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Environment Agency

The Planning Inspectorate
Major Applications and Plans
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Our ref: KT/2023/130482/01-L01
Your ref: TR020005

Date: 26 October 2023

Dear Planning Inspectorate Team

GATWICK AIRPORT NORTHERN RUNWAY DEVELOPMENT CONSENT ORDER APPLICATION

Please find below our Relevant Representation on behalf of the Environment Agency in relation to the application for a Development Consent Order (DCO) for the Gatwick Airport Northern Runway made by Gatwick Airport Limited (GAL).

The Environment Agency's Role

The Environment Agency works to create better places for people and wildlife.

We were established to bring together responsibilities for protecting and improving the environment and to contribute to sustainable development. We take an integrated approach in which we consider all elements of the environment when we plan and carry out our work. This allows us to advise on the best environmental options and solutions, considering the different impacts on water, land, air, resources, and energy.

We help prevent hundreds of millions of pounds worth of damage from flooding. Our work helps to support a greener economy through protecting and improving the natural environment for beneficial uses, working with businesses to reduce waste and save money, and helping to ensure that the UK economy is ready to cope with climate change. We will facilitate, as appropriate, the development of low carbon sources of energy ensuring people and the environment are properly protected.

We have three main roles:

- We are an **environmental regulator** – we take a risk-based approach and target our effort to maintain and improve environmental standards and to minimise unnecessary burdens on businesses. We issue a range of permits and consents.

- We are an **environmental operator** – we are a national organisation that operates locally. We work with people and communities across England to protect and improve the environment in an integrated way. We provide a vital incident response capability.

- We are an **environmental advisor** – we compile and assess the best available evidence and use this to report on the state of the environment. We use our own monitoring information and that of others to inform this activity. We provide technical information and advice to national and local governments to support their roles in policy and decision-making.

Application for a Development Consent Order for Gatwick Northern Runway

We will support the Examining Authority by advising them if the application is in line with the above so that they can be satisfied that their recommendation in relation to the application for the DCO can be made taking full account of environmental impacts.

Pre-application consultation

We have had a positive working relationship with GAL and their consultants throughout the pre-application stage of the DCO.

We have made comprehensive comments in response to each of the pre-application consultations. Throughout that process, and in the subsequent lead up to their DCO application, we have agreed several measures, including alterations to the design and construction, use of best practice and environmental monitoring and response, which have been included in their application. These support the protection of the environment, local habitats and protected species.

The applicant has started to develop a Statement of Common Ground (SoCG) and will continue to progress this throughout the application process.

Outstanding information and issues of concern

Our Relevant Representation outlines where further work, clarification or mitigation is required to ensure that the proposal has no detrimental impact on the environment. In summary, our key concerns/outstanding issues are:

- We cannot comment in detail on the proposed fluvial mitigation features until a detailed review of the applicants 'with-scheme' flood risk modelling has been completed. Appendix 11.9.6 Flood Risk Assessment Annex 5 (Document Reference 5.3) details the build of the applicants 'with-scheme' model, which we will use as part of the model review. We are working with the applicant to obtain all the relevant data to enable this review to take place. Until this is completed, we are unable to comment on any flood risk conclusions.
- There are a range of proposed works, including diversion of the River Mole, proposed bridges and elements of the flood compensation areas, that will require Flood Risk Activity Permits. Any works in, over, under or within 8 metres of a main river require a Flood Risk Activity Permit prior to works commencing.

We have also provided some advice to the applicant which we hope will be useful. We hope that these comments are helpful in setting out details to be considered during the examination.

Yours sincerely

Michelle Waterman-Gay
Planning Advisor – Sustainable Places, Kent

Email KSLPLANNING@environment-agency.gov.uk

Relevant Representation
On behalf of the Environment Agency

1.0 FLOOD RISK

Some parts of Gatwick Airport are at risk to fluvial flooding, with Flood Zone 2, Flood Zone 3, and Flood Zone 3b being present, indicating the varying risk to river flooding across the Airport site.

There are several main rivers near the Airport, including the River Mole, Gatwick Stream and Crawters Brook. The River Mole passes beneath the runway in a twin culvert structure with an adjacent syphon utilised during higher flows. The Gatwick Stream runs through the eastern side of the Airport, with the Crawters Brook running adjacent to the airfield before joining the River Mole to pass beneath the runway.

