



Gatwick Airport Northern Runway Project

Environmental Statement

Appendix 11.9.2: Water Framework Directive Compliance Assessment

Book 5

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0 Executive Summary

- 0.1.1 The proposal to make best use of London Gatwick Airport's existing runways and infrastructure has the potential to detrimentally affect the quality and health of receiving watercourses through changes to discharges to them and works within the river corridor.
- 0.1.2 This appendix to the **Environmental Statement (ES) Chapter 11: Water Environment** (Doc Ref. 5.1) is the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Regulations) Compliance Assessment.
- 0.1.3 The assessment concludes that it is anticipated that the Project would not lead to deterioration in the current status or prevent the WFD water bodies from achieving "Good" Status/Potential in the future and is therefore considered compliant with the WFD legislation.

1 Introduction

1.1 General

- 1.1.1 This document forms **Appendix 11.9.2: Water Framework Directive Compliance Assessment** (Doc Ref. 5.3) of the Environmental Statement (ES) prepared on behalf of Gatwick Airport Limited (GAL) for the proposal to make best use of London Gatwick Airport's existing runways and infrastructure (referred to within this report as 'the Project').
- 1.1.2 This document provides the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Regulations) Compliance Assessment for the Project.

1.2 Purpose of this Report

- 1.2.1 Compliance with the provisions of the WFD Regulations needs to be taken into account in the planning of all new activities in the water environment, as outlined in **ES Chapter 11: Water Environment** (Doc Ref. 5.1), Section 11.2. The Secretary of State must decide this application for development consent so as to secure compliance with the Regulations, and so as best to secure the achievement of the following environmental objectives:
- measures should be put in place to prevent deterioration of the surface water status or groundwater status of a body of water (subject to the application of Regulations 18 and 19), and

- measures should otherwise support the achievement of the environmental objectives set for a body of water (subject to the application of Regulations 16 to 19).

- 1.2.2 Regulations 16 to 19 set out the conditions relevant to extended deadlines for environmental objectives (Regulation 16), setting less stringent environmental objectives (Regulation 17), natural causes of change (Regulation 18) and modifications to physical characteristics of water bodies (Regulation 19).

1.3 Background

- 1.3.1 All water bodies should aim to achieve good ecological status (GES), or for heavily modified water bodies and artificial water bodies to achieve good ecological potential (GEP), by a set timeframe. Overall ecological status (or potential) is made up of a number of biological, hydromorphological and chemical quality characteristics called elements. The overall status is determined by the lowest element status.

- 1.3.2 Any activity which has the potential to have an impact on ecology will require consideration in terms of whether it could cause deterioration in the ecological status or potential of a water body. It is therefore necessary to consider the possible changes associated with the proposed options for the Project.

- 1.3.3 Where there are sites protected under transposed and adopted regulations, WFD aims for compliance with any relevant standards or objectives for these sites. including the Urban Waste Water Treatment (England and Wales) Regulations 1994, the Nitrate Pollution Prevention Regulations 2015 or the Conservation of Habitats and Species Regulations 2017.

- 1.3.4 For those water bodies that are not already in 'good' condition, specific mitigation measures have been set for each River Basin District (RBD) to achieve the environmental objectives of the WFD. These measures are to mitigate impacts that have been or are being caused by human activity and to enhance and restore the quality of the existing environment. These mitigation measures will be delivered through the River Basin Management Plan (RBMP) which also identifies the different organisations responsible for their delivery.

1.4 Project Description

Key Components of the Project

- 1.4.1 The Project proposes alterations to the existing northern runway which, along with lifting the current restrictions on its use, would enable dual runway operations. Together with the alterations to the northern runway, the Project would include the development of a range of infrastructure and facilities to allow increased

airport passenger and aircraft operations and to allow Gatwick to make best use of its existing runways.

- 1.4.2 The Project would include alterations to the existing northern runway and corresponding enhancements to the taxiway system and parking stands to accommodate an increase in aircraft movements.

- 1.4.3 The Project includes the following key components, which are described in further detail in **ES Chapter 5: Project Description** (Doc Ref. 5.1).

- amendments to the existing northern runway including repositioning its centreline 12 metres further north to enable dual runway operations;
- modification and daylighted channel extension on runway culvert and syphon channel;
- reconfiguration of taxiways;
- pier and stand alterations (including a proposed new pier);
- reconfiguration of other airfield facilities;
- extensions to the existing airport terminals (north and south);
- provision of additional hotel and office space;
- provision of reconfigured car parking, including new car parks;
- surface access (including highway) improvements;
- water treatment facilities;
- reconfiguration of existing utilities, including surface water, foul drainage and power; and
- landscape/ecological planting and environmental mitigation.

2 Assessment Stages

2.1.1 The following discrete stages need to be followed to complete the assessment of the proposed development for its compliance with the Regulations and Planning Inspectorate (PINS) advice note (PINS18) Scoping Opinion (2019):

- Screening and data collection (Section 3.1 and 3.2): identification of relevant water bodies potentially affected by the proposed development and to determine if there are any activities associated with the proposed development that do not require further consideration, for example activities which have been ongoing since before the current RBMP plan cycle and which have thus formed part of the baseline.
- Scoping (Section 3.3): identifies the receptors and water body elements (including current status, objectives and parameters) that are potentially at risk from the proposed development and need impact assessment.
- Impact Assessment (Section 4): considers the potential impacts of the proposed development, identifies ways to avoid or minimise impacts, and indicates if the proposed development with the proposed mitigation would enhance, cause deterioration or jeopardise the water body achieving GES or GEP and identifies contributions to the RBMP objectives.

2.1.2 The methodology used for each stage is described in the relevant section.

3 Screening and Scoping

3.1 Waterbody Screening

3.1.1 Table 3.1.1 shows the baseline of the surface water, and groundwater water bodies within the study area that have been screened into the assessment based on proximity to the Project and hydrological connectivity. All water bodies within the Project boundary have been screened into the assessment. A 2 km radius beyond the Project boundary has been defined to identify receptors that could reasonably be affected by direct impacts associated with the Project. Data have been extracted from Environment Agency Catchment Data Explorer (Environment Agency, 2019).

3.1.2 The WFD waterbodies and watercourses which have been screened into this assessment are shown in **ES Appendix 11.9.2 Figure 4.1.1** (Doc Ref 5.3).

Table 3.1.1 General Water Features and Baseline (Rivers and Groundwater Bodies)

Water Body Code	Name of water body in RBMP	Hydro-morphological Designation	Current Status/ Potential (2019)	Objective/ Status Potential	Linked Protected Areas
Surface Water Bodies					
GB106039017481	Mole upstream of Horley	Heavily Modified	Moderate	Good 2027 (low confidence)	No data to show
GB106039017500	Tilgate Brook and Gatwick Stream	Heavily Modified	Moderate	Good 2027 (low confidence)	River Mole UKENR158 Urban Wastewater Treatment Regulations
GB106039017520	Burstow Stream	River – not designated artificial or heavily modified	Bad	Poor 2027 (low confidence)	No data to show
GB106039017621	Mole (Horley to Hersham)	River – not designated artificial or heavily modified	Moderate	Moderate 2015	River Mole UKENR158 Urban Wastewater Treatment Regulations Mole Gap to Reigate Escarpment UK0012804 Habitats and Species Directive (SAC) Leatherhead and Elmer G725 Nitrate Pollution Prevention Regulations
Groundwater Bodies					
GB40602G602400	Copthorne Tunbridge Wells Sands	N/A	Good	Good 2015	Eden Brook East of Lingfield NVZ S487 Nitrate Pollution Prevention Regulations River Arun (u/s Pallingham) NVZ S523 Nitrate Pollution Prevention Regulations Weir Wood Reservoir Eutrophic lake NVZ EL133 Nitrate Pollution Prevention Regulations Medway at Weir Wood NVZ S488 Nitrate Pollution Prevention Regulations Copthorne Tunbridge Wells Sands UKGB40602G602400 Drinking Water Protected Area

3.1.3 Table 3.1.2 includes the relevant biological and hydromorphological elements for the surface water and groundwater waterbodies which have been screened into this assessment. This information is carried forward in the assessment tables presented in Section 3.

Table 3.1.2 Biological and Supporting Elements for Water Bodies

Element	Current Status 2019	Overall status objective	Reasons for not achieving good status and reasons for deterioration
Surface Water Bodies			
Mole Upstream of Horley (includes Man's Brook, Withy Brook and Crawler's Brook)			
Ecological	Moderate	Good (2027)	No data available on Catchment Data Explorer
Biological quality element	Good	Good (2015)	

Hydromorphological Supporting Elements	Supports Good	Supports Good (2015)	
Physico-chemical quality elements	Moderate	Good (2027)	
Specific pollutants	High	High (2015)	
Chemical	Fail	Good (2063)	
Tilgate Brook and Gatwick Stream at Crawley (includes Gatwick Stream)			
Ecological	Moderate	Good (2027)	<ul style="list-style-type: none"> ▪ Point source, Sewage discharge (continuous), Water Industry, Fish; Invertebrates ▪ Diffuse source, Urbanisation - urban development, Urban and transport, Invertebrates ▪ Diffuse source, Transport Drainage, Urban and transport, Invertebrates; Fish ▪ Physical modification, Recreation, Mitigation Measures Assessment; Urban and transport, Local and Central Government ▪ Physical modification, Flood protection - structures, Local and Central Government, Fish; ▪ Physical modification, Barriers - ecological discontinuity, Urban and transport, Fish ▪ Physical modification, Urbanisation - transport, Urban and transport, Fish; transport, Urban and transport, Invertebrates ▪ Invasive non-native species, North American signal crayfish, No sector responsible, Invertebrates; Fish ▪ Mercury and Its Compounds (Reason awaiting classification, No sector responsible) ▪ Polybrominated diphenyl ethers (PBDE) (Reason awaiting classification, No sector responsible)
Biological quality element	Bad	Poor (2027)	
Hydromorphological Supporting Elements	Supports Good	Supports Good (2015)	
Physico-chemical quality elements	Good	Good (2021)	
Specific pollutants	High	High (2015)	
Chemical	Fail	Good (2063)	
Burstow Stream (includes Burstow Stream and Burstow Stream Tributary)			
Ecological	Bad	Poor (2027)	<ul style="list-style-type: none"> ▪ Physical modification, Barriers - ecological discontinuity, Domestic General Public/ Urban and transport/ Other, Fish ▪ Physical modification, Land drainage - operational management, Agriculture and rural land management, Fish, Invertebrates ▪ Physical modification, Urbanisation - urban development, Urban and transport, Fish ▪ Physical modification, Reservoir / Impoundment - non flow related, Other, Invertebrates ▪ Point source, Sewage discharge (continuous), Water Industry, Phosphate, Fish, Macrophytes and Phytobenthos Combined, Invertebrates ▪ Point source, Sewage discharge (intermittent), Water Industry, Phosphate, Macrophytes and Phytobenthos Combined ▪ Flow, Low Flow (not drought), No sector responsible, Invertebrates, Fish, Phosphate, Macrophytes and Phytobenthos Combined ▪ Diffuse source, Riparian/in-river activities (inc. bankside erosion), Agriculture and rural land management, Invertebrates ▪ Invasive non-native species, North American signal crayfish, No sector responsible, Invertebrates ▪ Cypermethrin (Priority hazardous) (Pending investigation)
Biological quality element	Bad	Poor (2027)	
Hydromorphological Supporting Elements	Supports Good	Supports Good (2015)	
Physico-chemical quality elements	Moderate	Moderate (2015)	
Specific pollutants	High	High (2015)	
Chemical	Fail	Good (2063)	
Mole (Horley to Hershaw) (includes River Mole and Withy Brook)			
Ecological	Moderate	Moderate (2015)	<ul style="list-style-type: none"> ▪ Point source, Sewage discharge (continuous), Water Industry, Phosphate, Invertebrates, Macrophytes and Phytobenthos Combined ▪ Point source, Sewage discharge (intermittent), Water Industry, Macrophytes and Phytobenthos Combined, Phosphate, Invertebrates
Biological quality element	Moderate	Moderate (2015)	
Hydromorphological Supporting Elements	Supports Good	Supports Good (2015)	
Physico-chemical quality elements	Moderate	Moderate (2015)	

