED-41) Construction stage surface water management.	Not Significant Adverse	Introduction and Spread of INNS: Several fish INNS species are known to exist in the River Thames. Construction activities associated with the River	No additional mitigation required

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure		(SGP-06) Standard good practice measures for managing ecology impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will involve intrusive works within and adjacent to the river including the placement and dewatering of coffer dams to facilitate the construction of infrastructure and permanent land take and modifications to natural habitats. These works carry a risk of introducing and/or spreading INNS to and from the site from plant and vehicles, personnel, equipment and PPE. It is possible that fish INNS will be enclosed within coffer dams and may be removed during dewatering. It is also possible that fish INNS, fry and eggs may be inadvertently moved from one site to another. INNS from other functional groups may also be introduced or spread during construction which may have secondary effects on native fish species, leading to a degradation in biodiversity value of affected sites. (Medium-term)	as the effect is not significant.
Macroinvertebrates - River Ock catchment [AEC-88] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: During construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress which may reduce groundwater ingress into the existing channels prior to the new channels being connected. Additionally, the new channels may affect surface water flow ingress into the existing channels. This could result in reduction to water levels and flow velocities in the existing channels during construction. Reduced water levels could concentrate pollutants in the watercourse, which could impact the health and lifecycles of aquatic species in the watercourse. Diverting flow during construction can significantly impact macroinvertebrates by altering or removing key habitats such as riffles and shallow margins, leading to habitat loss and reduced diversity. Lowered flows can increase sediment deposition, raise water temperatures and reduce dissolved oxygen, all of which can stress sensitive taxa. (Medium-term)	No additional mitigation required as the effect is not significant.
Macroinvertebrates - River Ock catchment [AEC-89] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses which could affect aquatic habitats, species and communities. Construction activities within waterbodies in close proximity to waterbodies	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. Elevated levels of suspended sediments can clog gills of aquatic fauna and smother spawning habitat. Contaminants and suspended solids can be harmful to aquatic macroinvertebrates by clogging gills and respiratory surfaces, impacting respiration, introducing toxic substances which can harm sensitive species or disrupt physiological processes; and/or change pH and oxygen levels, stressing or displacing macroinvertebrates. These impacts can alter macroinvertebrate community composition and diversity. (Medium-term)	
Macroinvertebrates - River Ock catchment [AEC-90] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Species disturbance, injury or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time. (Medium-term)	No additional mitigation required as the effect is not significant.
Macroinvertebrates - River Ock catchment [AEC-287] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (construction)	(ED-41) Construction stage surface water management.	Not Significant Adverse	Introduction and Spread of INNS: Several macroinvertebrate INNS species have been reported within the SESRO draft Order limits and within the Ock catchment. Therefore, pathways to facilitate the	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)		(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		introduction and/or spread of INNS exist, and through construction, new pathways will be created. There is a risk that during the construction phase, INNS may be spread or introduced and colonise newly created habitats. This could affect the establishment of native species in these habitats, through increased competition for resources and habitats. In addition to macroinvertebrate INNS, the potential introduction of other INNS (e.g. fish, macrophytes) could have a detrimental effect on native macroinvertebrate communities leading to increased predation or simplification of the community which may reduce the diversity of native species. (Long-term)	
Macroinvertebrates - River Thames [AEC-124] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.