Historic fluvial flooding has been recorded at the Airport, including during December 2013 where operations were impacted due to the severity of the flooding experienced.

Due to the nature of the fluvial flood risk, development at the Airport has the potential to impact on the flood risk not only within the Airport itself, but to receptors both up and downstream. Therefore, Gatwick must demonstrate the risk to flooding from all sources can be managed throughout any construction phases and post-development without increasing, and ideally reducing, the risk to flooding on and off-site.

In line with the requirement of the NPPF, Appendix 11.9.6 Flood Risk Assessment (Document Reference 5.3) and supporting Annex 1 – 6 have been undertaken by the applicant.

1.1 ENVIRONMENTAL STATEMENT

Environmental Statement - Appendix 11.9.6 Flood Risk Assessment

Climate Change
The document states climate change and the associated increase in peak river flows for the River Mole Management catchment. Table 3.7.1 is reflective of the most up to date peak river flow climate change allowances from 2022. The applicant should consider the impact of climate change, clearly stating the development lifetime over which the assessment has been made.

We would consider the proposed development of the airfield and surface element to have a flood risk vulnerability classification of essential infrastructure in line with Table 2 Flood and Costal Risk Change of the National Planning Policy Framework Planning Practice Guidance. Therefore, the Higher Central Allowance climate change figure(s) should be adopted when considering climate change for development in Flood Zones 2, 3 and 3b. This is noted by the applicant in paragraph 3.7.8.

This proposal must consider the credible maximum scenario as a sensitivity test to assess how sensitive the proposal is to changes in the climate for future scenarios.

For this proposal, the credible maximum scenario would be the Upper End climate change figure of a 40% increase in peak river flows. This requirement is noted by the applicant in paragraph 3.7.11.

Paragraphs 3.7.8 to 3.7.78 describe the total percentage uplifts to be applied in terms of peak river flows for various elements of the proposal. As the proposed works would take place over a period with the various project elements having suggested development design lives ranging from 40 to 100 years, this would span different epochs of predicted climatic change. Therefore, there is a need to consider a range of increases in peak river flow as part of the Flood Risk Assessment.

Paragraphs 3.7.6, 3.7.8, 3,7.9 and 3.7.10, describe the design life and subsequent peak river flow climate change allowance percentages assessed.

The surface access works as described in paragraph 2.2.3, have been given an adopted lifetime of 100 years whilst the airfield and associated works as described in paragraph 2.2.2 have been given an adopted lifetime of 40 years.

Peak river flow allowance uplifts of 20% and 12% have been applied to the applicants 1% AEP modelled flood events within their ‘with-scheme’ fluvial hydraulic model to represent future increases in flood risk. These peak river flow allowances are in line with the most up to date information for the River Mole management catchment for the Higher Central allowance in both the 2050s and 2080s epochs.

Works are also proposed within the 2020s epoch which require assessing against the peak flow allowance uplift of 16%. Although many of these works are temporary in nature, such as access bridges, a suitable assessment that also uses the Higher Central allowance is necessary. This is noted in paragraph 3.7.12).

Fluvial Flood Risk

Paragraphs 5.2.20 to 5.2.25 describe the differences between the outputs of the applicant’s model and the Flood Zones as shown by the Environment Agency’s Flood Map for Planning (Rivers and Sea). The applicants flood risk model contains features more specific to the Airport than the Environment Agency’s flood risk model and offers a more detailed picture of the site within the DCO boundary. However, the flood extents shown by the Environment Agency’s Flood Map for Planning should still be considered by the applicant for resilience planning and future proofing of the proposed development.

Section 6.2 concludes that fluvial flood risk would be increased by the development proposals due to floodplain losses and the displacement of flood waters. As the proposal encroaches on the existing floodplain.

Flood Mitigation

The fluvial mitigation strategy consists of two flood compensation areas, and several syphons to maintain floodplain connectivity. In addition, it is proposed to divert a section of the River Mole to allow for the increase in length of the River Mole culvert and syphon, with the diverted section of river channel being designed to accommodate higher flows. High level concepts of the two flood compensation areas and the River Mole diversion are shown in the Flood Risk Assessment - Annex 1 (Doc Ref 5.3), with some description given in Section 7.2. We cannot comment in any detail on these proposed fluvial mitigation features at the present stage as further information is required.