Specific pollutants	High	High (2015)	<ul style="list-style-type: none"> ▪ Point source, Private Sewage Treatment, Domestic General Public, Macrophytes and Phytobenthos Combined, Phosphate ▪ Diffuse source, Poor nutrient management, Agriculture and rural land management, Phosphate, Macrophytes and Phytobenthos Combined ▪ Diffuse source, Poor Livestock Management, Agriculture and rural land management, Macrophytes and Phytobenthos Combined, Phosphate ▪ Diffuse source, Poor soil management, Agriculture and rural land management, Macrophytes and Phytobenthos Combined, Phosphate ▪ Invasive non-native species, North American signal crayfish, No sector responsible, Invertebrates ▪ Dissolved oxygen (pending investigation) ▪ Ammonia (Phys-Chem) (pending investigation) ▪ Biochemical Oxygen Demand (BOD) (pending investigation)
Chemical	Fail	Good (2063)	
Groundwater Bodies within the Study Area			
Copthorne Tunbridge Wells Sands			
Quantitative	Good	Good (2015)	N/A
Quantitative – saline intrusion	Good	Good (2015)	N/A
Quantitative – water balance	Good	Good (2015)	N/A
Quantitative – GWDTE	Good	Good (2015)	N/A
Quantitative – dependent surface water body	Good	Good (2015)	N/A
Chemical	Good	Good (2015)	N/A
Chemical – saline intrusion	Good	Good (2015)	N/A
Chemical – water balance	Good	Good (2015)	N/A
Chemical – GWDTE	Good	Good (2015)	N/A
Chemical – dependent surface water body	Good	Good (2015)	N/A

3.2 Screening and Scoping of Project Components

3.2.1 The Project is described and terms defined in the **ES Chapter 5: Project Description** (Doc Ref. 5.1).

3.2.2 The following Project components carried out as part of the Project have been screened into the assessment due to the possibility of these works to impact on surface water bodies and groundwater bodies:

- Increases in impermeable area
- Construction of outfalls
- Earthworks
- Culverting
- Works within the floodplain

3.2.3 Table 3.2.1 sets out which of the screened in works are required for each component of the Project, and whether those specific Project components are screened in or out of the assessment at the construction and operation stage. Where no screened in works were relevant to the Project component, the Project component has been screened out. Where there screened in works were relevant to the Project component, the possibility of the Project component to impact on surface water bodies and groundwater bodies was evaluated based on the locality and whether there is an established pathway to the receptor between the Project component to the screened in water bodies.

Table 3.2.1 Project components for further consideration

Project Components	Increases in impermeable area	Outfalls	Earthworks	Culverting	Works within the floodplain	Construction – Scoped in or out	Operation – Scoped in or out
Amendments to the existing northern runway and repositioning its centreline 12 metres further north to enable dual runway operations.	✓		✓		✓	In	In
Modification and daylighted channel extension to runway culvert and syphon channel	✓		✓	✓	✓	In	In
Reconfiguration of taxiways	✓		✓		✓	In	In
Pier and stand alterations (including a proposed new pier)						Out (works separated from water body by flood embankment)	Out (lack of clear pathway to receptor)
Reconfiguration of other airfield facilities			✓		✓	In	Out (lack of clear pathway to receptor)
Extensions to the existing airport terminals (north and south);						Out (works separated from water body by flood embankment)	Out (lack of clear pathway to receptor)
Provision of additional hotel and office space					✓	In	Out (lack of clear pathway to receptor)
Provision of reconfigured car parking, including new car parks					✓	In	Out (lack of clear pathway to receptor)
Surface access (including highway) improvements	✓	✓	✓	✓	✓	In	In
Water treatment facilities					✓	In	In
Reconfiguration of existing utilities, including surface water, foul drainage, and power		✓			✓	In	In
Landscape/ecological planting and environmental mitigation			✓		✓	In	In
Construction compounds	✓				✓	In	Not applicable

3.3 Scoping of Water Body Elements

3.3.1 Table 3.3.1 sets out the WFD quality elements for surface water bodies and whether each element is scoped in or out of the assessment of impact on surface water bodies. The WFD quality elements are based on the existing classification system used to assess the ecological and chemical status of the water bodies screened into this assessment. If there is a likelihood of the works scoped in as shown on in Table 3.3.1 impacting that quality element then it has been scoped in to the assessment. If a quality element has been scoped out this has been explained. Table 3.3.2 sets out the equivalent for the WFD quality elements for groundwater water bodies.

Table 3.3.1 Surface water body quality elements for further consideration

Element	Description	Construction and Operation – Scoped in or out
Biological Status Quality Elements		
Fish	Composition, abundance and age of structure of fish fauna, presence of sensitive species	In
Invertebrates	Composition and abundance of benthic invertebrate fauna	In
Freshwater aquatic plants (macrophytes) and diatoms (Phytobenthos)	Composition and abundance of aquatic flora	In
Hydromorphological Supporting Elements		
Hydromorphology (i.e., hydrological regime and morphology)	Quantity and dynamics of water flow	In
	Connection to groundwater bodies	In (refer to ES Appendix 11.9.5: Groundwater Assessment (Doc Ref. 5.3) for a detailed assessment of impacts from dewatering in the vicinity of surface water receptors)
	River continuity	In
	River depth and width variation	In
	Structure and substrate of the riverbed	In
	Structure of the riparian zone	In
Physicochemical Quality Elements		
	Thermal conditions	In
	Oxygenation conditions	In
	Salinity	Out (no saline source within the scoped in water body extent)
	Acidification status	Out (no external environmental parameters to promote acidification within the scoped in water body extent)
	Nutrient conditions	In
Chemical Quality Elements		
	Pollution including: All priority substances identified as being discharged into the water body Other substances identified as being discharged in significant quantities into the water body	In
Protected areas	Protected areas within 2km of a waterbody	Out (no protected areas within the scoped in water body extent)
Invasive non-native species (INNS)	Presence of invasive non-native species within the waterbody catchment	In

Table 3.3.2 Groundwater water body quality elements for further consideration

Element	Scoped in or out
Qualitative Elements	
Drinking Water Protected Area	Out (no geographic overlap of works within the Project boundary with the groundwater body)
Groundwater dependent terrestrial ecosystems	Out (no groundwater dependent terrestrial ecosystems within the Project boundary)
Saline intrusion	Out (no saline source within the Project boundary)
Dependent surface water body status	Out (none in area of works within the Project boundary linked to groundwater body)

Water balance	Out (no Project interaction with water balance)
General quality	Out (no Project interaction with water quality)
Chemical Elements	
Chemical – saline intrusion	Out (no saline source within the Project boundary)
Chemical – water balance	Out (no Project interaction with water balance within the Project boundary)
Chemical – GWDTE	Out (no groundwater dependent terrestrial ecosystems within the Project boundary)
Chemical – dependent surface water body	Out (none in area of works within the Project boundary linked to groundwater body)

3.3.3 It is noted from Table 3.3.2 that there is no further consideration needed regarding the potential impact of the Project on groundwater water bodies, as all of the quality elements are scoped out. Although the Copthorne Tunbridge Wells Sands groundwater water body lies within the relevant proximity of the Project, the water body is located outside of the geographic footprint of the Project components, which are not expected to extend below the Weald Clay.

3.3.4 Therefore, it is considered that there will be no impacts on the groundwater water body as a result of the Project.

4 Impact Assessment

4.1 Introduction

4.1.1 The impact assessment is set out in Table 4.2.1 for surface water bodies during construction and Table 4.3.1 for surface water bodies during operation.

4.1.2 The impact assessment has been carried out considering the likely impact without proposed mitigation being in place. The impact conclusions are included within Table 4.2.1 and Table 4.3.1 shown by the colour of the cell (key located in Table 4.1.1). The impact conclusions demonstrate whether there is a potential for change in the condition of the site due to the particular activity and to that element. Negative changes are defined as a noticeable change in the quality element but may not be extensive (as they are local and/or temporary) and therefore not a risk to the quality of the status element. These changes highlight a need for mitigation to limit deterioration of the water body (both locally and on a water body scale). A negative change could be one that is of a localised nature and would not lead to deterioration in quality element status. However, because the precautionary principle is used, an explanation of this is provided in the impact assessment with a statement to say if there is a potential change to the element. The specific impacts detail whether a risk of deterioration has been identified. If there is a change to status element, then this would lead to overall waterbody status change.

4.1.3 As noted in Section 3.3, all ground water body elements are scoped out of the study, and therefore there is no impact assessment related to groundwater.

Table 4.1.1 Impact key for the Table 4.2.1 and Table 4.3.1

Key to Impact	Impact
	Negative
	No change
	Negligible (negative/positive)
	Positive

4.2 During construction

Table 4.2.1 Comparison of Project against status objectives and elements for surface water bodies during construction

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
Amendments to the existing northern runway and repositioning its centreline 12 metres further north to enable dual runway operations.	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	Construction impacts on biological elements due to water quality, including macrophytes, phytobenthos, invertebrates and fish present in the Water Body A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species. There is a potential increase in runoff, and suspended sediments and fines due to runway works, and therefore disturbance to substrate downstream of the works. However, there is limited potential for fine sediment to enter the River Mole on site as it flows beneath the runway through a closed culvert, and embedded mitigation will also minimise potential unfavourable effects. Overall impact on biological elements is negligible, with no potential change to element status and therefore the overall waterbody status.	Embedded mitigation: Any potential impact would be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref 2.1).
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements: Hydrological regime Quantity and dynamics of water flow Structure of the riparian zone	Construction impacts on the substrate in the riparian zone is limited as the substrate is most likely to be made ground so there is no impact on riverine sediments. Construction impacts on the hydrological regime, including quantity and dynamics of flow due to changes in substrate is not significant at the water body scale or to other water bodies outside of airport boundary. There are no discernible pathway to these as receptors. Furthermore, embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no potential change in element status.	Embedded mitigation: Any potential impact would be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation for de-icer pollutant risk secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements: Oxygenation conditions Nutrient conditions	Construction impacts on water quality include pollution from dust and increased suspended sediment concentrations from runoff and from plant machinery. Pollutants are more than likely to be intercepted via the drainage system and discharged away from the surface water bodies. If they are washed into the River Mole, impacts are likely to be temporary and localised. There is no direct entry as the river flows under the runway. Furthermore, embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no potential change in element status.	Embedded mitigation: Any potential impact would be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation for de-icer pollutant risk secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
Modification and daylighted channel extension on runway culvert and syphon channel	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	Construction impacts on biological elements due to changes in habitat structure, including macrophytes, phytobenthos, invertebrates and fish present in the water body. A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species. Fish passage may be disrupted in the short term during in-channel works, however mitigation including fish rescue should mitigate any waterbody scale negative effects.	Embedded mitigation: Avoid spawning periods for working in the river. Installation of cofferdam for in-channel works. Undertake fish rescue survey prior to in-channel works to safeguard fish populations Application of relevant guidance and mitigation secured as a DCO requirement in