Macroinvertebrates - River Thames [AEC-125] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies.	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River Thames flood compensation (eastern bank)		surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		(Medium-term)	
Macrophytes - River Ock catchment [AEC-96] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: During construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress which may reduce groundwater ingress into the existing channels prior to the new channels being connected. Additionally, the new channels may affect surface water flow ingress into the existing channels. This could result in reduction to water levels and flow velocities in the existing channels during construction. (Medium-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Ock catchment [AEC-97] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses which could affect aquatic habitats, species and communities. Construction activities within waterbodies in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.		suspended solids being released into these waterbodies. (Medium-term)	
Macrophytes - River Ock catchment [AEC-98] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Species disturbance, injury or mortality: Macrophyte communities could be disturbed, damaged or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location. These impacts may result in the removal of macrophytes and/or their habitats, or other damage through pollution (smothering or other toxic effects), shading effects, physical disturbance or other changes in habitat quality. Such disturbance could cause a reduction in growth and reproduction of macrophytes, and consequently a loss in abundance and diversity through time. (Medium-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Ock catchment [AEC-288] (Moderate)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello	Most / all project activities (construction)	(SGP-06) Standard good practice measures for managing ecology impacts.	Not Significant Adverse	Introduction and Spread of INNS: Several macrophyte INNS species have been reported within the SESRO draft Order limits and within the Ock catchment. Therefore, pathways to facilitate the introduction and/or spread of INNS exist, and through construction activities, new pathways will be created.	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Recreational lakes centre (including visitors centre)		(SGP-08) Standard good practice measures for controlling and treating INNS.		There is a risk that during the construction phase, INNS may be spread or introduced and colonise newly created habitats. This could affect the establishment of native species in these habitats, through increased competition for resources and habitats, leading to detriment to native species and the conservation value of these habitats. There may also be opportunities to remove established macrophyte INNS communities through the removal of existing aquatic habitats as part of the planned development. (Long-term)	
Macrophytes - River Thames [AEC-132] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in flow/level: In the River Thames modifications to river banks and channel associated with River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will necessitate dry works area which may constrict and impound flow within the River Thames altering flow dynamics. (Medium-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Thames [AEC-133] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of the River Thames which could affect aquatic habitats, species and communities. Construction activities within and in close proximity to the River Thames and where a flow pathway from construction activities to the River Thames may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Macrophytes - River Thames [AEC-134] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River Thames erosion protection River Thames flood compensation (eastern bank)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Species disturbance, injury or mortality: Aquatic species and communities could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities within the River Thames which could result in the mortality of macrophytes present within the construction areas. (Medium-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Thames [AEC-292] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Intake/outfall structure	Most / all project activities (construction)	(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Introduction and Spread of INNS: Several macrophyte INNS species are known to exist in/adjacent to the River Thames. Construction activities associated with the River Thames erosion protection, flood compensation (eastern bank) and intake/outfall structure will involve intrusive works within and adjacent to the river including the placement and dewatering of coffer dams to facilitate the construction of infrastructure and permanent land take and modifications to natural habitats.	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
					These works carry a risk of introducing and/or spreading INNS to and from the site from plant and vehicles, personnel, equipment and PPE. It is possible that macrophyte INNS may be inadvertently moved from one site to another during construction, or disturbed, allowing seeds, propagules or other viable plant material to spread downstream, potentially degrading the biodiversity value of the site, sites downstream, and any other sites to which macrophyte INNS may have been introduced. (Long-term)	
Phytobenthos - River Ock catchment [AEC-99] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Direct habitat loss/gain and/or severance: During the diversion of the watercourses direct habitat loss and severance to existing watercourses will occur which will lead to loss of river habitat during construction, for which mitigation will not be fully realised until after construction is completed. (Medium-term)	No additional mitigation required as the effect is not significant.
Phytobenthos - River Ock catchment [AEC-100] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources.	Not Significant Adverse	Changes in flow/level: During construction of the watercourse diversions, the newly constructed channels may be subject to groundwater ingress which may reduce groundwater ingress into the existing channels prior to the new channels being connected. Additionally, the new channels may affect surface water flow ingress into the existing channels. This could result in reduction to water levels and flow velocities in the existing channels during construction. (Medium-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)		(SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.			