Flood Risk During construction

Areas Outstanding

Paragraphs 7.2.39 and 7.2.40 conclude the proposed fluvial mitigation measures would not result in an increase in flood risk off-site, though there are some increases in flood risk within the DCO boundary. However, we cannot comment in any detail on these conclusions at the present time and whether we agree with the applicants' findings, as a detailed review of the applicants 'with-scheme' flood risk modelling has yet to be completed. Appendix 11.9.6 Flood Risk Assessment Annex 5 (Document Reference 5.3 details the build of the applicants 'with-scheme' model, which we will use as part of the model review. We are working with the applicant to obtain all the relevant data to enable this review to take place.

Section 7.5 of the Flood Risk Assessment discusses flood risk during construction. It is essential that flood risk is managed throughout all phases of the proposed development, and the construction of the flood compensation areas early in the development phasing is essential.

Table 7.5.1 sets out the proposed phases of construction, the inclusion by the applicant of the flood compensation areas and River Mole diversion in the Initial Construction Period 2024 up to 2029 is noted.

The applicant has carried out modelling for all the construction phases, the outputs of which are shown in mapping included in the Flood Risk Assessment. As stated above, we have not yet completed a detailed review of the applicants 'with-scheme' modelling and cannot comment further on this aspect at the present time. We are working with the applicant to obtain all the relevant data to enable this review to take place.

We have also requested details of the Integrated Hydraulic Model the applicant has developed to support their proposal; this model is discussed in Annex 4 of the Flood Risk Assessment. Although our focus is around fluvial flood risk, the integrated model assesses a combination of fluvial and surface water flood risk, we have therefore requested further details on this modelling and will seek to carry out a model review. We are working with the applicant to obtain all the relevant data to enable this review to take place and cannot comment in further detail on the conclusions of this modelling at the present time.

Annex 6 of the Flood Risk Assessment on the suitability of flood evacuation routes are primarily for other organisations to comment on. We are aware that the applicant

benefits from a bespoke flood alert and warning service from the Environment Agency, which was developed following the flooding at the Airport in 2013.

There are a range of proposed works, including the diversion of the River Mole, proposed bridges and elements of the flood compensation areas would require Flood Risk Activity Permits. Any works in, over, under or within 8 metres of a main river would require a Permit prior to works commencing.

2.0 BIODIVERSITY

2.1 ENVIRONMENTAL STATEMENT

Biosecurity and invasive non-native species management plan
We note that considerations have not been addressed in the submission. There is minimal reference to invasive non-native species impact within Chapter 9: Ecology and Nature Conservation**.**

There are no details of a proposed management plan in either Appendix 8.8.1: Outline Landscape and Ecology Management Plan or Chapter 9 and whether this will be secured later.

Appendix 5.3.2: Code of Construction Practice
Biosecurity or invasive non-native species management has not been included in this document.

Appendix 5.3.2: Code of Construction Practice Annex 1 - Water Management Plan

Measures to intercept and treat suspended fine sediments.
Paragraph 10.5.4 describes biosecurity measures are required to minimise the risk of introducing undesirable invasive non-native species plants.

The document describes the main pathways for spread via machine and people, although a recommendation would be to label it under its own sub-heading in this document and the main Code of Construction Practice Ecology & Conservation Objectives. There is also room to enhance references for best biosecurity practice within the Soil Management Strategy (currently, there is one relevant line that if invasive plants are encountered, the relevant legislation will be adhered to – but not consideration of a biosecurity-based response).

The water environment statement refers to **Appendix 8.8.1:** Outline Landscape and Ecology Management Plan for further details; however, it is not clear how this benefits the outcome. It demonstrates landowner and procurement management in principle, such as preventing plant disease and pests to establish.

Biosecurity
Biosecurity practice should feature during every phase of development, ensuring that where known invasive non-native species plants occur – no new potential spread pathways are created due to the construction and development activity. A good standard of biosecurity provision at depots and compounds will also contribute towards maintaining best efforts to reduce the risk of either introducing or spreading pests and diseases.

Biosecurity protocols should be clearly reiterated for all documents supporting construction plans and activities and will be expected when determining environmental permit applications.

