

M25 Junction 28 Improvements TR010029

8.1 Statement of Common Ground with the Environment Agency

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Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M25 junction 28 scheme Development Consent Order 202[x]

8.1 STATEMENT OF COMMON GROUND WITH ENVIRONMENT AGENCY

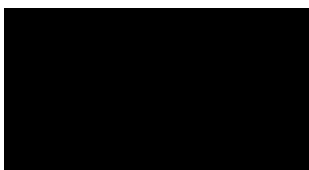
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STATEMENT OF COMMON GROUND

This Statement of Common Ground has been prepared and agreed by (1) Highways England Company Limited and (2) the Environment Agency.

Signed



**Project Manager
on behalf of Highways England**

Date: 21/05/2020

Signed



**Planning Specialist, Hertfordshire and North London Sustainable Places
on behalf of Environment Agency**

Date: 21/05/2020

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1. Introduction

1.1 Purpose of this document

- 1.1.1 This Statement of Common Ground (“SoCG”) has been prepared in respect of the application made by Highways England Company Limited (“Highways England”) to the Secretary of State for Transport (“Secretary of State”) for a Development Consent Order (“the Order”) to authorise the proposed M25 junction 28 improvement scheme (“the Application”) under section 37 of the Planning Act 2008 (“PA 2008”).
- 1.1.2 This SoCG has been prepared in accordance with the guidance published by the Department for Communities and Local Government.
- 1.1.3 This SoCG does not seek to replicate information which is available elsewhere within the Application documents. All documents are available in the deposit locations and/or Planning Inspectorate website.
- 1.1.4 This SoCG has been produced to confirm to the Examining Authority where agreement has been reached between the parties to it, and where agreement has not (yet) been reached. SoCGs are an established means in the planning process of allowing all parties to identify and so focus on specific issues that may need to be addressed during the examination of the Application.
- 1.1.5 It may be subject to further updates and revisions during the examination process.

1.2 Parties to this Statement of Common Ground

- 1.2.1 This SoCG has been prepared by (1) Highways England as the Applicant and (2) the Environment Agency.
- 1.2.2 Highways England became the Government-owned Strategic Highways Company on 1 April 2015. It is the highway authority in England for the strategic road network and has the necessary powers and duties to operate, manage, maintain and enhance the network. Regulatory powers remain with the Secretary of State. The legislation establishing Highways England made provision for all legal rights and obligations of the Highways Agency, including in respect of the Application, to be conferred upon or assumed by Highways England.
- 1.2.3 The Environment Agency is an executive non-departmental public body, sponsored by the Department for Environment, Food and Rural Affairs (Defra) with the stated purpose ‘to protect or enhance the environment, taken as a whole.’ Within England, it is responsible for:
- regulating major industry and waste;
 - treatment of contaminated land;
 - water quality and resources;
 - fisheries;
 - some inland river, estuary and harbour navigations;
 - conservation and ecology; and

- managing the risk of flooding from main rivers, reservoirs, estuaries and the sea.

1.3 Terminology

- 1.3.1 In the tables in the Issues chapter of this SoCG “Under discussion” indicates where points remain the subject of on-going discussion wherever possible to resolve, or refine, the extent of disagreement between the parties. “Agreed” indicates where the issue has been resolved.
- 1.3.2 It can be taken that any matters not specifically referred to in the Issues chapter of this SoCG are not of material interest or relevance to Environment Agency and therefore have not been the subject of any discussions between the parties. As such, those matters can be read as agreed, only to the extent that they are either not of material interest or relevance to Environment Agency.

2. Record of engagement

- 2.1.1 A summary of the key meetings and correspondence that has taken place between Highways England (HE) and Environment Agency (EA) in relation to the Application is outlined in Table 2.1.
- 2.1.2 Copies of meeting minutes and other correspondence received from EA can be found in Appendix A and Appendix B.