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
			<p>Working within or close to the channel could release large volumes of sediment and soil, presenting a temporary but localised effect on macrophytes and invertebrates within the channel during works. Impacts could include smothering, loss of habitat and burial. Disturbance to fish species within the river, which could include temporary interruption to any migration (if occurring), and potential for disturbance or loss of species over a localised and temporary event. Disturbance could be due to noise of construction, movement of substrate within or adjacent to channel or installation of structures within or adjacent to the channel. Potential limited loss of habitat due to the siltation resulting from the works within the banks. However, this would be temporary and localised. Furthermore, embedded mitigation will also minimise potential unfavourable effects during construction. Overall impact is negligible.</p> <p>There is no potential for a change in element status, and therefore to the waterbody.</p>	Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure of the riparian zone	Construction impacts could include reduced or increased sediment supply downstream of the structure; destabilisation of bed and banks downstream of culvert; and potential siltation downstream of culvert if flow velocities are reduced. There is the potential for smothering downstream channel bed features or in-channel habitat. The effect is localised and temporary. Furthermore, embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no change to status of the element. .	Embedded mitigation: Avoid spawning periods for working in the river. Installation of cofferdam for in-channel works. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements: Oxygenation conditions Nutrient conditions	Water temperature and dissolved oxygen levels fluctuate considerably on the River Mole due to lack of shading, extensive emergent and submerged macrophyte cover and organic pollution from the catchment (Ecus Ltd., 2021). Changes to the length of daylighted culverted channel has the potential to affect the thermal and oxygenation conditions, however the effects during construction would have a negligible impact with no change in status.	N/A
Reconfiguration of taxiways.	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	Construction impacts on biological elements due to water quality, including macrophytes, phytobenthos, invertebrates and fish present in the water body. A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species. There is a potential increase in runoff, and suspended sediments and fines due to runway works, and therefore disturbance to substrate downstream of the works. However, there is limited potential for fine sediment to enter the River Mole on site as it flows under the runway. Embedded mitigation will also minimise potential unfavourable effects. Overall impact on biological elements is negligible with no change in status.	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure of the riparian zone	<p>Construction impacts on substrate in the riparian zone are limited as the substrate is most likely to be made ground so there is no impact on riverine sediments. However, there is potential for contaminated ground under the runway.</p> <p>Construction impacts on the hydrological regime, including quantity and dynamics of flow due to changes in substrate are not significant at the water body scale or to other water bodies outside of the airport boundary. There are no discernible pathways to these as receptors. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no change in element status.</p>	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation for de-icer pollutant risk secured as a DCO requirement in Schedule 2 of the

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
				Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements: Oxygenation conditions Nutrient conditions	Construction impacts on water quality include pollution from dust and increased suspended sediment concentrations from runoff and from plant machinery. Pollutants are more than likely to be intercepted via the drainage system and discharged away from the surface water bodies. If they are washed into the River Mole, impacts are likely to be temporary and localised. There is no direct entry as the river flows under the runway. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no potential for a change in element status.	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation for de-icer pollutant risk secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Specific pollutants: Pollution by all priority substances identified as being discharged into the body of water Pollution by other substances identified as being discharged in significant quantities into the body of water	There is potential for contaminated ground under the runway which could release contaminants into the River Mole during construction. Washout into the River Mole could release sediment and soil, presenting a temporary but localised risk to overall water quality conditions. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no potential change in element status.	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation for de-icer pollutant risk secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order .
Reconfiguration of other airfield facilities.	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna	Construction impacts on biological elements due to water quality, including macrophytes, phytobenthos, invertebrates and fish present in the water body. A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species. There is a potential increase in runoff, and suspended sediments and fines due to works and disturbance to substrate, and potential for fines to enter the River Mole via drainage. Fines likely to settle in margins and subsequently be colonised by macrophytes during lower flows and be re-suspended during higher flows. This could disturb benthic invertebrates and fish temporarily. However, distance of works from the River Mole would make the impact of this negligible. Embedded mitigation will also minimise potential unfavourable effects. There is no potential for a change in element status.	Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1). Require survey data to account for species quantity and quality.
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Structure of the riparian zone	The substrate in the riparian zone is most likely to be made ground but the riparian zone is already developed, so there is no overall change from present conditions. There is potential for contaminated ground on site which may need to be remediated. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There is no potential for a change in element status.	Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
	Mole upstream of Horley (GB106039017481)	Specific pollutants: Pollution by all priority substances identified as being discharged into the body of water	Construction impacts on water quality involve a potential increase in runoff; potential increase in suspended sediments and fines due to runway works and disturbance to substrate, and potential for fines to enter the River Mole. However, the distance of works from River Mole would make this unlikely. Embedded mitigation will also minimise potential unfavourable effects. The overall impact is no change to element status and/or waterbody.	Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
		Pollution by other substances identified as being discharged in significant quantities into the body of water		
Provision of additional hotel and office space.	Tilgate Brook and Gatwick Stream (GB106039017500)	Chemical and physico-chemical elements supporting the biological elements: Oxygenation conditions Nutrient conditions	Construction impacts on water quality include pollution from dust and increased suspended sediment concentrations from runoff and from plant machinery. Pollutants are more than likely to be intercepted via the drainage system and discharged away from the surface water bodies. If they are washed into the Gatwick Stream, impacts are likely to be temporary and localised. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There is no potential for a change in element status.	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
Provision of reconfigured car parking, including new car parks.	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements: Oxygenation conditions Nutrient conditions	Construction impacts on water quality include pollution from dust and increased suspended sediment concentrations from runoff and from plant machinery. Pollutants are more than likely to be intercepted via the drainage system and discharged away from the surface water bodies. If they are washed into the River Mole, impacts are likely to be temporary and localised. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There is no potential for a change in element status.	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
Surface access (including highway) improvements, including: <ul style="list-style-type: none">South Terminal roundabout works. Earthworks would support the approach to the bridge and reinforced earth-walls or retaining walls would be required between the Brighton-London mainline railway and slip roads on M23 spur. Requires 4m culvert extension on Burstow Stream Tributary.North Terminal roundabout, replace	Mole upstream of Horley (GB106039017481) Mole (Horley to Hersham) (GB106039017621) Tilgate Brook and Gatwick Stream (GB106039017500) Burstow Stream (GB106039017520)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	Construction impacts on biological elements due to changes in habitat structure and water quality, including macrophytes, phytobenthos, invertebrates and fish present in the water body. A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded in the River Mole, with roach being the dominant species. A mean of 10 macroinvertebrate taxa were recorded at Gatwick Stream, with a community with PSI scores indicating slightly sedimented to sedimented conditions. There were 7 species of fish recorded in Gatwick Stream, with chub and dace being the dominant species (Ecus Ltd., 2021). Burstow Stream Tributary (upstream of Burstow Stream) was recorded during the Phase 1 Habitat Survey (ES Appendix 9.6.2: Ecology Survey Report (Doc Ref. 5.3); GAL, 2021) as a dry ditch and no further ecological survey information is available. There are potential effects on biological quality elements due to changes in habitat structure and water quality within the watercourses, primarily due to the bridge and culvert extension. There is permanent loss of aquatic habitat under the highways footprint due to removal of channel bank and bed, leading to loss of benthic invertebrates and macrophytes/phytobenthos. There is also a loss in fish habitat under the footprint. Working within or close to the channel could release large volumes of sediment and soil, presenting a temporary but localised effect on macrophytes and invertebrates within the channel during works. Impacts could include smothering, loss of habitat and burial. The works have a localised effect on the biological elements across the extent of the modified structures and there is potential for residual effects either side of the area where mobile organisms may be displaced. Fish passage may be disrupted in the short term during in-channel works, however mitigation including fish rescue should mitigate any	Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1). Avoid spawning periods for working in the river. Installation of cofferdam for in-channel works. Minimise length to be culverted. Undertake fish rescue survey prior to in-channel works to safeguard fish populations