If any activity or construction plans overlap with areas of known INNS contamination, a potential spread pathways analysis should be carried out.

Environmental Statement - Appendix 8.8.1 Outline Landscape and Ecology Management Plan
Section 7.2.7 - The airfield satellite construction compound will occupy land outside of the River Mole diversion footprint to allow the new river channel to establish early in the Project. A minimum 8 metre buffer will be created along the channel to allow for this.

We ask for justification on why this is not set to be a minimum of 10m buffer in line with the Natural England Biodiversity Net Gain metric requirements.

Museum field: retaining existing mature habitat where it is compatible with the function of flood compensation area.
There are existing mature trees situated within in the Museum Field, which were discussed in a previous joint consultation meeting whether these might be retained and could be assessed for compatibility with the function of that flood compensation feature.

The landscaping plans refers to a clear space with new grassland being created within the flood compensation area and note the landscaping design approach which will test the suitability of existing habitat features for incorporation and retention. However, it remains unclear about the fate of these trees within the Museum field flood compensation area, and therefore request clarification.

The approach is welcome with established river corridor habitat structures and commitments to protect these sensitive receptors from light pollution at all phases of development.

Artificial lighting ethos and future strategy:
The document describes the importance to connect habitats and people throughout the approach, but to also recognise the criticality of controlling artificial light spill onto natural habitats and wildlife foraging corridors.

This ethos is expected to be retained particularly to protect the river corridors, their buffer zones and associated wetland habitats from any disturbances.

Further details are requested that identify the priority light-sensitive receptors for the site when refining the lighting strategy.

This should address impacts and mitigation for all phases of development. Any non-mitigated effects will be expected to amend the Environmental Impact Assessment accordingly. This has been included in the Code of Construction Practice Ecology objectives.

We recommend minimising artificial light spill onto river corridors to a range of 0-2lux, which is comparable to background light levels.

River Mole alignment and recovery post storm damage
The document describes the commitment to re-naturalise this section of the River Mole and represents a significant gain for the water environment and ecology. It states in the summary that an appropriate design of the two-stage channel will allow for floodplain features to occur. The indicative dimensions are unclear, it is expected that any wet grassland habitats able to establish are managed in response to their development over time.

It is welcome to see an overarching objective in the Landscape and Ecology Management Plan whereby regular condition monitoring is intended for all stages of habitat establishment, including monitoring of sediments in the realigned Mole, prevention of spread of invasive non-native species is also welcomed and to include post storm damage.

We recommend enhancing the commitment to include priority reinstatement for lost and damaged culvert habitats (these represent unique mitigation requirements and need to reinstated or mitigated before a new ecological season sets in). Species conservation measures should also be incorporated into the designed habitats matrix throughout the site. Ensuring connectivity of habitats is maintained.

We look forward to reviewing further detailed designs.

Requirement outlining principles within an invasive non-native species management plan.

- **Introduction or spread of invasive species: invasive non-native species management and Biosecurity plan.**
  It is expected to see a targeted invasive non-native species management and biosecurity plan produced for the known invasive non-native species plant and pest species on site, this may be a chapter within the management plan required to uphold Biodiversity Net Gain implementation and/or a document.
  Consideration for non-chemical means and collaboration with catchment partners and experts is strongly encouraged to feature.

Awareness for novel invasive non-native species and rapid response
We encourage the continual appreciation and awareness of good biosecurity practice and tree pest/disease prevention, with the ability to adapt management and supply chain scrutiny.

We further recommend that invasive non-native species and landscape management approaches and plans also incorporate awareness and readiness for dealing with potential incidents where a rapid response to isolate and eradicate a new invasive non-native species related threat is detected on site.

Depending on the species there may be DEFRA issued Plant/Species Control Orders issued for immediate response. For other species, it may simply be a wise choice of action for the sake of preserving the highest cost-benefit outcome by rapid intervention for site eradication, i.e., versus long term management and disposal.

Relevant invasive non-native species documents and legislation to consider:
We have reviewed The Great Britain Invasive-non-native-species Strategy 2015-2030. Every audience has a role to play, and co-ordinated catchment working is often more successful at managing invasive non-native species overall.