Table 2.1: Record of engagement

Date	Form of correspondence	Key topics discussed and key outcomes (the topics should align with the issues tables)
08.03.17	Email	Update on design options being considered.
30.10.17	Meeting 1	Meeting with EA lead, flood risk and geomorphology specialists. Scheme overview with EA recommendations on flooding, WFD compliance, biodiversity, geomorphology and water quality.
20.11.17	Meeting 1a	Meeting with EA lead, contaminated land and waste specialists. Discussed historic landfill, approach to Ground Investigation and the suitability of soakaways.
06.11.18	Meeting 2	Project update following project pause. Update on Ground Investigation progress and scheme interaction with water environment.
30.11.18	Letter	Notification of statutory consultation as a prescribed consultation body.
05.12.18	Skype meeting 3	Groundwater matters - update on Ground Investigation and proposed approach to DCO application.
16.01.19	Email	Email regarding the availability of scoping WFD assessment for PEIR review.
28.01.19	Letter	Response letter from EA to statutory consultation.
29.01.19	Email	Descriptions of WFD Action Measures on the River Ingrebourne nearest to Junction 28.
18.03.19	Email	Confirmation letter with location of Ground Investigations and proximity to watercourses.
18.03.19	Email	Scheme WFD assessment for review and comment.
16.04.19	Meeting 4	Meeting to discuss design development and environmental mitigation.
25.04.19	Letter	EA comments on WFD Scoping assessment report dated September 2017.
21.05.19	Site meeting 4a	To familiarise EA staff with the site and the opportunities / constraints this presents to the design of the Scheme. Initial looks at potential for mitigating the effect of Scheme on the water environment by works on Ingrebourne upstream of M25 J28 (WFD Action Measure 22480).
11.06.19	Skype meeting 5	Site visit follow-up call. Discussion on feasibility of mitigating the effect of Scheme on the water environment by works on

Date	Form of correspondence	Key topics discussed and key outcomes (the topics should align with the issues tables)
		Ingrebourne upstream of M25 J28 (WFD Action Measure 22480).
12.8.19	Meeting 6	Meeting to provide update on scheme design, supplementary consultation, intrusive surveys, WFD, biodiversity, flood risk assessment and DCO.
14.8.19	Email	Email requesting advice on disapplication of permissions within the DCO including Flood Risk Activity Permits, Land Drainage Consents, Abstraction License, Impoundment License and ground contamination license.
15.8.19	Email	Sharing the J28 flood risk model for review.
02.9.19	Letter	EA comments on the draft Flood Risk Assessment and WFD Assessment.
05.09.19	Email	Response from EA regarding standard sets of protective provisions for DCO.
19.09.19	Email	EA issue review comments on the flood risk model.
24.09.19	Skype meeting 7	To discuss the outcome of a feasibility investigation into mitigating the effect of Scheme on the water environment by works on Ingrebourne upstream of M25 J28 (WFD Action Measure 22480).
22.10.19	Skype meeting 8	Meeting to discuss off-site mitigation for effects of Scheme on water environment and to provide an update of DCO programme, protective provisions and HAWRAT assessment.
06.12.19	Skype meeting 9	Discussion on the EA's flood risk model review comments.
17.12.19	Skype meeting 10	Meeting to discuss HAWRAT modelling and off-site mitigation
18.12.19	Letter	Response letter from EA to supplementary consultation
12.02.20	Skype meeting 11	Meeting to discuss EA role in delivering off-site mitigation.
27.02.20	Skype meeting 12	Meeting to discuss EA role in delivering off-site mitigation
10.03.20	Email	Issue of revised Flood Risk Assessment to the EA following updates to address EA review comments.
20.03.20	Email	EA Comments on WFD Assessment dated January 2020.
20.04.20	Skype meeting 13	Discussion on off-site mitigation within Ingreborne water body, legal agreement, draft SoCG.
05.05.20	Skype meeting 14	Follow up discussion on off-site mitigation within Ingreborne water body.