Phytobenthos - River Ock catchment [AEC-101] (Low)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Temporary watercourse crossings Bridges and culverts (over/under watercourses and canal)	General construction activities	(ED-01) Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure. (ED-41) Construction stage surface water management. (SGP-02) Standard good practice measures to reduce the impacts to surface and groundwater resources. (SGP-03) Standard good practice measures for works within or adjacent to waterbodies. (SGP-06) Standard good practice measures for managing ecology impacts. (SGP-07) Timing of construction works to reduce ecological impacts. (SGP-08) Standard good practice measures for controlling and treating INNS.	Not Significant Adverse	Changes in water quality: The Project may result in temporary changes to the water quality of affected watercourses which could affect aquatic habitats, species and communities. Construction activities within waterbodies in close proximity to waterbodies and where a flow pathway from construction activities to waterbodies may be present may result in changes to water quality. This include risks of contaminants and suspended solids being released into these waterbodies. (Medium-term)	No additional mitigation required as the effect is not significant.

1.5 Likely non-significant operation effects

Table 1.4 Initial likely non-significant effects during operation (with embedded and standard good practice mitigation applied, but prior to additional mitigation)

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Clifton Hampden Meadows LWS [AEC-156] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). (Long-term)	No additional mitigation required as the effect is not significant.
Clifton Hampden Meadows LWS [AEC-157] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Clifton Hampden Meadows LWS [AEC-158] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be neutral to this receptor. (Long-term)	No additional mitigation required as the effect is not significant.
Clifton Hampden Meadows LWS [AEC-159] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	associated infrastructure, such as pipes in the base)		(ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.		emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	
Cowslip Meadows LWS [AEC- 78] (Moderate)	Rail siding and material handling facility Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Cowslip Meadows LWS [AEC- 79] (Moderate)	Rail siding and material handling facility Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Adverse	Changes in flow/level: Watercourse diversions have the potential to alter flow dynamics within the Letcombe Brook during the construction phase, which may affect the LWS. Changes in flow dynamics could impact aquatic species (spawning, feeding and migration) present in the Letcombe Brook. Altered flow dynamics can also affect water quality due to associated changes in dilution of pollutants, which can also impact the health and survival of aquatic species. This LWS is located within the draft Order limits. Designated sites will be protected during construction from direct and indirect adverse effects. The sites will be integrated into the site plan and priority areas for biodiversity which will either result in their retention or where possible enhancement. This will include no reduction in footprint of sites and appropriate planning of drainage systems from hydrologically connected infrastructure to ensure that water quality and quantity in aquatic habitats does not deteriorate. (Long-term)	No additional mitigation required as the effect is not significant.
Cowslip Meadows LWS [AEC- 80] (Moderate)	Rail siding and material handling facility Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Changes in water quality: Changes to Letcombe Brook and surrounding land could affect the water quality within the watercourse which is located within the LWS. During the construction phase, there is potential for changes in water quality due to elevated levels of suspended sediment and contaminants, which may enter the Letcombe Brook. Contaminants and suspended solids can be harmful to aquatic fauna by clogging or irritating gills and respiratory surfaces, impacting respiration; smothering habitat, especially coarse substrate used for feeding, spawning or shelter; introducing toxic substances which can harm sensitive species or disrupt physiological processes; and/or change pH and oxygen levels stressing or displacing aquatic fauna. These impacts may detrimentally affect the diversity and community composition of aquatic fauna. (Long-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Dorchester Gravel Pits LWS [AEC-164] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). (Long-term)	No additional mitigation required as the effect is not significant.
Dorchester Gravel Pits LWS [AEC-165] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Dorchester Meadow LWS [AEC-162] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). (Long-term)	No additional mitigation required as the effect is not significant.
Dorchester Meadow LWS [AEC-163] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
			(ED-48) Designated ecological site protection from direct disturbance.			
Hayward's Eyot LWS [AEC-154] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). (Long-term)	No additional mitigation required as the effect is not significant.
Hayward's Eyot LWS [AEC-155] (Moderate)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Marcham Salt Spring LWS [AEC-139] (Moderate)	Most / all project components	No project activities identified at this stage.	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-42) Operation stage surface water management.	Not Significant Neutral	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic communities. This LWS is located within the draft Order limits. Designated sites will be protected during construction from direct and indirect adverse effects. The sites will be integrated into the site plan and priority areas for biodiversity which will either result in their retention or where possible enhancement. This will include no reduction in footprint of sites and appropriate planning of drainage systems from hydrologically connected infrastructure to ensure that water quality and quantity in aquatic habitats does not deteriorate. (Long-term)	No additional mitigation required as the effect is not significant.