Furthermore, the HM Government's Environmental Improvement Plan 2023 introduces a determined Biosecurity target to tackle and reduce the rate of introduction and establishment of invasive non-native species by at least 50% by 2030 (compared to 2000 trends). With supporting plant biosecurity policy and strategies rapidly forming. The applicant is a key stakeholder in this aspect, as part of border control, however a continued sense of responsibility should be applied including for landowners. It would therefore be appropriate to demonstrate due diligence in this respect.

Where invasive non-native species management can contribute to tackling a wider catchment approach for that species, e.g., riparian invasive non-native species. The applicant should consider opportunities to liaise with catchment partners for forming a coherent treatment and management plan, and to also use the forum for sharing distribution information and tracking spread and management effectiveness trends. We would also be interested to be informed of management progress for invasive non-native species within the river corridor and wetland environments and can support technical queries through the customer engagement team.

The Non-Native Species Secretariat hosts a very useful resource for all knowledge and novel species Alert needs, it is recommended to sign up to mailing lists. There are also biosecurity training resources that can be incorporated into induction sessions for operational field staff.

Other invasive non-native species legislation
The landscaping- invasive non-native species sections may also want to reflect awareness for consideration around The Invasive Alien Species (Enforcement and Permitting) Order 2019 and maintaining compliance.

Invasive non-native (alien) plant species: rules in England and Wales - GOV.UK

Pesticides: Use near to water
Section 10.15 describes a default approach that pesticides for plant control are reserved for situations where plant species are classed as infestations and that non-chemical means of management is the primary approach.

The agreement can be found here - Application to use herbicides in or near water

We agree with the recommendations around triggers for seeking advice and agreement for use near to water, another consideration is where the chosen product label instructs the user to do so.

Each Environment Agency Area has a BASIS qualified Officer available for free advice to discuss management objectives and techniques, herbicide choice and integrated weed management. The applicant should contact local enquiries requesting this service.

Appendix 8.8.1: Outline Landscape and Ecology Management Plan - Part 3
Table A3. 10: Ornamental Shrubs
Consideration and justification should be given whether *Ruso rugosa* in the 'Ornamental planting mix' is compliant with Schedule 9 of the Wildlife and Countryside Act 1981 (See Table A3.10)

Tree Tree survey schedule' – ref no G29
The proposal must consider whether the 'poor quality' *Robina pseudoacacia* will be managed/removed (Ref 'Tree survey schedule' – ref no G29)

Paragraph 5.9 describes an intention to utilise a mix of native marginal and aquatic plants**.** We would like to further support awareness within the landscape design and management approach that native species will be the preferred basis for all natural areas, and these should be prioritised.

It should be noted that we would expect only native plant species, of appropriate genetic province and suited to the catchment character to be intended for river and connected wetland habitats. This includes planting of the 'daylighted' culvert (River Mole), where the open grill will limit light availability and appropriate species choices are required.

- We would recommend highlighting some precaution where invasive non-native plant species may be considered for landscaping design, in particular those chosen for climate change resilience and that those selected species are appropriate for the potential environmental risk of escape (and establishment) into the wild.

- One specific example for appropriate consideration is the mention of Climbers (**section 5.6),** virginia creeper and false virginia creeper for example are listed on Schedule 9 of WCA legislation. Similarly, Vinca major (Greater periwinkle) *features in the plant lists and is a non-native invasive perennial plant of the UK, typically found growing in woodland, hedgerows and waste ground, it has an invasive habit that could succeed well in the wild.*

- Euphorbia amygdaloides robbiae
  The subspecies robbiae is commonly grown in gardens and often escapes *or is deliberately planted in the wild. The flowers are the same, but the 1st year stem leaves are leathery, often shiny, dark green and smooth. The native plant (subspecies amygdaloides) has 1st year stem-leaves which are hairy on margins and underside, usually pale- to mid-green, and dull in texture.*

Design & Access - General comment & query:
A commitment to integrate nature-based solutions is promising, however it doesn't state if any options for Natural Flood Management opportunities have been scoped in and/or assessed.

Biodiversity Net Gain Statement
Request for clarification
When looking at the Biodiversity Net Gain units it seems apparent that Irreplaceable habitat units (including Hedgerows) are not specified. However, throughout the Landscape and Ecology Management Plan hedgerows are mentioned frequently as a removed/reinstated/managed element, including for native hedgerow planting. Are all hedgerow elements related to mitigation, rather than additional for Biodiversity Net Gain?