3. Issues

3.1 Road drainage and the water environment

3.1.1 Surface water quality

SoCG issue ref.	Issue	Sub-section	Environment Agency (EA) comment	Highways England (HE) response	Status
SWQ01	Road Drainage and the Water Environment (Surface Water Quality)	Soakaways	EA advised that SuDS should be built into the design.	<p>Noted. All mitigation has been developed through engagement with the EA. The Register of Environmental Actions and Commitments (REAC, application document TR010029/APP/7.3) commits to a design of the Highway drainage system for the Scheme that complies with all current standards and sustainable drainage system (SuDS) best practice techniques.</p> <p>Soakaways are not proposed. All discharge is to surface water. Appropriate SuDS measure are embedded within the preliminary design for the Scheme in the form of detention basins and ditches prior discharge to surface water.</p>	Agreed
SWQ02	Road Drainage and the Water Environment (Surface Water Quality)	SuDS	Any SuDS implemented as part of the Scheme should be 'future proofed' to the expected loading from increased traffic on the road network.	<p>The SuDS implemented as part of the Scheme have been future proofed by basing their design on the pollutants generated by forecast traffic flows for the year 2027. Section 8.6 of Chapter 8 within the Environmental Statement document (application document TR010029/APP/6.1) sets out the basis of this design.</p> <p>The proposed drainage system also has additional capacity to strip pollutants from road runoff over and above that explicitly accounted for in the pollution control design. It has balancing ponds that are required to attenuate the rate at which runoff generated by the road surfaces is discharged to</p>	Agreed

SoCG issue ref.	Issue	Sub-section	Environment Agency (EA) comment	Highways England (HE) response	Status
				natural waters. As well as slowing runoff, these ponds will also trap sediment and associated pollutants. The ponds will therefore improve the quality of runoff discharged to receiving waters over and above design standards – this will contribute to future proofing water quality in the receiving waters.	
SWQ03	Road Drainage and the Water Environment (Surface Water Quality)	SuDS	The EA expect a SuDS maintenance strategy to be included as part of the Scheme to ensure that there is no future deterioration in the quality of run-off discharged to local watercourses. Road run-off has been identified as a WFD 'pressure' and has potential to cause deterioration in the Ingrebourne WFD water body if not managed appropriately.	HE's operational arm, Connect Plus, will undertake routine maintenance of the traditional and SuDS components of the Scheme to ensure they perform as designed during the operation of the Scheme. As part of the detailed design and handover of the Scheme a maintenance plan will be developed. Development of this plan is secured through item RD3.1 of the REAC (application document TR010029/APP/7.3).	Agreed
SWQ04	Road Drainage and the Water Environment (Surface Water Quality)	River Ingrebourne WFD status	The EA noted that the main risk to water quality is to watercourses on and surrounding the site. The WFD compliance assessment should demonstrate a) how the Scheme addresses any impacts from the construction and operation to avoid further deterioration to the waterbody and b) how additional improvements to water quality can be made to ensure future resilience.	The preliminary design of the Scheme includes a drainage system designed to achieve compliance with the relevant standards for soluble and sediment pollutants as tested with HAWRAT (Chapter 8, Road Drainage and the Water Environment) of the ES, application document TR010029/APP/6.1). The HAWRAT assessment has been shared with the EA. See SWQ02 on future proofing of the drainage design.	Agreed
SWQ05	Road Drainage and the Water Environment (Surface Water Quality)	Surface outfalls	The EA requested more information on new outfalls into the Weald Brook or Ingrebourne River and advised these should be as small as possible, preferably not pre-cast concrete and should be set back away from the river bank.	Although the location and capacity of outfalls have largely been fixed at the current (preliminary) stage of design, there is flexibility to decide details (e.g. size, position of an outfall relative to the river) at detailed design. The EA have opportunity to input to detailed design under Protective Provisions set out in the draft DCO.	Agreed