The Cuttings and Hutchins Copse LWS [AEC-151] (Moderate)	Steventon to East Hanney road diversion Rail siding and material handling facility	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir	Not Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Project Priority Areas for Biodiversity		infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.		(incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	
The Cuttings and Hutchins Copse LWS [AEC-152] (Moderate)	Steventon to East Hanney road diversion Rail siding and material handling facility Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Adverse	Changes in flow/level: Changes in the alignment of watercourses around the reservoir location could affect the flow regime of watercourses within the Ock catchment and result in the loss of catchment area and alteration to groundwater connection to surface waterbodies which could affect connected aquatic habitats including those within the LWS. Additionally, modification to drainage from the railway and/or highways may result in modified flow regimes within the aquatic habitats on site. (Long-term)	No additional mitigation required as the effect is not significant.
The Cuttings and Hutchins Copse LWS [AEC-153] (Moderate)	Steventon to East Hanney road diversion Rail siding and material handling facility Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology. (ED-48) Designated ecological site protection from direct disturbance.	Not Significant Neutral	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. (Long-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (priority rivers) - River Ock catchment [AEC-148] (Very High)	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Direct habitat loss/gain and/or severance: There are currently no planned works on Letcombe Brook as part of this Project. It is expected that some habitat enhancements may occur in the land to the east of Letcombe Brook, south of East Hanney, this may include woodland and grassland creation/enhancement. No works are planned in this location currently with only potential for habitat enhancement works which would not be expected to result in loss or severance of aquatic habitat. (Short-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)					
Aquatic Habitats (priority rivers) - River Ock catchment [AEC-149] (Very High)	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: There are currently no planned works on Letcombe Brook as part of this Project. It is expected that some habitat enhancements may occur in the land to the east of Letcombe Brook, south of East Hanney, this may include woodland and grassland creation/enhancement. However, the detail of this is not confirmed at this stage. It is not expected that there will be any operation related changes to flow/level in the Letcombe Brook, but further detail is required to improve the robustness of this conclusion. (Short-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (priority rivers) - River Ock catchment [AEC-150] (Very High)	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in water quality: There are currently no planned works on Letcombe Brook as part of this Project. It is expected that some habitat enhancements may occur in the land to the east of Letcombe Brook, south of East Hanney, this may include woodland and grassland creation/enhancement. However, the detail of this is not confirmed at this stage. It is not expected that there will be any operation related changes to flow/level in the Letcombe Brook, but further detail is required to improve the robustness of this conclusion. (Short-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Ditches) - River Ock catchment [AEC- 196] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Adverse	Introduction and spread of INNS: The Project could introduce INNS into aquatic habitats which could affect the conservation value of the ditches. Monitoring/ maintenance works could provide opportunities for INNS to colonise. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Ditches) - River Ock catchment [AEC- 203] (Low)	Project Priority Areas for Biodiversity Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Not Significant Beneficial	Changes in flow/ water level: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting diverse communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. A proportion of the ditches will be permanently wetted to support aquatic habitats and species. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Aquatic Habitats (Ditches) - River Ock catchment [AEC- 204] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Not Significant Beneficial	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. There is potential change in water quality in the Ock catchment through improved water residence times within watercourses (and associated catchment) and adjacent land habitats managed for biodiversity which is expected to lead to a small improvement in water quality. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Aquatic Habitats (Non-priority rivers and streams) - River Ock catchment [AEC-144] (High)	Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: Changes in the alignment of watercourses around the reservoir location could affect the flow regime of watercourses within the Ock catchment and result in the loss of catchment area and alteration to groundwater connection to surface waterbodies. This may affect the type and quality of habitat within these watercourses. (Long-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Non-priority rivers and streams) - River Ock catchment [AEC-146] (High)	Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch) Wilts and Berks Canal Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Aquatic Habitats (Non-priority rivers and streams) - River Thames [AEC-143] (High)	Intake/outfall structure River tunnel and shafts Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Project Priority Areas for Biodiversity	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Aquatic Habitats (Non-priority rivers and streams) - River Thames [AEC-145] (High)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River tunnel and shafts Intake/outfall structure	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). The Project may result in minor increases in flow in the River Thames due to increased volumes of sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.