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
<p>the existing roundabout with a signalised junction arrangement and noise barrier.</p> <ul style="list-style-type: none"> Longbridge roundabout – expanded northwards and eastwards into flood zone, extended bridge crossing of Brighton Road and London Road (A23). Modification of existing highways ditches and culverts, including removal, extension and replacement. Two new farm bridges over Man's Brook. 			<p>waterbody scale negative effects. With mitigation, the overall effect on biological elements is not significant at the water body scale or to downstream water bodies, therefore the impact is negligible.</p> <p>Disturbance to fish species within the river, which could include temporary interruption to any migration, and potential for disturbance or loss of species over a localised and temporary event. Disturbance could be due to noise of construction, movement of substrate within or adjacent to channel or installation of structures within or adjacent to the channel. Potential limited loss of habitat due to the siltation resulting from the works within the banks. However, this would be temporary and localised. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There is no potential for a change in element status, and therefore waterbody.</p>	
	Burstow Stream (GB106039017520)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure and substrate of the river bed Structure of the riparian zone	<p>There is permanent loss of the riparian zone under the structure footprint of the road alignment. There is potential increase in loose non-cohesive material as works being excavated, and potential disturbance to substrate adjacent to the road works and channel works. However, this is short-term, temporary and localised. Embedded mitigation will also minimise potential unfavourable effects. Overall, the impacts are negligible. There is no potential for a change to the element status.</p>	<p>Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Mole upstream of Horley (GB106039017481)		<p>Construction impacts include potential disturbance or loss of riparian zones under the footprint of internal routes and drainage. Given the limited extent of floodplain utilised for construction, the impact is negligible, and therefore is unlikely to cause deterioration to the status of the relevant water bodies within the Project's boundary.</p>	<p>Embedded mitigation: Limit journeys with plant on ground to avoid tracking repetitively on softer verges; provision of matting; utilisation of pollution prevention guidelines.</p>
	Mole (Horley to Hersham) (GB106039017621)		<p>Construction impacts on the substrate in the riparian zone is limited as the substrate is most likely to be made ground. Furthermore the existing riparian zone is mostly developed, so there is negligible change from present conditions.</p>	<p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Tilgate Brook and Gatwick Stream (GB106039017500)		<p>There is potential for contaminated ground in the vicinity of the highways works which has the potential to wash out into the watercourse during construction and release sediment and soil, presenting a temporary but localised risk to overall water quality conditions. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There is no potential for a change in element status.</p>	<p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Mole upstream of Horley (GB106039017481) Mole (Horley to Hersham) (GB106039017621) Tilgate Brook and Gatwick Stream (GB106039017500) Burstow Stream (GB106039017520)	Chemical and physico-chemical elements supporting the biological elements Oxygenation conditions Nutrient conditions	<p>There is potential for temporary increase in localised suspended sediment concentration, as these water bodies are connected via drainage capture and ditches which are modified as part of the highways improvement works. This could lead to a deterioration in water quality but not substantially greater than present background conditions. Fines are likely to settle in margins and be re-suspended during higher flows. Embedded mitigation will also minimise potential unfavourable effects. The overall impact is no change. There would be no change in element status.</p>	<p>Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
	<p>Mole upstream of Horley (GB106039017481)</p> <p>Mole (Horley to Hersham) (GB106039017621)</p> <p>Tilgate Brook and Gatwick Stream (GB106039017500)</p> <p>Burstow Stream (GB106039017520)</p>	<p>Specific pollutants</p> <p>Pollution by all priority substances identified as being discharged into the body of water</p> <p>Pollution by other substances identified as being discharged in significant quantities into the body of water</p>	<p>Working within or close to the channel (including balancing ponds close to M23) could release large volumes of sediment and soil, presenting a temporary but localised risk to species within the channel during works. As these water bodies are connected via drainage capture and ditches, there could be a potential temporary increase in localised suspended sediment concentrations but not substantially greater than present background conditions. Fines likely to settle in margins and be re-suspended during higher flows. Embedded mitigation will also minimise potential unfavourable effects. The overall impact is no change. There would be no change in element status as a result.</p>	<p>Embedded mitigation:</p> <p>Any potential impact should be mitigated by drainage design, drainage capture and attenuation.</p> <p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
<p>Reconfiguration of existing utilities, including surface water, foul drainage and power. Including:</p> <ul style="list-style-type: none"> Works to realign existing surface water drainage infrastructure along Taxiway. Yankee, providing a connection to Pond D. Creation of an additional runoff treatment and storage area (including runoff from deicing areas) to complement the existing capacity provided by Pond D. Removal of Pond A. 	<p>Mole upstream of Horley (GB106039017481)</p>	<p>Biological elements:</p> <p>Macrophytes and phytobenthos</p> <p>Benthic invertebrate fauna</p> <p>Fish</p>	<p>Works within or close to Pond D could release large volumes of sediment and soil, presenting a temporary but localised risk to species within the channel during works. However, the distance of works from River Mole would make this unlikely. Embedded mitigation will also minimise potential unfavourable effects. The overall impact is no change and therefore no change to element status.</p>	<p>Embedded mitigation:</p> <p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
			<p>Underground works likely to involve excavation and piling may lead to disturbance to any species located in soils. Fines are likely to settle in margins and subsequently be colonised by macrophytes during lower flows and be re-suspended during higher flows if they are entrained across the surface to the River Mole. This could disturb benthic invertebrates and fish temporarily. However, distance of works from River Mole would make this unlikely. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.</p>	<p>Embedded mitigation:</p> <p>Any potential impact should be mitigated by drainage design, drainage capture and attenuation.</p> <p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
			<p>There is the potential for contaminated ground under Pond A. Ground disturbance during Project construction works could release contaminants into the River Mole. Washout into the River Mole could release sediment and soil, presenting a temporary but localised risk to overall water quality conditions. However, the distance of works from River Mole would make this unlikely. Embedded mitigation will also minimise potential unfavourable effects. The overall impact is no change. There would be no change in element status.</p>	<p>Embedded mitigation:</p> <p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
			<p>There is the potential disturbance or loss of riparian zones under the footprint of drainage routes. Embedded mitigation will minimise potential unfavourable effects. The impact is negligible, and therefore not causing deterioration to the status of the element.</p>	<p>Embedded mitigation:</p> <p>Any potential impact should be mitigated by drainage design, drainage capture and attenuation.</p> <p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	<p>Mole upstream of Horley (GB106039017481)</p>	<p>Hydromorphological elements supporting the biological elements</p> <p>Hydrological regime</p> <p>Quantity and dynamics of water flow</p> <p>Morphological conditions</p> <p>River depth and width variation</p> <p>Structure and substrate of the river bed</p>	<p>There is potential disturbance to the riparian zone and substrate due to excavation during construction. The substrate in riparian zone is most likely to be made ground but the riparian zone is already developed, so there is no overall change from present conditions. There is also potential for contaminated ground on</p>	<p>Embedded mitigation:</p> <p>Any potential impact should be mitigated by drainage design, drainage capture and attenuation.</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
		Structure of the riparian zone	<p>site. There would be no significant impact at the water body scale or to other water bodies outside of airport boundary as there is no discernible pathway to these as receptors. Overall impact is negligible.</p> <p>There is the potential loss of substrate under footprint of any newly created areas as part of the Project. There is a potential increase in loose non-cohesive material as works are being excavated, and potential disturbance to the substrate. However, this is short-term, temporary and localised. Due to the proximity of water bodies, this is unlikely to cause a change in element status and is likely to increase levels of biodiversity and green spaces. Removal of Pond A provides extra floodplain capacity. Impacts resulting from removal of Pond A are likely to be more site-specific due to connection to drainage system. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no change to water quality element status.</p>	<p>Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1)..</p> <p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1)..</p>
		Mole upstream of Horley (GB106039017481)	<p>Chemical and physico-chemical elements supporting the biological elements</p> <p>Oxygenation conditions</p> <p>Nutrient conditions</p>	<p>There is potential risk of discharging waste materials from the works into the water bodies, which can cause deterioration to water quality elements. Any impact is likely to be localised and temporary and depends on flood routes. Impacts resulting from removal of Pond A are likely to be more site-specific due to connection to drainage system. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no change in element status.</p>
	Mole upstream of Horley (GB106039017481)	<p>Specific pollutants: Pollution by all priority substances identified as being discharged into the body of water</p> <p>Pollution by other substances identified as being discharged in significant quantities into the body of water</p>	<p>Construction impacts on water quality involve a potential increase in runoff; potential increase in suspended sediments and fines and disturbance to substrate, and potential for fines to enter the River Mole. However, the distance of works from River Mole would make this unlikely. Embedded mitigation will also minimise potential unfavourable effects. The overall impact is no change to element status.</p> <p>There is potential risk of discharging waste materials from the works into the water bodies, which can cause deterioration to water quality elements. This depends on the likely flood routes, and containment of pollutants during works. The impacts on nutrient conditions during construction is largely controlled by this. Any impact is likely to be localised and temporary. Impacts resulting from removal of Pond A are likely to be more site-specific due to connection to drainage system. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status and/or waterbody.</p>	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1)..</p> <p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1)..</p>
	Landscape/ecological planting and environmental mitigation. Including: <ul style="list-style-type: none"> Lowering of ground levels in Museum Field FCA and creation of spillway connecting FCA to River Mole. 	Mole upstream of Horley (GB106039017481)	<p>Biological elements: Macrophytes and phytobenthos</p> <p>Benthic invertebrate fauna</p> <p>Fish fauna</p>	<p>Construction impacts on biological elements due to changes in habitat structure, including macrophytes, phytobenthos, invertebrates and fish present in the water body. A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species.</p> <p>There are potential effects on biological quality elements due to changes in habitat structure and water quality within the River Mole (upstream of Horley). There is permanent loss of aquatic habitat under the footprint of the Museum Field FCA spillway and culvert headwall to Car Park X due to removal of channel bank and bed, leading to loss of benthic invertebrates and macrophytes/phytobenthos. There is also a reduction in fish habitat under the footprint. Similarly, existing biological elements present in the channel to be realigned and filled would be lost. Working within or close to the channel could release large volumes of</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
<ul style="list-style-type: none"> ▪ Renaturalisation of the River Mole with re-meandering. ▪ Lowering of the existing ground levels in car park X by 2.5 metres; installation of flapped culvert. 			<p>sediment and soil, presenting a temporary but localised effect on macrophytes and invertebrates within the channel during works. Impacts could include smothering, loss of habitat and burial.</p>	<p>Construction sequencing which allows for planting and establishment of riparian and aquatic plant species at renaturalised channel.</p>
			<p>The works have a localised effect on the biological elements across the extent of the works and there is potential for residual effects either side of the areas where mobile organisms may be displaced. Fish passage are likely to be disrupted in the short term during in-channel works, particularly at the renaturalised channel, however mitigation including fish rescue and sequencing of diversion works should mitigate any waterbody scale negative effects. Additional and improved aquatic habitat is created at the renaturalised section of the River Mole which, once established, would offset the effects (including localised loss of macrophyte and benthic invertebrate habitat in the existing channel). The sequencing of construction should minimise the lag between the loss and replacement of aquatic habitats, allowing for the planting of and establishment of riparian and aquatic vegetation. With mitigation, the overall effect on biological elements is not significant at the water body scale or to downstream water bodies, therefore the impact is negligible.</p>	<p>Renaturalised channel brought online prior to infilling old channel to maintain fish passage through River Mole.</p>
			<p>Disturbance to fish species within the river, which could include temporary interruption to any migration, and potential for disturbance or loss of species over a localised and temporary event. Disturbance could be due to noise of construction, movement of substrate within or adjacent to channel or installation of structures within or adjacent to the channel. Potential limited loss of habitat due to the siltation resulting from the works within the banks. However, this would be temporary and localised. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible.</p> <p>There would be no change in element status and therefore waterbody.</p>	
			<p>Construction of the two-stage channel as part of river renaturalisation has the potential to impact habitat structure within the Mole (upstream of Horley). The potential effect on macrophytes and invertebrates is lowered because release of fines is minimised through mitigation. Overall impact is negligible with no change in element status and therefore that of the waterbody.</p>	<p>Embedded mitigation: Offline construction of the renaturalised channel and re-seeding of banks during spring to allow stabilisation of banks Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	<p>Mole upstream of Horley (GB106039017481)</p>	<p>Hydromorphological elements supporting the biological elements Hydrological regime</p>	<p>There is loss of riparian zone in areas under the spillway footprint and culvert headwall, and where floodplain substrate is lowered. The riparian zone includes areas of amenity grassland at Car Park X, and marshy grassland at Museum Field FCA spillway. The area on the floodplain being lowered for the FCA incorporates areas of improved grassland and a section of semi-natural broadleaved woodland through the proposed spillway. The habitats would be reinstated/enhanced after construction, and the effects during</p>	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
		Quantity and dynamics of water flow Morphological conditions River depth and width variation Structure and substrate of the river bed Structure of the riparian zone	<p>construction are temporary. Embedded mitigation will also minimise potential unfavourable effects. Therefore, the overall impact is negligible. There would be no change in element status.</p> <p>There is a potential impact to the structure and substrate of the riverbed and riparian zone due to destabilisation of bed and banks at the proposed culvert outlet from Car Park X, the River Mole renaturalised channel and spillway connecting Museum Field FCA. This has the potential to increase sediment supply downstream and smother bed features. The overall effect is localised and temporary, and with mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1) and application of relevant guidance. The overall impact is negligible. There would be no change in element status.</p>	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Mole upstream of Horley (GB106039017481)	Specific pollutants: Pollution by all priority substances identified as being discharged into the body of water Pollution by other substances identified as being discharged in significant quantities into the body of water	There is a temporary potential pollution risk if working in or adjacent to channel particularly where floodplain is being lowered to make way for this element of the Project. There is potential for contaminated ground which could release contaminants into the watercourse during construction. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.	<p>Embedded mitigation: All works to be undertaken in accordance with relevant Pollution Prevention Guidelines. Riparian planting could be used as buffer strips to reduce diffuse pollution.</p>
Construction compounds, including temporary bridge and haul roads	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Invertebrates	There is potential of disturbance to species within substrate and potential smothering of species and disturbance of habitat due to plant movements. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Tilgate Brook and Gatwick Stream (GB106039017500)			
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Structure of the riparian zone	<p>There is a potential impact on hydromorphological elements due to discharging waste materials from the works into the watercourses. Works could release large volumes of sediment and soil, presenting a temporary but localised impact particularly where plant movement is frequent. Potential indirect impacts depend on whether there is a pathway to the receptor. Overall impact is negligible.</p> <p>Potential loss of riparian zone under footprint of any newly created areas as part of the Project. Overall impact is negligible.</p> <p>Potential increase in loose non-cohesive material as works being excavated, and potential disturbance to substrate. However, this is short-term, temporary and localised. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.</p>	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Tilgate Brook and Gatwick Stream (GB106039017500)			
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements Oxygenation conditions Nutrient conditions	There is the potential for discharging of waste materials from the works into the watercourses. Works could release large volumes of sediment and soil, presenting a temporary but localised impact particularly where plant movement is frequent. Potential indirect impacts depend on whether there is a pathway to the receptor. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).</p>
	Tilgate Brook and Gatwick Stream (GB106039017500)			
	Mole upstream of Horley (GB106039017481)	Specific pollutants: Pollution by all priority substances identified as	There is the potential for discharging of waste materials from the works into the watercourses. Works could release large volumes of sediment and soil, presenting a temporary but localised impact particularly where plant movement is frequent. Potential indirect impacts depend on whether there is a pathway to the	<p>Embedded mitigation: Application of relevant guidance and mitigation secured as a DCO requirement in</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, likely impact and assessment of any potential changes to the waterbody quality element and/or status	Proposed mitigation
	Tilgate Brook and Gatwick Stream (GB106039017500)	being discharged into the body of water Pollution by other substances identified as being discharged in significant quantities into the body of water	receptor. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.	Schedule 2 of the Draft Development Consent Order (Doc Ref. 2.1).
All scoped in project components.	Mole upstream of Horley (GB106039017481) Tilgate Brook and Gatwick Stream (GB106039017500)	Non-Native Invasive Species	There is a risk of the spread of invasive species as a result of the works for the Project. The presence of American signal crayfish has been confirmed in Gatwick Stream. New Zealand mud snail was identified at both the River Mole and Gatwick Stream. The overall impact is negative should there be a risk of spread during construction. Without suitable mitigation, a spread could impact the water body status, however this is unlikely.	Embedded mitigation: Invasives are reportable to DEFRA. Best practice guidelines would be used to prevent spread of species.