3.1.2 Flood risk

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
FR01	Road Drainage and the Water Environment	Flood Risk Activity Permit	EA advised that a Flood Risk Activity Permit would be required for any works within eight metres of a main river and it would be useful to have a discussion on protective provisions.	The Flood Risk Activity EPR have been disapplied and Protective Provisions have been included within the Draft DCO. The Protective Provisions will require HE to submit the designs for approval for any works within eight metres of a main river.	Agreed
FR02	Road Drainage and the Water Environment	Flooding	The application site is partially within Flood Zone 2 and 3 and the Scheme design should be informed by an appropriate Flood Risk Assessment (including being resilient to climate change). The EA would like to review the modelling and advised that the Scheme should be designed to a minimum one in 100 year plus an allowance for climate change.	HE has submitted the Flood Risk Assessment and flood modelling data for EA review. The EA have provided comments on the FRA and flood model. Both have been updated and reissued to the EA for review. The FRA confirms that the design standard for the Scheme is the 1 in 100 flood event including a 35% climate change allowance.	Agreed
FR03	Road Drainage and the Water Environment	Flooding	The EA has agreed that the 1 in 100 year 35% allowance for climate change flood event is acceptable to design to, provided there is not a significant increase in risk between the 35% and 70% scenarios. Based on the submitted FRA, it would appear that the 35% scenario has been used as the design flood event. However, the FRA should include details of the depths and extents for both modelled scenarios so a decision on whether the 35% scenario is suitable for use can be made.	The Flood Risk Assessment has been updated to include further details on the flood levels associated with a 70% climate change allowance. This has been reissued to the EA for review.	Agreed
FR04	Road Drainage and the Water Environment	Flooding	The EA Scoping Opinion for this scheme requested that, in terms of flood storage compensation, a scheme of this size should look to produce an overall reduction in flood risk, as opposed to just ensuring the situation is not made worse. We would like to be provided with a detailed	The Flood Risk Assessment has been updated to clarify the volume of storage provided both in the 35% and 70% climate change scenario. This has been reissued to the EA for review.	Agreed

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
			comparison between the 35% and 70% flood scenarios to agree whether the 35% scenario is suitable for use as the design flood event.		
FR05	Road Drainage and the Water Environment	Flood risk management standards	EA flood risk management standards stipulate 300 mm of freeboard above the 100 year plus 35% Climate Change Allowance flood level to account for uncertainties in hydraulic modelling. EA standards also advocate allowing a further 300 mm freeboard (i.e. total of 600 mm) to provide clearance under structures for floating flood debris and to reduce the risk of blockage during floods.	<p>The design for Grove Bridge, the Loop Road crossing over the Weald Brook and Ingrebourne, delivers 600 mm total freeboard along the majority of the length of the structure but does not provide the clearance for around 10-20 m at the northern (lower) end of the bridge. In its letter of 2 September 2019 titled 'Draft Flood Risk Assessment and Water Framework Directive', the EA agreed to a departure from standard on the basis that:</p> <ul style="list-style-type: none"> a) the additional 300 mm freeboard was included primarily to avoid damage / risk of failure to bridge structures and could be waived when limited by other constraints; and b) the structure would be designed to protect against the impact of floating debris. Consultation with the EA will be continued through the design process and final designs will be submitted for approval through Protected Provisions set out in the DCO. 	Under discussion
FR06	Road Drainage and the Water Environment	Flood storage opportunities	The Defra 25 Year Environment Plan advocates expanding the use of natural flood management (NFM) solutions to reduce risk from flooding (and coastal erosion). The EA encourage incorporation of NFM into the Scheme, where appropriate. In particular, the EA would welcome being involved in consultation on proposed alterations to the river floodplain required for the Scheme and the multiple use of flood compensation areas (different types of wet woodland).	The DCO design includes lowering the floodplain between the new A12 slip road and the Loop Road, increasing connectivity of the Ingrebourne River to the floodplain. The design also includes lowering the base level of the floodplain compensation areas below the level required to provide the necessary compensation storage. The design of these elements of the Scheme has been developed in consultation with the EA to provide a better connection between the river and floodplains of the River Ingrebourne and the Weald Brook	Agreed