Aquatic Habitats (Non-priority rivers and streams) - River Thames [AEC-147] (High)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) River tunnel and shafts Intake/outfall structure	Emergency drawdown testing of the reservoir	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. Operation of the Project may result in increased volumes of sewage processed at Abingdon Sewage Treatment Works (STW), which may increase the volume of treated sewage effluent to the River Thames. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Aquatic habitats (Ponds) - River Ock catchment [AEC-201] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Adverse	Introduction and spread of INNS: The Project could introduce INNS into aquatic habitats which could affect the conservation value of ponds. Monitoring/ maintenance works could provide opportunities for INNS to colonise. (Medium-term)	No additional mitigation required as the effect is not significant.
Aquatic habitats (Ponds) - River Ock catchment [AEC-206] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity.	Not Significant Beneficial	Changes in water quality: Changes to water quality may occur in relation to improvements in the catchment area for the Ock catchment as a result of watercourse diversions and the creation of priority areas for biodiversity. Potential water quality improvements anticipated through direct connection (online ponds) and/ or dissolved oxygen increases/ nutrient reduction through macrophyte communities within the ponds. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Aquatic habitats - River Ock catchment [AEC-316] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Not Significant Adverse	Introduction and Spread of INNS: Several INNS species have been reported within the SESRO draft Order limits and within the Ock catchment. During the operational phase, there are likely to be pathways through which INNS may spread to newly created aquatic habitats, such as from upstream migration or downstream drift in flowing watercourses. This could affect the establishment of native species in these habitats, through increased competition for resources and habitats, leading to detriment to native species and the conservation value of these habitats. (Long-term)	No additional mitigation required as the effect is not significant.
Depressed River Mussel - River Thames [AEC-177] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Project Priority Areas for Biodiversity	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Depressed River Mussel - River Thames [AEC-178] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames. The Project may result in minor increases in flow in the River Thames due to increased volumes of sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.
Depressed River Mussel - River Thames [AEC-179] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. Operation of the Project may result in increased volumes of sewage processed at Abingdon Sewage Treatment Works (STW), which may increase the volume of treated sewage effluent to the River Thames.	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	associated infrastructure, such as pipes in the base)				(Long-term)	
Fine-lined pea mussels - River Ock catchment [AEC-176] (High)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. Change to water quality may occur in relation to increased volumes of sewage being treated at Drayton Sewage Treatment Works which could affect fine-lined pea mussels in the receiving watercourse. Whilst there is potential for elevated flow rates entering the Ginge Brook, it is assumed that water quality of projected discharges are anticipated to remain within established environmental permit limits and the effect would therefore be neutral. Overall, the effect on the receptor in the River Ock catchment is considered to be beneficial. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Fish - River Ock catchment [AEC-225] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Adverse	Changes in flow: The Project may result in changes to the flow regime of watercourses within the study area, including watercourses within the Ock catchment because of permanent changes to the alignment of watercourses and loss of catchment area. There may be some increases in flow in the Ginge Brook due to increased volumes of sewage treated at Drayton Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.