4.3 During operation

Table 4.3.1 Comparison of Project against status objectives and elements for surface water bodies during operation

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
Amendments to runway, holding area and reconfiguration of taxiways – including de-icer and drainage.	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	There Project involves an increase in impermeable area, and therefore a potential increase in discharge to the River Mole. However, no impact to the biological elements is anticipated as discharge would only occur when water levels are high in the River Mole to meet pollution prevention elements of discharge consent from Pond D. Increased discharge would not be enough to change species numbers, quality and the habitat that they colonise downstream. Overall impact is negligible. There would be no change in element status.	N/A
			During de-icer use, surface water drains via surface water drainage and pollution systems in order to control water quality before discharging into the River Mole. Pond D is the key drainage pond receiving the majority of runoff from London Gatwick Airport including that transferred from the 'dirty' side of the Dog Kennel Pond. Runoff from the Pond D catchment drains to Pond D (lower) and is then raised by three Archimedes Screws. If the water quality meets the required standard, or if there is no capacity in the downstream storage lagoons, runoff enters Pond D (upper) via a series of separator channels and discharges to the River Mole. Discharge to the River Mole is at a consented rate, controlled by a series of hydro brakes and pumps. The actual rate of discharge is determined by the volume of flow in the River Mole. Higher flow rates in the River Mole permit a higher discharge rate from Pond D (upper). The amendments to the runway would have the potential to alter the distribution of runoff and the use of de-icer which could affect water quality in the River Mole if unmitigated. A new de-icer contaminated runoff treatment system would be constructed adjacent to the long-term storage lagoons. This treatment system will treat up to 100l/s, increasing overall system capacity to treat runoff and lowering the long-term storage lagoon levels, and thereafter the level of Pond D (lower) so it has greater capability to accept storm flows (and reduce the risk of emergency discharges into the River Mole). This treatment works significantly reduces the risk of runoff contaminated with de-icer to the River Mole and improves river quality for Biochemical Oxygen demand from Bad to Good. Furthermore, with additional storage in Car Park Y, this allows for some capacity and protection during flood events. With	Embedded mitigation: Additional de-icer treatment from Long Term Storage Lagoons, MBBR plant Additional storage in Car Park Y

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
			the embedded mitigation this would have an overall positive impact on the biological elements and has the potential to improve the element status.	
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure of the riparian zone	Resurfacing and removal of redundant hardstanding would change the extent of impermeable areas. Increased discharge (attenuated to greenfield discharge) would not impact on the hydrological regime sufficiently to cause deterioration in status. Overall impact is negligible, with no change in element status and therefore waterbody status.	N/A
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements: Oxygenation conditions Nutrient conditions	De-icer has a very large biological oxygen demand (BOD). Surface water drains via surface water drainage and pollution systems in order to control water quality before discharging into the River Mole. The amendments to the runway would have the potential to alter the distribution of runoff and the use of de-icer which could affect water quality in the River Mole if unmitigated. A new de-icer contaminated runoff treatment system would be constructed adjacent to the long-term storage lagoons. This treatment system will treat up to 100l/s, increasing overall system capacity by lowering pollution lagoon levels and thereafter level of Pond D lower so it has greater capability to accept storm flows (and reduce the risk of emergency discharges into the River Mole). The treatment works significantly reduces the risk of runoff contaminated with de-icer to the River Mole and improves river quality for biochemical oxygen demand from Bad to Good. Furthermore, with additional storage in Car Park Y, this allows for some capacity and protection during flood events. With the embedded mitigation this would have an overall positive impact on the chemical elements. This has the potential to improve the element status.	Embedded mitigation: Additional de-icer treatment from Long Term Storage Lagoons, MBBR plant Additional storage in Car Park Y
Modification and daylighted channel extension on runway culvert and syphon channel	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	<p>There are potential direct effects on biological quality elements due to change in habitat structure within the River Mole (upstream of Horley). A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species.</p> <p>There is permanent loss of aquatic habitat under the footprint due to removal of channel bank and bed, leading to loss and/or displacement of benthic invertebrates and macrophytes/phytobenthos. There is also a loss in fish habitat under the footprint which has the potential to effect fish migration. The works have a localised effect on the biological elements across the extent of the modified structure (26m) and there is potential for residual effects either side of the area where mobile organisms may be displaced. Mitigation through detailed design, including a daylighted cover for the culvert, inclusion of baffles and natural substrate would help facilitate fish passage during operation and mitigate any water body scale negative effects. It is proposed that additional aquatic habitat is created downstream at the River Mole renaturalised channel which, once established, would offset the effects (including localised loss of macrophyte and benthic invertebrate habitat) at the culvert. With mitigation, the overall effect on biological elements is not significant at the water body scale or to downstream water bodies, therefore the impact is negligible. There would be no change in element status.</p>	<p>Embedded mitigation: Design culverts to be as short as possible to avoid tunnelling effect and light-dark barrier at threshold. Design culverts to have rough bed / baffles to maintain water depth at low flows to allow fish passage. Increase 'bed' roughness of culvert to provide opportunity for deposition of materials. Use natural gravel substrate to provide small-scale variations in water depth. Use baffles to retain sediment, create resting areas for fish and invertebrates and improve flow diversity. Low flow channel and fish resting pool Marginal vegetation planting within the new daylighted channel extension</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
	Mole upstream of Horley (GB106039017481)		There is the potential to improve and facilitate fish passage through the runway culvert as the length of daylighted channel would reduce the tunnelling effect and light and dark threshold. Other mitigation such as modifying the channel bed roughness also facilitates fish passage. A weir at the southern entrance to the culvert is proposed to divert low flows into one culvert barrel to increase water flow depths in dry conditions. The overall impact is positive, and there is a potential improvement to the element status.	Minimise length of the daylighted channel extension. Creation of aquatic habitat for fish Daylighted channel extension to encourage migratory fish to enter the runway culvert through the outlet
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure and substrate of the river bed Structure of the riparian zone	There is potential for reduced or increased sediment supply downstream of the culvert; destabilisation of bed and banks downstream of culvert; potential siltation downstream of culvert if flow velocities are reduced; and higher rates of siltation/blockages above the culvert than anticipated, affecting the operation of the culvert. There is the potential for smothering downstream channel bed features or in-channel habitat, reducing availability of clean spawning gravels for fish as well as impacting upon invertebrate populations. With mitigation the effect is localised and short-term as the channel adjusts naturally to the change in channel form. The overall impact is negligible. There would be no change in element status.	(Refer to Annex 1 for Daylighted channel extension of River Mole) New small weir across the southern face of the east box of the runway culvert to enable the concentration of summer low flows in the west box to improve fish passage
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements Oxygenation conditions Nutrient conditions	Water temperature and dissolved oxygen levels fluctuate considerably on the River Mole due to lack of shading, extensive emergent and submerged macrophyte cover and organic pollution from the catchment (Ecus Ltd., 2021). Changes to the length of daylighted culverted channel has the potential to impact oxygenation conditions during operation, as channel shading is increased overall and mitigation such as inclusion of baffles has the effect of improving oxygenation in the channel. The effects are localised and would have a negligible impact with no change in element status.	Enhancement: Creation of a fish pass on the weir at the upstream of the runway culvert
<p>Surface access (including highway) improvements. Including:</p> <ul style="list-style-type: none"> South Terminal roundabout works. Earthworks would support the approach to the bridge and reinforced earth-walls or retaining walls would be required between the Brighton-London mainline railway and slip roads on M23 spur. Requires 4m culvert extension on Burstow Stream Tributary. North Terminal roundabout, replace the existing roundabout with a signalised junction arrangement and noise barrier. 	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	Drainage ditches have the potential to provide a contamination pathway to a river from road dust and contaminants if not intercepted by better road drainage under current conditions, where it is discharged into toe drains. With an improved drainage strategy, there is likelihood of betterment to all water bodies connected to the River Mole, Burstow Stream and Gatwick Stream. Overall impact is negligible with no change in element status.	Embedded mitigation: Drainage strategy to prevent contaminant loads discharging into the water bodies
	Mole (Horley to Hersham) (GB106039017621)			
	Tilgate Brook and Gatwick Stream (GB106039017500)			
	Burstow Stream (GB106039017520)			
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure and substrate of the river bed	The riparian zone would be lost under the footprint of the works. Given the extent of the loss, the overall impact is negligible. There would be no change in element status.	N/A
	Mole (Horley to Hersham) (GB106039017621)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Structure and substrate of the river bed	An increase in the length of the culverted channel further reduces the potential for naturalisation in Burstow Stream Tributary, however the channel bed is concrete lined under current conditions, therefore the overall impact is negligible. There would be no change in element status.	
	Tilgate Brook and Gatwick Stream (GB106039017500)			

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation	
<ul style="list-style-type: none"> Longbridge roundabout – expanded northwards and eastwards into flood zone, extended crossing of Mole on Brighton Road and London Road (A23). Modification of existing highways ditches and culverts, including removal, extension and replacement. Two new farm bridges over Man’s Brook. 	Burstow Stream (GB106039017520)	Structure of the riparian zone			
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements Oxygenation conditions Nutrient conditions	Drainage ditches have the potential to provide a contamination pathway to the water bodies from road dust and contaminants if not intercepted by better road drainage under current conditions, where it is discharged into toe drains. With an improved drainage strategy, there is likelihood of betterment to all water bodies connected to the River Mole, Burstow Stream and Gatwick Stream. Water temperature and dissolved oxygen levels fluctuate considerably on the River Mole due to lack of shading, extensive emergent and submerged macrophyte cover and organic pollution from the catchment (Ecus Ltd., 2021). Dissolved oxygen levels in Gatwick Stream are generally high due to shading of the channel by overhanging trees and presence of macroinvertebrates tolerant of organic pollution present in the watercourse. Temperature is also comparatively stable. There is the potential for changes to both dissolved oxygen and temperature due to input from new connecting highways drainage and ditches. The effect is negligible as drainage into the connecting water bodies is attenuated and treated in tanks before discharging into the channel. The overall impact is positive, although given the size of the designated waterbodies, this may not be enough to change status of this element.	Embedded mitigation: Drainage strategy in place to provide betterment	
	Mole (Horley to Hersham) (GB106039017621)				
	Tilgate Brook and Gatwick Stream (GB106039017500)				
Burstow Stream (GB106039017520)					
	Mole upstream of Horley (GB106039017481)	Specific pollutants Pollution by all priority substances identified as being discharged into the body of water Pollution by other substances identified as being discharged in significant quantities into the body of water	Drainage ditches have the potential to provide a contamination pathway to the water bodies from road dust and contaminants if not intercepted by better road drainage under current conditions, where it is discharged into toe drains. With an improved drainage strategy, there is likelihood of betterment to all water bodies connected to the River Mole, Burstow Stream and Gatwick Stream. The overall impact is positive, although given the size of the designated waterbodies, this may not be enough to change status of this element	N/A	
	Mole (Horley to Hersham) (GB106039017621)				
	Tilgate Brook and Gatwick Stream (GB106039017500)				
	Burstow Stream (GB106039017520)				
Reconfiguration of existing utilities, including surface water, foul drainage and power. Including: <ul style="list-style-type: none"> Works to realign existing surface water drainage infrastructure along Taxiway. Yankee, providing a connection to Pond D. Creation of an additional runoff treatment and storage area (including runoff from deicing areas) 	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos	No change to Pond D as a result of works. Potential improvement to River Mole water quality as drainage is improved with the additional runoff treatment and storage area. The overall impact is positive, and there is a potential improvement to the element status.	N/A	
	Tilgate Brook and Gatwick Stream (GB106039017500)	Benthic invertebrate fauna	Removal of Pond A could increase levels of biodiversity and green spaces. Removal of Pond A provides extra floodplain capacity. The overall impact is positive, and there is a potential improvement to the numbers of species and overall habitat for macrophytes and phytobenthos.	N/A	
				No change to existing outfall connecting new MBBR water treatment works at long-term storage lagoon to Gatwick Stream. Concrete apron of pipe outfall is elevated, and flapped valve covers pipe outfall when not in operation. Fish passage is unaffected by additional flow from outfall during operation. There is no impact on the element status.	N/A
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements	Potential disturbance or loss of riparian zones is expected under the footprint of drainage routes. Embedded mitigation will minimise potential negative effects. The impact is negligible, and therefore not causing deterioration to the status of the relevant element..	N/A	