3.1.3 Water Framework Directive and aquatic biodiversity

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
WFD01	Road Drainage and the Water Environment (Water Framework Directive)	Screening criteria and scope for WFD compliance assessment	Following a review of the September 2017 version of the WFD assessment for the Scheme (letter of 25/4/19) the EA supported the screening IN of biological, physico-chemical and hydro-morphological WFD quality elements. They also agreed the screening OUT of lake and groundwater bodies. At the same time, they advocated the screening IN of Specific Pollutant and Chemical WFD elements, citing the potential leaching of contaminants from Brook Street Landfill as a potential source of these elements in the water environment.	Section 3.4 of the WFD Compliance Assessment (application document TR010029/APP/6.7) sets out the scope of the assessment in accordance with the EA's recommendations set out opposite. It also screens OUT WFD protected areas, on the basis that there are no European designated areas affected by the Scheme.	Agreed
WFD02	Road Drainage and the Water Environment (Water Framework Directive)	Improvements to the Water Environment	At a number of meetings (for instance 16/4/19, 6/11/18 or 21/5/19) the EA have expressed an expectation that a scheme of the size of junction 28 should deliver improvement to the environment in addition to the mitigation and compensation required to directly address its effects on the water environment.	Table 5.1 of the WFD Compliance Assessment (application document TR010029/APP/6.7) summarises the mitigation and enhancement measures that are embedded into the design of the Scheme. The table divides these embedded measures into mitigation and enhancements. The enhancements are improvements to the environment over those required to directly address the effect of the Scheme on the water environment. ¹ .	Agreed
WFD03	Road Drainage and the Water Environment (Water Framework Directive)	'Like for like' mitigation	The EA have raised concern about the direct loss of river channel and associated open water, marginal and riparian habitats resulting from the proposed construction of bridges and culverts that form part of the	HE have designed a mitigation package for the junction 28 Scheme in accordance with the principle set out opposite by the EA. Only 'like for like' measures have been accounted for as mitigation. All other measures have been counted as enhancement. Mitigation and	Agreed

¹ Note that Table 5.1 only presents measures embedded into the design of the Scheme. The full mitigation package of the Scheme as includes what have been termed Additional Mitigation (specific) and Additional Mitigation (generic guidance), as set out in sections 5.3 and 5.4 of the WFD Compliance Assessment (application document TR010029/APP/6.7).

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
	Directive)		Scheme. In particular the EA raised concern regarding the loss of river channel and associated habitat associated with the 80 m extension of Grove Farm Culvert. The EA advocate that loss of river channel should be addressed through mitigation measures that replace or improve river channels – ‘like for like’ mitigation. As an example, the preferred ‘like for like’ mitigation for a culvert extension would be removal of an equal length of culvert at another location. Alternatives to this preferred solution would be river restoration measures such as removal of hard banks/structures, softening of bed/banks or re-meandering where watercourses have been shortened/straightened in the past. Mitigation measures such as floodplain reconnection or creation of backwaters do not create ‘like for like’ habitat and therefore should not be considered to be appropriate mitigation.	enhancements to the water environment are summarised in Sections 5 of the WFD Compliance Assessment (application document TR010029/APP/6.7), with Table 5.1 identifying which embedded measures are not considered ‘like for like’ and hence have been counted as enhancement, not mitigation.	
WFD04	Road Drainage and the Water Environment (Water Framework Directive)	Investigation into incorporating delivery of WFD River Basin Management Plan (RBMP) ‘Action Measure’ 22480 as part of the Scheme.	<p>The EA suggested HE should undertake an investigation to determine whether Measure 22480 a) was feasible and b) could be implemented as part of the Scheme.</p> <p>Measure 22480 is a potential river restoration scheme on the Ingrebourne River described in EA RBMP documentation as “Re-meander 550m section of straightened section of the</p>	Appendix F of WFD Compliance Assessment (application document TR010029/APP/6.7) reports on the feasibility study undertaken by HE on the potential implementation of Measure 22480. The study investigated three potential interventions to restore the reach, but concluded that none were viable. The simplest interventions were considered not to address the fundamental hydromorphological intent of the Measure. Two more complex interventions were so confounded by external constraints (a deeply incised channel, high pressure gas mains crossings and road drainage outfalls) to either	Agreed