The widening of the road bridge over Burstow stream:
The proposal for permanent loss of habitat and increased overshadowing is a tangible impact on the watercourse although argued in the submission as minor due to other encroaching elements.

We would expect to see this captured through a River Condition Assessment and the river metric adjusted accordingly.

We request clarification of how this impact has been assessed, the methods and justification if omitted. Furthermore, if it has been reflected in the Biodiversity Net Gain balance.

3.0 FISHERIES

The documents cover off what we have agreed with the applicant in our pre application meetings.

We need to ensure delivery of is the fish pass on the southern exit of the culverts. This needs to be a multispecies fish pass appropriate to the fish species and life-stages found in the Mole both up and downstream of the airport. It also needs to provide safe passage for eels. The detailed, technical design of such a pass can be agreed later, but the delivery of this is a key element of their mitigation.

We would seek for the fish pass to be delivered before, or when, the culvert extension is implemented, so Gatwick will need to incorporate the planning and delivery of this within their work programme. The delivery of an appropriate fish pass and any necessary clearance and maintenance required for it to function as designed needs to be stated as a deliverable element to the project.

Requirement: A fish pass shall be installed either before, or when, the culvert extension is implemented. The applicant shall incorporate the planning and delivery of the fish pass within their work programme. The delivery of an appropriate fish pass and any necessary clearance and maintenance required for it to function as designed shall be stated as a deliverable element to the project. The design and maintenance programme the fish pass shall be agreed in writing with the Environment Agency prior to its installation.

Reason: To ensure fish and other aquatic species can freely move through the water course.

3.1 ENVIRONMENTAL STATEMENT

Environmental Statement - Chapter 11 Water Environment

11.8.4 Aquatic Ecology Improvement Measures
We support this option to send most flow down the western box culvert by the installation of 300mm weir on the eastern culvert. This should also reduce siltation and the need to dredge the eastern culvert as frequently.

Table 11.8.1 Provision of compensatory flood storage - Page 11-97
The provision of swales or similar low flow channels will be critical in enabling fish to return to the main channel when the FCA drains, we would seek that these are incorporated into the final design and agreed with us.

Agree that water levels should be reduced slowly, but the flow control structures that achieve this must allow fish to move freely through them. Weirs or bottom hinged sluices will stop fish movements, top closing penstocks or fixed orifice discharge points that close to bed level without any weiring of water through the structure would be preferable.

Loss of aquatic habitat for fish should be mitigated for, however any new fish habitat created in mitigation needs to be explicitly identified and linked back to the loss to demonstrate that it has been addressed and to prevent any new habitat created being counted more than once.

New section of River Mole channel at existing runway culvert exit – These mitigation measures have been discussed with us and we support the channel improvements and creation of a fish resting area. These, and the grid for the new section of culvert will also partially mitigate its impact upon fish movements.

The applicant also discussed with us the creation of a multi-species fish and eel pass at an upstream weir on the southern end of the culvert. Provision of this fish passage at this structure also forms an important part of the fisheries mitigation to offset the increase in culvert length. The mechanisms for future maintenance and any debris clearance necessary for the pass to function should also be identified.

Table 11.8.1: Mitigation, Monitoring and Enhancement Measures - **Page 102**
The fish pass and creation of the 300mm weir on the eastern culvert entrance to divert flows are *both mitigation measures for the impact of the increase in culvert length* therefore we do not agree that they should be described as Enhancements, as they currently are in.

4.0 GEOMORPHOLOGY

4.1 ENVIRONMENTAL STATEMENT

Environmental Statement - Chapter 11: Water Environment

Table 11.7.1: Maximum Design Scenarios
We do not agree with the use of the word daylighted. The document states 26 m of daylighted channel which indicates that existing culverted channel is to be reopened to the air. This is not the case. Existing natural channel is to be changed into an open box culvert with a metal mesh roof, reducing the biodiversity value and reducing the likelihood of fish passage through the existing 550 m culvert. Mitigations for this are included.

Table 11.8.1: Mitigation, Monitoring and Enhancement Measures

New section of River Mole channel at existing runway culvert exit
The table is missing the further mitigations for the culvert extension (it is such but with an open metal mesh roof and baffles on the bed) which have been discussed and confirmed elsewhere in the submission.