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
to complement the existing capacity provided by Pond D. ▪ Removal of Pond A.	Tilgate Brook and Gatwick Stream (GB106039017500)	Structure of the riparian zone	There is a proposed increase in impermeable areas. Increased discharge from these areas would have a negligible impact on the hydrological regime, which would not be sufficient to cause deterioration in element status.	N/A
			There is potential improvement due to less runoff in places where it has previously caused a problem and decreased runoff discharged into water bodies. The overall impact is positive, and there is a potential improvement to the element status.	N/A
			There is loss of substrate under the footprint of any newly created areas as part of the Project. This can result in a potential increase in loose non-cohesive material. However, this is short-term, temporary and localised. Due to the proximity of water bodies, this is unlikely to cause a change in element status and is likely to increase levels of biodiversity and green spaces. Removal of Pond A provides extra floodplain capacity. Impacts resulting from removal of Pond A are likely to be more site-specific due to connection to drainage system. Embedded mitigation will minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status.	N/A
			No changes are proposed for the existing outfall to Gatwick Stream where clean water discharging from the new water treatment works enters the watercourse. Additional discharge from the treatment works has the potential to increase the duration of maximum flows from the outfall, which subsequently impacts flow velocity in the watercourse in the immediate vicinity of the outfall. Given the position of the outfall on the outside of the meander, the opposite bank is naturally accreting, meaning erosion risk is low. Alterations to flow variance can have a positive impact by encouraging the natural evolution of the watercourse through processes of erosion and deposition, however the overall impact is negligible given the length of watercourse impacted. There would be no change in element status.	N/A
	Mole upstream of Horley (GB106039017481)	Nutrient conditions	Potential improvement to River Mole water quality there is a reduction in the risk of emergency discharges into the River Mole through the provision of additional treatment (MBBR plant) in pollution lagoons and storage capacity in the system. The overall impact is positive, and there is a potential improvement to the element status.	Embedded mitigation: Additional de-icer treatment from Long Term Storage Lagoons, MBBR plant Additional storage in Car Park Y
	Mole upstream of Horley (GB106039017481) Tilgate Brook and Gatwick Stream (GB106039017500)	Specific pollutants: Pollution by all priority substances identified as being discharged into the body of water Pollution by other substances identified as being discharged in significant quantities into the body of water	There is a proposed increase in impermeable areas, and therefore a potential increase in surface water runoff. There is likely to be an increased risk of pollutants such as dust, traffic pollutants etc. being conveyed into any adjacent water body (e.g., River Mole). Any impact is likely to be localised and temporary (usually after rain) and depends on flood routes and attenuation, so there is a potential minor impact but insignificant at the water body scale. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible. There would be no change in element status. The new treatment works adjacent to Crawley Sewage Treatment Works will provide a high-quality effluent to the Gatwick Stream which will provide dilution for storm discharges and final effluent from Thames Water Crawley Treatment works. The overall impact is positive, and there is a potential improvement to the element status.	Embedded mitigation: Any potential impact should be mitigated by drainage design, drainage capture and attenuation. N/A
Landscape/ecological planting and environmental mitigation. ▪ Lowering of ground levels in Museum Field FCA and creation of spillway	Mole upstream of Horley (GB106039017481)	Biological elements: Macrophytes and phytobenthos Benthic invertebrate fauna Fish fauna	Operation impacts on biological elements due to changes in habitat structure, including macrophytes, phytobenthos, invertebrates and fish present in the water body. A mean of 19.3 macroinvertebrate taxa were recorded at the River Mole, with a community characteristic of sluggish flow conditions and low Proportion of Sediment intolerant Invertebrates (PSI) scores indicating heavily sedimented conditions (Ecus Ltd., 2021). There were 10 species of fish recorded, with roach being the dominant species.	Embedded mitigation: Habitat enhancement within flood storage area through integration of scrapes for fish refuges on floodplain and other wetland habitat features.

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
connecting FCA to River Mole. <ul style="list-style-type: none"> Renaturalisation of the River Mole with re-meandering. Lowering of the existing ground levels in car park X by 2.5 metres; installation of flapped culvert. 			<p>There are potential effects on biological quality elements due to changes in habitat structure and water quality within the River Mole (upstream of Horley). There is permanent loss of aquatic habitat under the footprint of the Museum Field FCA spillway and culvert headwall to Car Park X, leading to loss of benthic invertebrates and macrophytes/phytobenthos. There is also loss of floodplain habitat under footprint of embankment and in area where floodplain is lowered at Museum Field FCA in the short-term. Habitats supporting the biological elements would also be lost in the existing channel which would be filled and replaced by a new renaturalised channel. Additional and improved aquatic habitat is created at the River Mole renaturalised channel which, once established, would offset the effects (including localised loss of macrophyte and benthic invertebrate habitat in the existing channel), and improve oxygenation of the channel by increasing flow diversity and introducing shading to parts of the channel.</p> <p>There is potential impediment to fish passage and potential fish stranding during Museum Field FCA operation. This could lead to potential for fish kills during operation. There is also potential for fish to enter the spillway to Car Park X, however a flap valve should reduce this. Further detailed design is required to mitigate the potential effects on fish passage within Museum Field FCA, including the design of swales within the FCA and spillway to facilitate fish passage. With mitigation, the overall effect on biological elements is not significant at the water body scale or to downstream water bodies, therefore the impact is negligible. There would be no change in element status.</p>	<p>Design flow control structure to reduce water levels behind the flood embankment slowly (if the water level receded rapidly fish are more likely to be stranded). Loss of aquatic habitat for fish should be mitigated by in-channel habitat elsewhere. FCA and spillways design to facilitate fish passage, taking into account the Eels (England and Wales) Regulations 2009 and Salmon and Freshwater Fisheries Act 1975. Planting riparian vegetation to vary shading in parts of the channel.</p>
			Potential improvement in habitat for all species due to two stage channel and variability in channel form. Improved heterogeneity in channel form improves water quality and therefore has the potential to improve the quantity and quality of species within the channel. The overall impact is positive, and there is a potential improvement to the element status.	N/A
			Potential increase overall in aquatic habitat with lowering of ground levels to form the FCA. The overall impact is positive, and there is a potential improvement to the element status.	N/A
			Potential to facilitate fish passage and prevent kills due to fish being stranded out of river. The overall impact is positive, and there is a potential improvement to the element status.	N/A
	Mole upstream of Horley (GB106039017481)	Hydromorphological elements supporting the biological elements Hydrological regime Quantity and dynamics of water flow Morphological conditions River depth and width variation	Limiting the maximum flow downstream of the Museum Field FCA could reduce sediment transport in the channel downstream. This could theoretically see a reduction in reworking of the channel bed and an increase in the extent and duration of smothering of the river bed by fine sediment supplied from upstream during construction. This could then in turn cause the channel bed to become more compact and stable and this would impact the existing habitats on the channel bed should this be reinstated. This would depend on how often the Museum Field flood storage area is in operation. Additionally, there could be a destabilisation in the bed and banks downstream of the works. The overall impact is negligible. There would be no change in element status.	Enhancement: The riparian zone within the flood storage area could be improved with fencing, buffer strips and/or planting and tree management and installation of woody debris (all subject to landowner agreement).
	Mole upstream of Horley (GB106039017481)	Structure and substrate of the river bed Structure of the riparian zone	Increased turbidity and scour potential during operation. Impacts are short-lived, temporary and localised. Embedded mitigation will also minimise potential unfavourable effects. Overall impact is negligible with no change to status.	Embedded mitigation: Installation of scour protection measures or stilling basin downstream of the spillway.
			Potential for gullying as water drains back into the watercourse from the floodplain and outflanking at spillway edges. Potential for bank destabilisation due to excess wetting leading to potential for sediments to be transported from floodplain to channel as the FCA drains. Embedded mitigation will	Embedded mitigation: Scour protection and toe protection along bankside installation of erosion control methods

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
			<p>minimise potential unfavourable effects. The overall impact is negligible. There would be no change in element status.</p> <p>The reduction of flow velocities is likely to lead to altered morphology downstream of the two-stage channel. This could lead to reduced or increased sediment supply downstream of the renaturalised channel; destabilisation of bed and banks and potential siltation downstream if flow velocities are reduced, as well as impacting upon invertebrate populations. Embedded mitigation will minimise potential unfavourable effects. The overall impact is negligible. There would be no change in element status.</p> <p>River depth and width: The opportunity to vary channel form could improve channel width and depth. Overall impact is negligible. There would be no change in element status.</p> <p>Structure and substrate: The opportunity to vary channel form through the development of a meandering two-stage channel could provide an additional benefit of improving the structure of the channel bed and the substrate. At present, the sediments are silty which promotes poor water quality. Overall impact is negligible. There would be no change in element status.</p> <p>Flow: The development of a sinuous channel promotes variable channel flow and improved heterogeneity in all channel characteristics. This is an opportunity for betterment. It improves water quality and potentially improves oxygen levels. Overall impact is negligible. There would be no change in element status.</p> <p>Potential disturbance or loss of riparian zones under footprint. Impact is negligible, and therefore not causing deterioration to the status of the relevant element.</p> <p>Hydrological regime: Discharge likely to be more controlled and intermittent compared to previous conditions without a flap valve at car park X. Smaller rates of discharge via flapped outfall could lead to differential rates of repeated sediment deposition and erosion at outfall. Overall, no deterioration in water body elements. There would be no change in element status.</p>	<p>Embedded mitigation: Diverse and multi-stage channel profiles in the renaturalised watercourse to maximise the transport of coarse sediment through the impounded section, reduce the impact of flow impoundment on coarse sediment transport and minimise the accumulation of such material. Use natural gravel substrate to provide small-scale variations in water depth.</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
	Mole upstream of Horley (GB106039017481)	Chemical and physico-chemical elements supporting the biological elements Thermal conditions Oxygenation conditions Nutrient conditions	<p>Thermal conditions: Flood water held in the FCA would be held temporarily and is likely to have a negligible impact on water temperature of the water body. There would be no change in element status.</p> <p>Oxygenation conditions: Flood water held in the FCA would be temporary and is likely to have a negligible impact on dissolved oxygen levels of the water body. There would be no change in element status.</p> <p>Oxygenation conditions in the renaturalised channel could be improved due to variability in channel form and improvement to channel flow. There is currently a lack in shading along the River Mole which contributes to fluctuating oxygenation conditions. There is an opportunity to improve conditions with habitat enhancement mitigation. The overall impact is positive, and there is a potential improvement to the element status.</p> <p>Thermal conditions: Flood water would be held temporarily and is likely to have a negligible impact on water temperature of the water body as a result of the car park.</p>	<p>N/A</p> <p>Enhancement: Habitat enhancement could include planting of suitable riparian vegetation to provide shading along parts of renaturalised channel.</p> <p>N/A</p>

Project component	Waterbody	Element likely to be impacted	Description of the elements, impact and assessment of any potential changes to the waterbody status	Proposed mitigation
			<p>Oxygenation conditions: Flood water held in the car park area would be temporary and is likely to have a negligible impact on dissolved oxygen levels of the water body as a result of the car park. There would be no change in element status.</p>	

5 Conclusions

- 5.1.1 As explained in Section 3.3, a WFD compliance assessment of the Project impact on groundwater water bodies is not required because the relevant water body is located outside of the geographic footprint of the Project components and therefore the quality elements have been scoped out.
- 5.1.2 This WFD compliance assessment for the Project has identified potential impacts affecting the quality elements of surface water bodies as a result of the Project and whether that would have any effect on the status any of the relevant water bodies.
- 5.1.3 It has been concluded that potential impacts of the Project, including considerations of the proposed mitigation measures outlined, do not have the potential to cause deterioration in status of individual quality elements and therefore overall status of any of the relevant water bodies.
- 5.1.4 It is also not anticipated that the Project would compromise the implementation of the Urban Waste Water Treatment (England and Wales) Regulations 1994, the Nitrate Pollution Prevention Regulations 2015 or the Conservation of Habitats and Species Regulations 2017, which are considered in order to meet overarching requirements of the Regulations (as set out in Section 1.2).
- 5.1.5 The assessment has concluded that it is anticipated that the Project does not lead to deterioration in the current status or prevent the WFD water bodies from achieving "Good" Status/Potential in the future and is therefore considered compliant with the Regulations.