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
			<p>Ingrebourne upstream of the M25 Brook Street junction (Jcn. 28) by installing deflectors or re-meander where space allows". The measure had been identified during a high level desk study undertaken by the EA as part of their WFD programme.</p> <p>Measure 22480 is located within the DCO boundary of the Scheme. EA considers that implementation of the measure as part of the Scheme has potential to make a significant contribution to the 'like for like' mitigation required to address the adverse effects of the Scheme on the water environment.</p>	<p>be technically infeasible or not deliver value for money.</p> <p>The feasibility of measure 22480 has been investigated and the conclusion has been reached that it is not viable.</p>	
WFD05	Road Drainage and the Water Environment (Water Framework Directive)	Securing sufficient "like for like" measures to adequately address the adverse effects of the Scheme on the water environment.	<p>Following a review of the September 2017 version of the WFD assessment for the Scheme (letter of 25/4/19) it was the EA's view that the Scheme would deliver insufficient 'like for like' mitigation to address its effects on the water environment unless an additional measure of a similar effect to WFD RBMP 'Action Measure' 22480 (see point WFD04 above) were incorporated into the Scheme.</p> <p>The EA stated that if HE were unable to identify a measure of similar effect to RBMP Action Measure 22480 within the DCO boundary, the EA would consider delivering a measure of similar scale within the Ingrebourne WFD water body beyond the DCO boundary as</p>	<p>A study has established that external constraints make implementation of RBMP Measure 22480 unviable (see point WFD04 above). Further review of the river and floodplain within the DCO boundary identified no additional opportunities to implement effective mitigation for the adverse effect of the Scheme on the water environment to those set out in Sections 5.2-5.4 of the WFD Compliance Assessment (application document TR010029/APP/6.7). In particular, there were no substantial opportunities to implement additional mitigation on the Weald Brook between Duck Wood Bridge and Weald Brook Culvert because this reach of river already retains many natural features.</p> <p>As part of the design process, a check was undertaken to determine whether sufficient "like for like" mitigation has been incorporated into the Scheme to address its adverse effects on the water environment. This check is described</p>	Agreed

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
			part of their wider programme of WFD improvement works. This offer was made on the basis that HE would fund such works.	<p>in the section 4.6 of the WFD Compliance Assessment (application document TR010029/APP/6.7) under the heading "Net effect of Scheme on riverine habitat". Further detail is provided in Appendix E. This confirmed the EA view opposite: that the Scheme would deliver a reduction in riverine habitat if only the mitigation measures within the DCO boundary as set out in Sections 5.2-5.4 of the WFD Compliance Assessment were implemented. Based on the metric used in the assessment, the scheme would deliver -0.23 units of riverine habitat.</p> <p>HE and the EA have reached a common understanding that the only viable option for delivering measures to mitigate the deficit net effect of the Scheme on riverine habitat is through works outside of the DCO boundary (called measure W13 in the WFD Compliance Assessment). The two organisations have also agreed that these measures can be most effectively delivered by the EA, as part of their programme of works within the Ingrebourne WFD water body with financial support from Highways England.</p> <p>Using the riverine habitat assessment summarised above, these works (measure W13) should deliver a minimum net riverine habitat benefit of 0.23 to ensure the Scheme has a neutral effect on the riverine environment within the Ingrebourne WFD water body. They should target a net riverine habitat benefit of 0.55: an equivalent to benefit generated by the 'upstream realignment' intervention set out in the Feasibility Study in Appendix F of the WFD Compliance Assessment.</p>	