- Addition of a small diversion weir on one of the 2 box culverts under the runway. This will ensure water depths are deeper during low flows to help allow fish passage and to ensure that both box culverts don't silt up as quickly. The act of desilting is an environmental risk.
- Addition of a fish pass to an existing 1 m high weir upstream of the culvert.

Geomorphological mitigation for Flood Compensation Area) and paragraph 11.9.98:
Requirement: Soft/bio engineering within riverbanks should avoid plastics to prevent the release of microplastics into the watercourse.

Reason: Many geotextiles contain plastic strands that will release microplastics that will impact the aquatic biodiversity.

Geomorphological mitigation for River Mole channel extension within the Juliet taxiway planform
Misuse of the word 'daylighted': No existing culverted channel is to be reopened to the air.

Geomorphological mitigation for Burstow Stream Tributary culvert extension
We have a no culverting policy including culvert extensions on main river. The 4 m culvert extension on the Burstow Stream ideally should be a clear span extension, however, because it is at the point of becoming ordinary watercourse, it is beyond our

jurisdiction to object. We strongly advise that this extension should still be in the form of a clear span bridge. Culverts often cause siltation/gravel deposition issues, erosion downstream and connectivity issues for flora and fauna. A 4 m wide clear span bridge would be easy to build.

Paragraph 11.9.96
Requirement: The re-naturalised channel shall not be netted.

Reasons: Netting would impinge on tree growth and natural movement of the channel impacting the biodiversity of the water course and its corridor.

Paragraph 11.9.104
East Bridge on the Man's Brook: this channel is undergoing significant adjustment since changes made to the River Mole alignment in the 1990s. Around 1 metre depth of incision is expected with associated bank collapses. It is advised to make sure the access bridges have a wider clear span than would be otherwise required in a more stable channel.

This section is missing the footbridge to be installed in Church Meadows over the River Mole at grid reference TQ2754242634 which has been shown in recent meetings. This bridge is at risk of erosion of the right bank due to it's position on an meander bend. The Mole in general is quite a dynamic river. We recommend either a wider bridge clear span or better still repositioning of the bridge slightly further upstream to avoid the outside of the meander bend.

Paragraph 11.9.140:
Example of response to monitoring: excessive erosion: this is only a bad things if receptors are at risk of erosion. Channel movement and dynamism should otherwise be welcomed because it has biodiversity benefits.

Section 11.11 - Cumulative impacts:
The degree of housing proposed in the Crawley area, particularly Forge Wood, Kilnwood Vale and Crabbett Park, as well as proposals for a northwestern ring road which will open up land for further development, will during construction, inevitably make temporary changes to the flow and geomorphological regime (e.g., increased fine sediment input) which will in turn have impacts within the DCO red line boundary e.g., increased siltation of culverts.

5.0 GROUNDWATER AND LAND AFFECTED BY CONTAMINATION

The geology and hydrogeology of the site has been outlined in this ES Chapter, with the potential impacts from historical, existing, and future land uses on land, surface water and groundwater quality assessed using a range of information. Several mitigation and enhancement measures have been proposed to reduce identified potential impacts, most of which are to be implemented through the Code of Construction Practice, including further site investigations, remediation (if required) and verification, piling risk assessments, and groundwater and surface water monitoring.

Environmental Statement - Chapter 10 Geology and Ground Conditions

5.3 Environmental Statement - Appendix 10.9.1 Preliminary Risk Assessment
This document contains various sources of information, including previous investigations and a contemporary site walkover. This has identified numerous potential areas of concern that represent potential sources of contamination resulting from existing and historical land uses. A range of potential contaminants have been identified from these areas. Further investigation is proposed for these areas, with the scope of works to be agreed with the Environment Agency and Local Authority. Areas not identified as potential areas of concerns but within the Project area will be subject to a discovery strategy.

Considering the proposed mitigation measures, the short-term impacts of the Project on groundwater and surface water are assessed as negligible/insignificant.

We acknowledge the content, conclusions and recommendations of this Environmental Statement Chapter and the Preliminary Risk Assessment. We acknowledge and agree that further work will be required, but that at present these recommendations address, or will address, our main areas of concern in relation to land contamination and impacts to controlled waters.