Fish - River Ock catchment [AEC-226] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Beneficial	Changes in water quality: Change to water quality may occur as a result of a change in the Ock catchment area as a result of the construction of SESRO and associated watercourse diversions. Water quality strongly influences the composition of fish communities. Potential change in water quality in the Ock catchment reflects a change in water residence times within the watercourses which is expected to lead to a small improvement in water quality. Based on the available hydrological modelling information, it is predicted that diversion of watercourses and their sub-catchment areas will contribute to these changes. Dilution of point source pollution from upstream remains minimal. Change to water quality may occur in relation to increased volumes of sewage discharged to Ginge Brook. However, it is assumed that water quality of projected discharges are anticipated to remain within established environmental permit limits and is therefore a minimal change in water quality relative to the baseline.	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Fish - River Ock catchment [AEC-317] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Not Significant Adverse	(Long-term) Introduction and Spread of INNS: Several fish INNS species have been reported within the SESRO draft Order limits and within the Ock catchment. During the operational phase, there are likely to be pathways through which fish INNS may spread to newly created aquatic habitats, such as from upstream or downstream migration in flowing watercourses, or by illegal stocking into stillwaters. This could affect the establishment of native species in these habitats, through increased competition for resources and habitats, leading to detriment to native species and the conservation value of these habitats. It is also possible that colonisation of the watercourses and waterbodies within the Ock catchment by INNS of other functional groups (e.g. macrophytes and macroinvertebrates) might have secondary effects on native fish communities, through food chain simplification or degradation of habitat diversity, which may lead to increased pressure. (Long-term)	No additional mitigation required as the effect is not significant.
Fish - River Thames [AEC-229] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Adverse	Changes in flow: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows because of flow releases from the reservoir back into the River Thames. Flows and water quality may also be affected by periodic emergency draw-down testing. These discharges and abstractions may affect the distribution of fish in the vicinity of the intake/outfall, with potential for flow and associated water quality changes and temporary washout of fish and potential for increased predation. (Medium-term)	No additional mitigation required as the effect is not significant.
Fish - River Thames [AEC-230] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows because of flow releases from the reservoir back into the River Thames. Water quality may also be affected by periodic emergency draw-down testing. These discharges and abstractions may affect the distribution of fish in the vicinity of the intake/outfall, with potential for water quality changes associated with discharge from the reservoir. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Medium-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Fish - River Thames [AEC-231] (Moderate)	River Thames flood compensation (eastern bank)	Most / all project activities (operation)	No embedded design or standard good practice	Not Significant Neutral	Changes to barrier porosity, function of existing fish passes: Existing barrier porosity (i.e. function of existing fish / eel passes) on watercourses within the Study Area may be affected by changes in	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)		mitigation identified at this stage.		flow. There may be short term impacts associated with periodic emergency draw-down testing. (Long-term)	
Fish - River Thames [AEC- 232] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	No embedded design or standard good practice mitigation identified at this stage.	Not Significant Neutral	Direct habitat loss/gain and /or severance: There may be subtle, localised changes in the habitat in the River Thames associated with the operation of the Project. (Long-term)	No additional mitigation required as the effect is not significant.
Macroinvertebrates - River Ock catchment [AEC-168] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: Changes in the alignment of watercourses around the reservoir location could affect the flow regime of watercourses within the Ock catchment and result in the loss of catchment area and alteration to groundwater connection to surface waterbodies which could affect aquatic communities. There may be some increases in flow in the Ginge Brook due to increased volumes of sewage treated at Drayton Sewage Treatment Works, and subsequent discharged of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.
Macroinvertebrates - River Ock catchment [AEC-170] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal	Most / all project activities (operation) Use of publicly accessible areas and recreation facilities	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce	Not Significant Neutral	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. Change to water quality may occur in relation to increased volumes of sewage being treated at Drayton Sewage Treatment Works which could affect macroinvertebrates in the receiving	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	effects on aquatic ecology.		watercourse. Whilst there is potential for elevated flow rates entering the Ginge Brook, it is assumed that water quality of projected discharges are anticipated to remain within established environmental permit limits. Overall, based on available information the effect is considered to be neutral. (Long-term)	
Macroinvertebrates - River Ock catchment [AEC-172] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in community structure/function caused by primary productivity changes: The diversion of watercourses within the Ock catchment is expected to alter habitat conditions, flow dynamics, and water quality, thereby impacting primary productivity. In this catchment, initial analysis has identified slight improvements in water quality, which may support a more diverse and stable phytobenthos community, enhancing primary productivity. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Macroinvertebrates - River Ock catchment [AEC-318] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Not Significant Adverse	Introduction and Spread of INNS: Several macroinvertebrate INNS species have been reported within the SESRO draft Order limits and within the Ock catchment. There is a risk that during the operational phase, macroinvertebrate INNS may colonise newly created aquatic habitats. This could detrimentally affect the establishment of native species in these habitats, through increased competition for resources and habitats. In addition to macroinvertebrate INNS, the potential introduction of other INNS (e.g. fish, macrophytes) could have a detrimental effect on native macroinvertebrate communities leading to increased predation or simplification of the community which may reduce the diversity of native species. (Long-term)	No additional mitigation required as the effect is not significant.