6 References

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7 Glossary

7.1 Glossary of terms

Table 7.1.1 Glossary of terms

Term	Description
Biological element	A collective term for a particular characteristic group of animals or plants present in an aquatic ecosystem (for example phytoplankton; benthic invertebrates; phytobenthos; macrophytes; macroalgae; phytobenthos; angiosperms; fish).
Biological quality element	A characteristic or property of a biological element that is specifically listed in Annex V of the Water Framework Directive Regulations for the definition of the ecological status of a water body (for example composition of invertebrates; abundance of angiosperms; age structure of fish).
BOD	Biological oxygen demand
Catchment	The area from which precipitation contributes to the flow from a borehole spring, river or lake. For rivers and lakes this includes tributaries and the areas they drain. In river basin management this can refer to the larger management catchments and the smaller operational catchments.
Chemical status	The classification status for the surface water body against the environmental standards for chemicals that are priority substances and priority hazardous substances. Chemical status is recorded as good or fail. A status of good means that concentrations of priority substances and priority hazardous substances do not exceed the environmental quality standards in the Environmental Quality Standards Directive. The chemical status classification for the water body, and the confidence in this (high or low), is determined by the worst test result. Chemical status and ecological status together define the overall surface water status of a water

Term	Description
	body. For groundwater see "Groundwater chemical status".
Classification	Method for distinguishing the environmental condition or 'status' of water bodies and putting them into one category or another.
Diffuse sources (of pollution)	Diffuse sources are primarily associated with run-off and other discharges related to different land uses such as agriculture and forestry, from septic tanks associated with rural dwellings and from the land spreading of industrial, municipal and agricultural wastes.
EA	Environment Agency
Ecological status	Ecological status is an expression of the structure and functioning of aquatic ecosystems associated with surface waters. Such waters are classified as being of good ecological status when they meet the requirements of the regulations.
Eels (England and Wales) Regulations 2009	The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 of the Council of the European Union, establishing measures for the recovery of the stock of European eel. The regulations apply to England and Wales.
EIA	Environmental Impact Assessment
ES	Environmental Statement
FCA	Flood Compensation Area
GAL	Gatwick Airport Limited
GES	Good ecological status is a general term meaning the status achieved by a surface water body when both the ecological status and its chemical status are at least good or, for groundwater, and when both its quantitative status and chemical status are at least good.
GEP	Good ecological potential
Good surface water chemical status	Good surface water chemical status means that concentrations of pollutants in the water body do not exceed the environmental limit values specified in the regulations.
Good groundwater status	Good groundwater status is that achieved by a groundwater body when both its

Term	Description
	quantitative status and chemical status are good.
Heavily Modified Water Body	Article 2(9) defines a heavily modified water body as a 'body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the Member State in accordance with the provisions of Annex II (of the Water Framework Directive).'
Hydromorphology	Describes the hydrological and geomorphological processes and attributes of surface water bodies. For example, for rivers, hydromorphology describes the form and function of the channel as well as its connectivity (up and downstream and with groundwater) and flow regime, which defines its ability to allow migration of aquatic organisms and maintain natural continuity of sediment transport through the fluvial system. The Water Environment Regulations require surface waters to be managed in such a way as to safeguard their hydrology and geomorphology so that ecology is protected.
Macrophyte	Larger plants, typically including flowering plants, mosses and larger algae but not including single-celled phytoplankton or diatoms.
MBBR	Moving bed biofilm reactor water treatment plant
Morphology	Describes the physical form and condition of a water body, for example the width, depth and perimeter of a river channel, the structure and condition of the riverbed and bank.
Nitrate Vulnerable Zones	A Nitrate Vulnerable Zone is designated where land drains and contributes to the nitrate found in "polluted" waters
Nitrate Pollution Prevention Regulations 2015	A basic measure under the Water Framework Directive, the Nitrates regulations aims to protect water quality by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices.

Term	Description
INNS	Invasive Non-native species. Many species of plants and animals have been introduced to this country. Several of these non-native species are invasive and have been causing serious problems to the aquatic and riverine ecology and environment. Problems include detrimental effects on native species, deoxygenation of water causing fish mortalities, blocking of rivers and drainage channels, predation and competition with native species, and in some cases pose health risks to the public or livestock.
No deterioration (in water body status)	Where none of the quality elements used in the classification of water body status deteriorates to the extent that the overall status of the water body is reduced. This is referred to as 'preventing deterioration' throughout the consultation.
Not designated artificial or heavily modified	A description of a water body that has not been designated as artificial or heavily modified. In other words, it is substantially natural in character.
PEIR	Preliminary Environmental Information Report
PINS Scoping Opinion	Planning Inspectorate Scoping Opinion. In accordance with Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, upon request the Secretary of State provides in writing its opinion as to the scope, and level of detail, of the information to be provided in the environmental statement.
Point sources (of pollution)	Point sources are primarily discharges from municipal wastewater treatment plants associated with population centres or effluent discharges from industry.
Protected areas	Areas that have been designated as requiring special protection under EU legislation for the protection of their surface water and groundwater or for the protection of habitats and species directly depending on water.

Term	Description
River basin	River basin means the area of land from which all surface water run-off flows, through a sequence of streams, rivers and lakes into the sea at a single river mouth, estuary or delta.
RBMP	River Basin Management Plan
Salmon and Freshwater Fisheries Act 1975	The Salmon and Freshwater Fisheries Act 1975 is a law passed by the UK government to protect salmon and trout from commercial poaching, to protect migration routes, to prevent willful vandalism and neglect of fisheries, ensure correct licensing and water authority approval.
ST	Surface Transport
WFD	Water Framework Directive

Annex 1

Daylighted Channel Extension of River Mole

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Model File References List - XRef Model Name (excluding path), Version & Status:
 ModelName

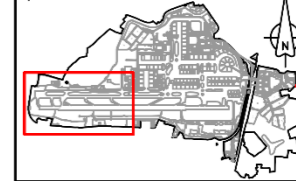
NOTES

1. BED PROTECTION TO BE DETERMINED
2. PLAN OF CULVERT DETAIL SNIP FROM DWG: 20883-RPS-GAL-XX-C-SK015
3. ALL DIMENSIONS APPROXIMATE AND SUBJECT TO DETAILED DESIGN
4. PROPRIETARY GRID DECKING SHALL MEET THE FOLLOWING REQUIREMENTS:
 - CAPABLE TO WITHSTAND A CHARACTERISTIC SINGLE WHEEL LOADING OF 100 KN FROM THE GROUP 1 FIRE ENGINE, OR THE APPROPRIATE WHEEL LOADING FROM SPECIAL AIRPORT FIRE ENGINE.
 - MATERIALS SHALL BE GALVANISED MILD STEEL AS PER THE HIGHWAY DMRB / MCHW REQUIREMENTS

Key

- Existing aside / landside fence
- New aside / landside fence
- Existing watercourse
- New watercourse
- Existing track
- New track
- Top of 16m wide channel
- Tadpoles

Rev	Date	Revision Description	By	CHK	APP	APP
A.1	19/05/2023	Final Issue	MWS	MWS	MWS	MWS