Environmental Statement - Chapter 11 Water Environment

5.3 Environmental Statement - Appendix 11.9.3 Water Quality HEWRAT Assessment
5.3 Environmental Statement - Appendix 11.9.4 Water Quality De-Icer Impact Assessment
5.3 Environmental Statement - Appendix 11.9.5 Groundwater Assessment
5.3 Environmental Statement - Appendix 11.9.7 Wastewater Assessment

This chapter has outlined the potential impacts of the Project (including highways works) on groundwater and surface waters, which includes deterioration in quality resulting from construction works, mobilisation of existing contamination (which should include river and attenuation pond sediments), and contaminated surface water runoff.

As part of the assessment, it has been assumed there will be no discharges to ground, and that any new attenuation ponds will be lined. We accept these assumptions on the basis that we would expect both these details to be included in the final designs.

It has also been assumed that water quality measures for car park runoff will be considered ‘embedded mitigation’ and therefore be integrated into future detailed designs.

Various aspects of the assessment have assumed no penetration into the Tunbridge Wells Sands. While we can accept this at present, further detailed ground investigations may be required for certain aspects of the Project, which may alter the risk level to that receptor (Tunbridge Wells Sand).

We are pleased to see groundwater (in superficial deposits) and surface water interactions have been included within the assessment, and potential impacts from dewatering on mobilisation of existing contamination.

Mitigation measures have been proposed to address potential impacts, both short and long term. These include construction of a new de-icer treatment system, water quality (groundwater and surface water) monitoring, temporary drainage systems to contain surface water during construction (e.g., at compounds), piling risk assessments, and general good practice.

We would also recommend additional site investigations/watching briefs in areas proposed for dewatering to ensure any existing contamination is not mobilised.

These mitigation proposals are to be implemented via various documents, including the Code of Construction Practice. Overall, we are satisfied these mitigation measures address or will address our main areas of concern but appreciate that further details and plans will be required at detailed design stage.

It is understood that all foul drainage is proposed to discharge to local Thames Water Wastewater Treatment Works, subject to assessment and approval from Thames Water. As no discharges to the environment are proposed, and therefore no environmental permit required, we have no further comment to make on wastewater plans for the Project.

Overall, the assessed impacts to all aspects of the water environment are deemed not significant when proposed mitigation measures are considered.

Environmental Statement - Appendix 5.3.2 Code of Construction Practice

This document outlines the environmental mitigation measures to be employed during construction of the project as authorised by the DCO and includes as annexes additional management plans (including water management and soil management, etc.). These mitigation measures are applicable to both activities and risks identified in the 'Geology and Ground Conditions' and 'Water Environment' ES Chapters. The Code of Construction Practice includes the requirement for additional ground investigations in areas of potential concern, followed by remediation (if necessary) and verification. It also outlines requirements for a discovery strategy, and production of a pollution prevention plan.

Environmental Statement - Appendix 5.3.2 Code of Construction Practice Annex 1 - Water Management Plan

The Code of Construction Practice and Water Management Plan Annex have identified that additional permits/consents will be required for specific activities. It is indicated that these will be obtained when necessary. A list of permits, licence and consent requirements is presented in section 8 of the Water Management Plan. Foul effluent from temporary compounds that are discharged to the environment would likely require an environment permit, although we expect connection to the mains sewer network to be sought in the first instance.

We are satisfied that the contents of the Code of Construction Practice and Water Management Plan address out main areas of concern from a groundwater and land contamination perspective. Further details, for example site investigations or monitoring, will be agreed later.

6.0 WATER RESOURCES AND QUALITY

6.1 ENVIRONMENTAL STATEMENT

Environmental Statement - Chapter 11 Water Environment

Table 11.8.1 Mitigation, Monitoring and Enhancement Measures
Details of the new on-site treatment facility to be supplied as soon as possible if the DCO is granted to enable modelling/permitting application to take place.

Paragraph 11.9.2 – the interaction with Thames Water Utilities Limited is critical to ensure that any required upgrades at Crawley Sewage Treatment Works are completed in sequence with the increased wastewater output from any Gatwick redevelopment.

Appendix 11.9.3 - Water Quality HEWRAT Assessment
Whilst recognising the 'minor adverse' classification we encourage every effort to minimise impact of road run-off to future-proof any development wherever possible.