Macroinvertebrates - River Thames [AEC-167] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce	Not Significant Beneficial	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macroinvertebrate communities. The aquatic habitats which will be created include the reservoir	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	River Thames erosion protection Intake/outfall structure Project Priority Areas for Biodiversity		effects on aquatic ecology.		(incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	
Macroinvertebrates - River Thames [AEC-171] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Macroinvertebrates - River Thames [AEC-173] (High)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in community structure/function caused by primary productivity changes: The Project is expected to result in flow/level and water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames. These changes may therefore impact primary productivity. In the River Thames, phytoplankton communities which are key contributors to primary productivity are likely to be most affected. These changes could disrupt the food web, potentially leading to a decline in the diversity and/or abundance of certain species, including macroinvertebrates. (Long-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Ock catchment [AEC-181] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: The Project may result in changes to the flow regime of watercourses within the study area including watercourses within the Ock catchment as a result of permanent changes to alignment of watercourses and loss of catchment area. There may be some increases in flow in the Ginge Brook due to increased volumes of sewage treated at Drayton Sewage Treatment Works during operation, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Hanney Ditch and Landmead Ditch)					
Macrophytes - River Ock catchment [AEC-183] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. Change to water quality may occur in relation to increased volumes of sewage being treated at Drayton Sewage Treatment Works which could affect macrophytes in the receiving watercourse. Whilst there is potential for elevated flow rates entering the Ginge Brook, it is assumed that water quality of projected discharges are anticipated to remain within established environmental permit limits and the effect would therefore be neutral. Overall, the effect on the receptor in the River Ock catchment is considered to be beneficial. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Macrophytes - River Ock catchment [AEC-319] (Moderate)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Not Significant Adverse	Introduction and Spread of INNS: Several macrophyte INNS species have been reported within the SESRO draft Order limits and within the Ock catchment. There is a risk that during the operational phase, macrophyte INNS may colonise newly created aquatic habitats. This could detrimentally affect the establishment of native species in these habitats, through increased competition for resources and habitats, potentially leading to a reduction in the diversity of macrophyte species and degradation of conservation value. (Long-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Thames [AEC-135] (Moderate)	River tunnel and shafts Intake/outfall structure	No project activities identified at this stage.	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-42) Operation stage surface water management.	Not Significant Neutral	Direct habitat loss/gain and/or severance: The Project will result in a minimum 10% Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic macrophytes communities. The aquatic habitats which will be created include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches and canals. (Long-term)	No additional mitigation required as the effect is not significant.
Macrophytes - River Thames [AEC-182] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce	Not Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). The Project may result in minor increases in flow in the River Thames due to increased volumes of	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)		effects on aquatic ecology.		sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	
Macrophytes - River Thames [AEC-184] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Beneficial	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). It is considered that from initial analysis, changes to water quality are likely to be beneficial to this receptor. Operation of the Project may result in increased volumes of sewage processed at Abingdon Sewage Treatment Works (STW), which may increase the volume of treated sewage effluent to the River Thames. (Long-term)	No additional mitigation has been identified at this stage as the effect is likely to be beneficial.