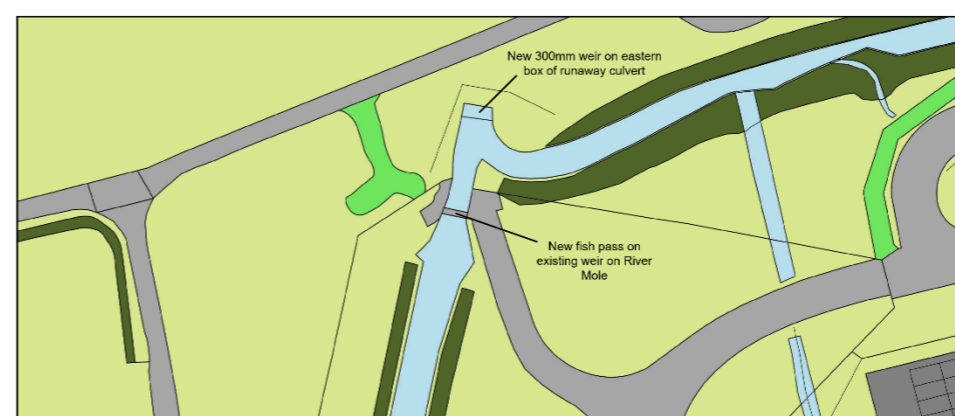
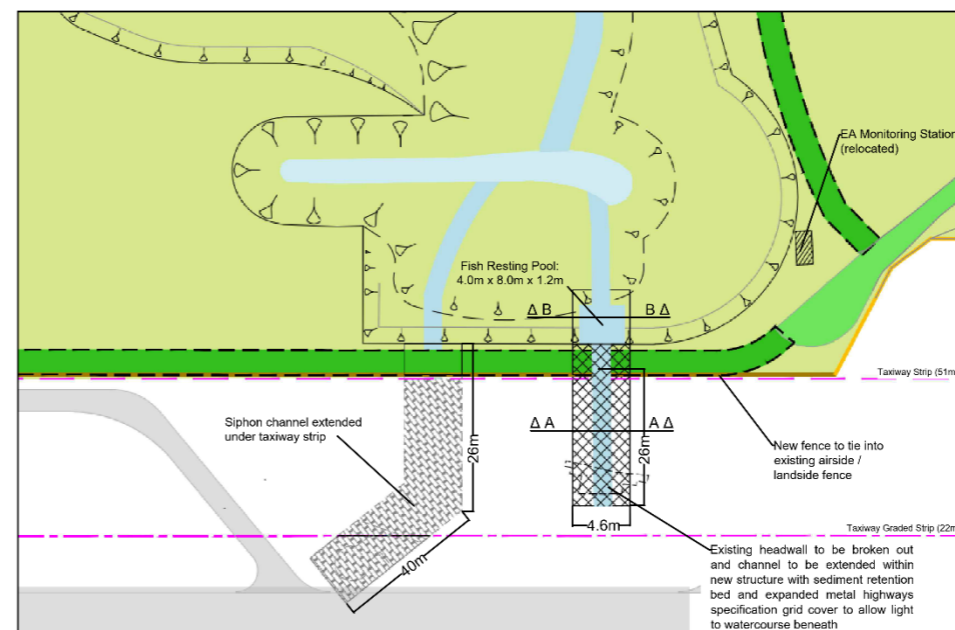
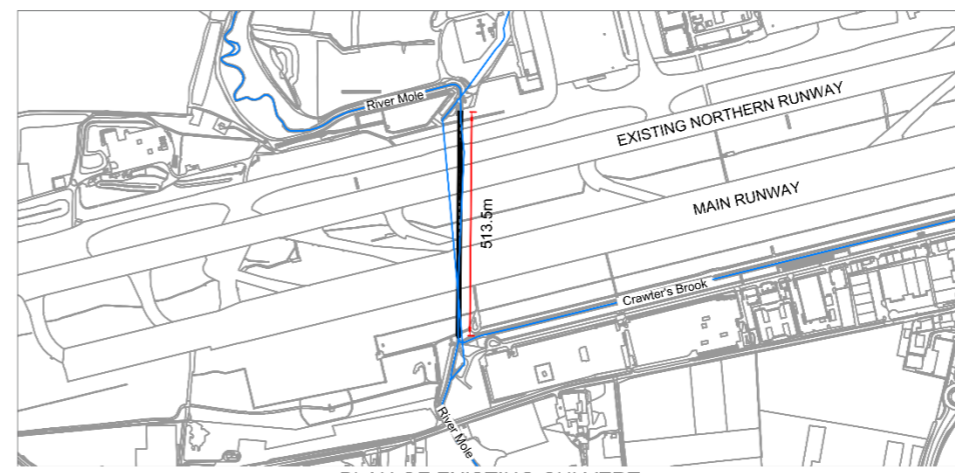
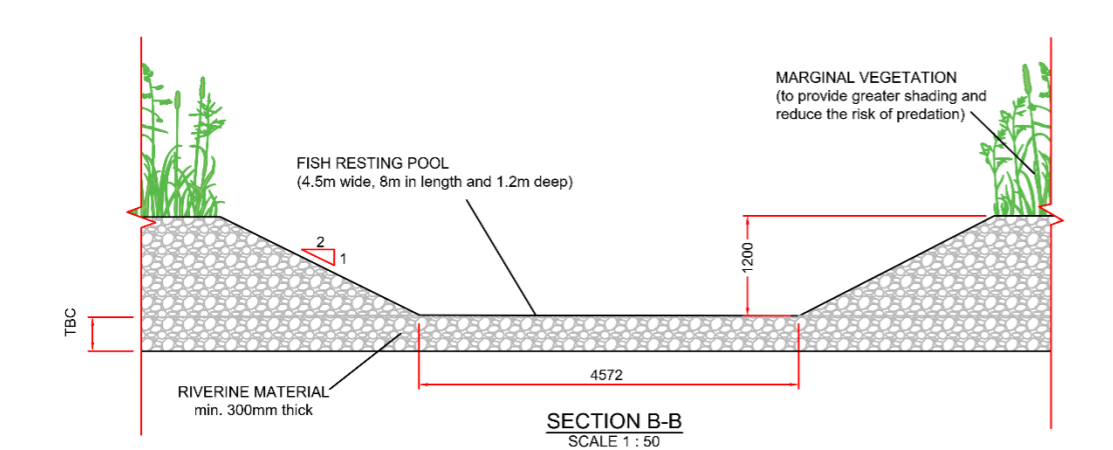
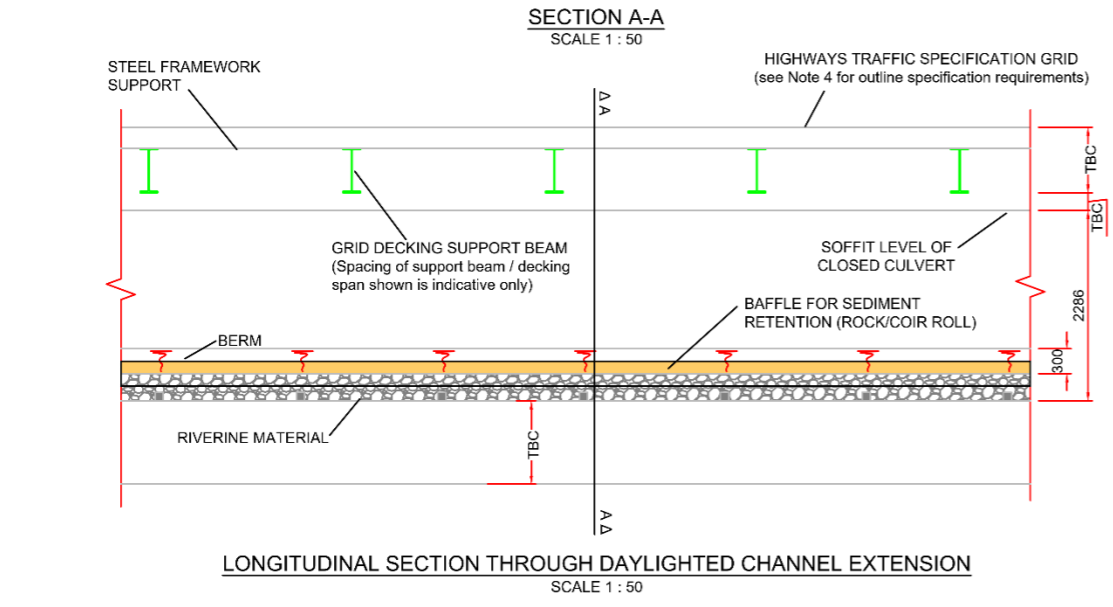
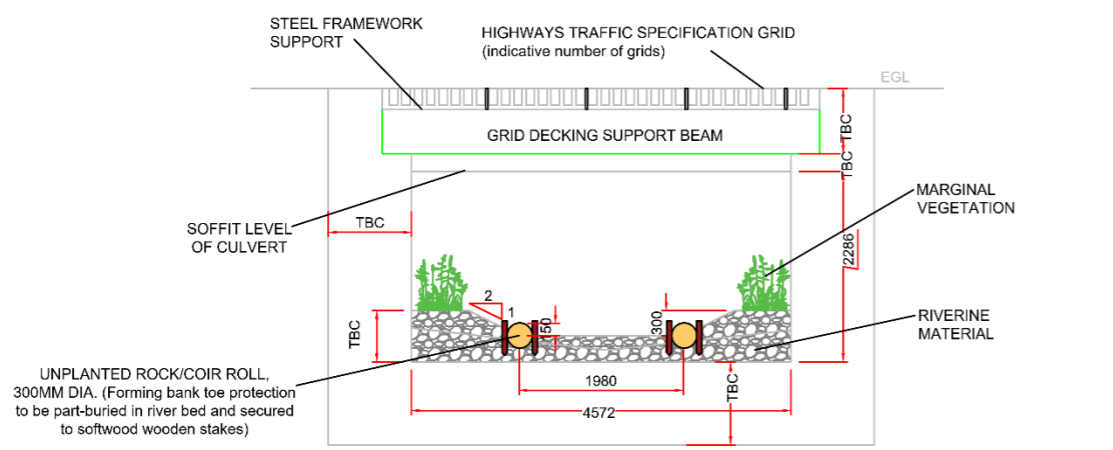
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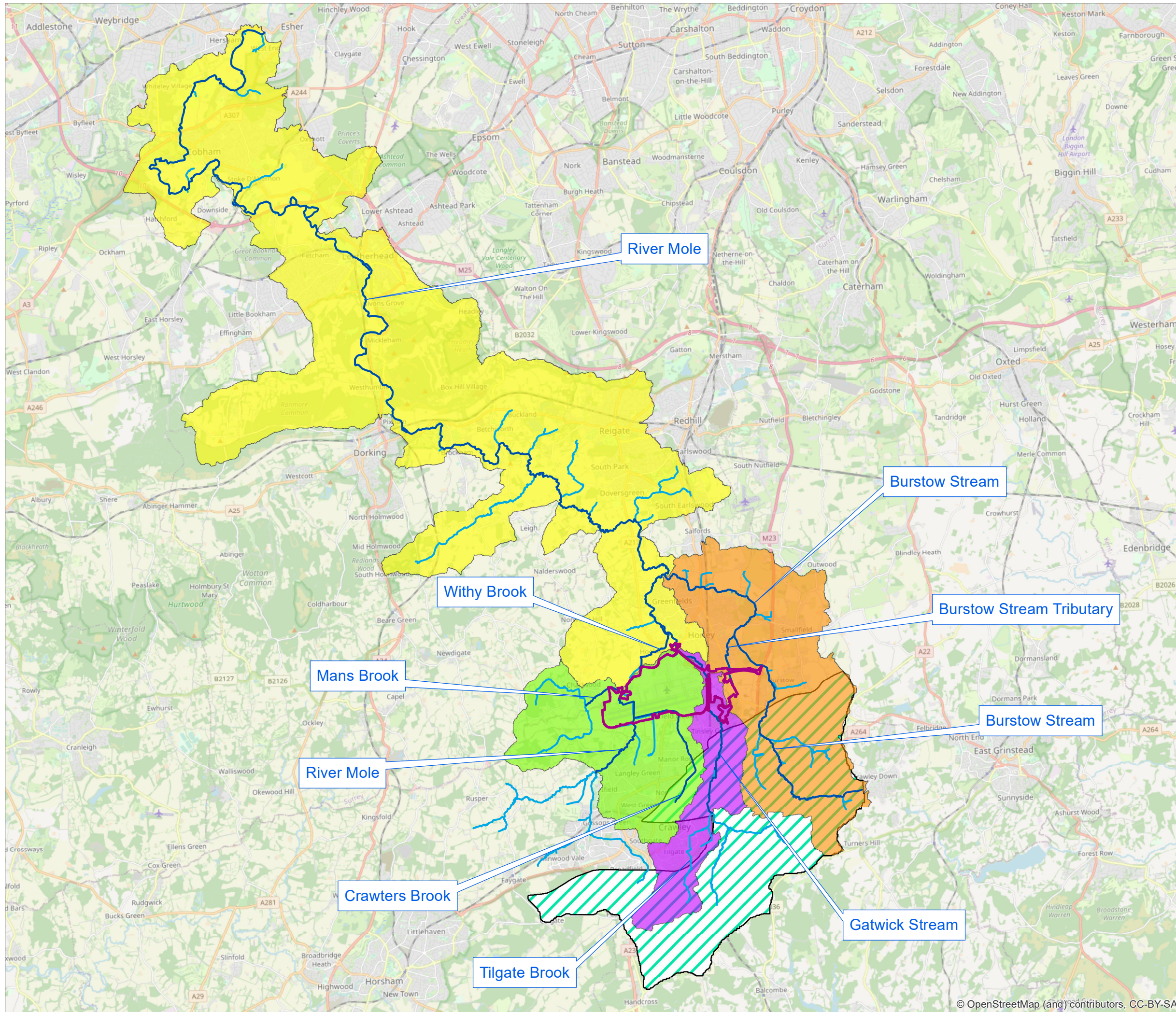
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Project Name:
NORTHERN RUNWAY PROJECT

DAYLIGHTED CHANNEL EXTENSION OF RIVER MOLE

Common Language Series		GAL Project No.	
Common Language System	JACOBS	Originator's Job No.	
Drawn By	MWS	Drawn Date	19/05/2023
Checked By	MWS	Checked Date	19/05/2023
Approved By	MWS	Approved Date	19/05/2023
Scale	N/A	Reason for Issue	
Document Code/Revision Number	GALCTC25-JAC-EWE-SCHW-DR-LE-0006		Revision
			A.1





KEY

- Project Boundary (DCO)
- Main River
- Ordinary Watercourses

WER Waterbody Catchments

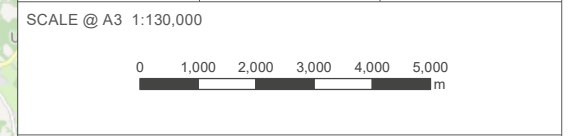
- Burstow Stream
- Mole (Horley to Hersham)
- Mole upstream of Horley
- Tilgate Brook and Gatwick Stream at Crawley
- Copthorne Tunbridge Wells Sand Groundwater body

DOCUMENT
Environmental Statement Appendix 11.9.2

DRAWING TITLE
WFD Waterbodies and Catchments

DATE
June 2023

	DRAWING NO. FIGURE 4.1.1	REVISION For ES
	DRAWN BY CC	PM / CHECKED BY MS



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