Macrophytes - River Thames [AEC-323] (Moderate)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-32) Management of aquatic INNS.	Not Significant Adverse	Introduction and Spread of INNS: During operation of the Project, macrophyte communities on the River Thames are at risk of being affected by INNS introduction, spread and/or proliferation. Although INNS are already known to be present within the Thames, it is possible that the reservoir may become colonised by INNS act as a source of seeds, propagules or other viable plant material, which may subsequently be discharged into the River Thames, potentially affecting native macroinvertebrate communities. INNS may also be spread to the Thames through the planned recreational activities at SESRO. (Long-term)	No additional mitigation required as the effect is not significant.
Phytobenthos - River Ock catchment [AEC-186] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: The Project may result in changes to the flow regime of watercourses within the study area including watercourses within the Ock catchment as a result of permanent changes to alignment of watercourses and loss of catchment area. There may be some increases in flow in the Ginge Brook due to increased volumes of sewage treated at Drayton Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
	Hanney Ditch and Landmead Ditch)					
Phytobenthos - River Ock catchment [AEC-187] (Low)	Reservoir (including embankment and directly associated infrastructure, such as pipes in the base) Wilts and Berks Canal Recreational lakes centre (including visitors centre) Eastern watercourses diversion (Mere Dyke and Drayton North Ditch) Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch and Landmead Ditch)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Neutral	Changes in water quality: Change to water quality may occur in relation to the change in the catchment area for the Ock catchment as a result of watercourse diversions. Change to water quality may occur in relation to increased volumes of sewage being treated at Drayton Sewage Treatment Works which could affect phytobenthos in the receiving watercourse. Whilst there is potential for elevated flow rates entering the Ginge Brook, it is assumed that water quality of projected discharges are anticipated to remain within established environmental permit limits and the effect would therefore be neutral. It is considered that from initial analysis, changes to water quality are likely to be neutral for this receptor. (Long-term)	No additional mitigation required as the effect is not significant.
Phytoplankton - River Thames [AEC-188] (Low)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). Phytoplankton communities follow a consistent annual pattern associated with flows in the River Thames which may be disrupted by flow changes resulting from the operation of the Project. The Project may result in minor increases in flow in the River Thames due to increased volumes of sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. (Long-term)	No additional mitigation required as the effect is not significant.
Phytoplankton - River Thames [AEC-189] (Low)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in water quality: The Project is expected to result in water quality changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). Operation of the Project may result in increased volumes of sewage processed at Abingdon Sewage Treatment Works (STW), which may increase the volume of treated sewage effluent to the River Thames. Phytoplankton communities follow a consistent annual pattern associated with water quality in the River Thames which may be disrupted by water quality changes resulting from the operation of the Project. (Long-term)	No additional mitigation required as the effect is not significant.

Receptor name [Effect ID] (Sensitivity of receptor)	Project component(s)	Project activity(ies)	Embedded design / standard good practice mitigation applied	Initial significance / Direction of effect	Description of effect (including duration)	Additional mitigation identified (including monitoring)
Zooplankton - River Thames [AEC-190] (Low)	River Thames flood compensation (eastern bank) River tunnel and shafts River Thames erosion protection Intake/outfall structure Reservoir (including embankment and directly associated infrastructure, such as pipes in the base)	Most / all project activities (operation)	(ED-27) Provision of Project Priority Areas for Biodiversity. (ED-37) Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology.	Not Significant Adverse	Changes in flow/level: The Project is expected to result in flow/level changes in the River Thames in relation to the abstraction of raw water from the River Thames in the reservoir via the intake/outfall structure and augmentation of flows as a result of flow releases from the reservoir back into the River Thames (including releases from emergency draw down testing). The Project may result in minor increases in flow in the River Thames due to increased volumes of sewage treated at Abingdon Sewage Treatment Works, and subsequent discharge of treated sewage effluent entering the watercourse. Zooplankton communities follow a consistent annual pattern associated with flows in the River Thames and their interdependency with the phytoplankton community. Flow changes resulting from the operation of the Project may therefore impact the zooplankton community. (Long-term)	No additional mitigation required as the effect is not significant.



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