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				Highways England has committed to providing the financial support required to enable delivery of these measures outside of the DCO Boundary by the EA.	
WFD06	Road Drainage and the Water Environment (Water Framework Directive)	Grove Culvert Extension	<p>The existing Grove Culvert is 120 m long and will be extended by a further 80m as part of the Scheme. The EA consider that this will result in a restriction of natural geomorphological process and loss of riverine habitat along the affected reach. Also that it will accentuate the existing disconnection between upstream and downstream habitats.</p> <p>The EA is in general opposed to the culverting of watercourses because of the adverse ecological, flood defence and other effects that are likely to arise.</p>	<p>The culvert extension is located beneath the realigned northbound slip road off the A12. A balance between many requirements has determined the eventual alignment of this slip road. The principal concern has been how to find a three-dimensional fit for the A12 slip road, the loop road and the river within a very confined space in a way that meets the many safety and operational standards required of a motorway design. This three-dimensional fit has been severely complicated by the presence of both overhead and underground utilities. Furthermore, the design needs to protect space to sustain businesses at Grove Farm and retain access to those business. The best overall balance that could be achieved whilst addressing this combination of complex constraints meant that no other reasonable alternative to extending the culvert was available to the Scheme.</p> <p>'Like for like' mitigation in the form of compensatory river restoration measures, a single bore extension, a depressed invert with natural bed, mammal ledges and measures to address potential scour immediately downstream of the structure are included in the Scheme to address the adverse effects of the extension of Grove Culvert on the water environment. These are included in the measures set out in sections 5.2-5.4 of the WFD Compliance Assessment (application document TR010029/APP/6.7).</p>	Agreed

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
WFD07	Road Drainage and the Water Environment (Water Framework Directive)	New river and floodplain crossings.	For bridges the EA recommend clear span bridges, avoiding any supports located within the river channel or floodplain, as this can increase flood risk by disrupting flows and increasing the risk of blockages. The EA supports setting back of abutments no less than eight metres from the watercourse, as well as the intention to reduce any impact of the scheme on floodplain processes.	<p>Following initial consultation with the EA proposals to use culverts at new crossings for the Ingrebourne River and Weald Brook were superseded by designs for wide span bridge crossings. The preliminary design for all three crossings have substantial spans as follows:</p> <ul style="list-style-type: none"> • Duck Wood Bridge: 54m span between abutments, with supporting bridge piers at mid span) • Mayland Bridge 95.5m span between abutments, with two sets of supporting bridge piers at 27.5m from each abutment • Grove Bridge: 50.9m span between abutments, with supporting bridge piers at 18.4 m from right bank) <p>Designs have also kept river channels at distances greater than 8 m from bridge abutments. However the need to find a balance between multiple constraints has meant that some bridge piers at all three structures are located less than 8 m from existing or proposed realignments of channels. The principal constraints forcing these alignments have been underground services (in particular a high pressure gas main running parallel with the Weald Brook), the need to provide access underneath some structures and a maximum standard span between abutment and pier of 27m.</p> <p>The adverse effect of crossing structures on river and riparian habitat is fully mitigated within the Scheme by provision of like for like mitigation elsewhere. This is most clearly demonstrated by the extremely low 'reach conservation status' scores attributed to the</p>	Under discussion (The EA are in agreement with the principles set out in the Highways England response, but prefer to keep the item under discussions until review of structure designs accompanying the DCO application)

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				reaches of watercourse passing beneath proposed structures in the 'Riverine Habitat Assessment'. Scores of 1 are attributed to the reaches directly beneath the new crossings in recognition of the heavy shading imposed by the structures and the potential effect of interaction of the channel with bridge piers through time (see Appendix E of the WFD Compliance Assessment - application document TR010029/APP/6.7).	
WFD08	Road Drainage and the Water Environment (Water Framework Directive)	New channel alignment beneath Duck Wood Bridge	The EA requested further investigation into why the Scheme does not propose retaining the meanders in the Weald Brook at Duck Wood Bridge.	<p>A wide span bridge for the new Duck Wood Bridge Crossing is proposed to minimise disruption to flow and sediment process (see point WFD07 above). However, multiple constraints preclude retention of the existing complex river planform at this location. These constraints are: a) a high pressure gas pipeline also passing under the bridge at this location b) vehicular access needed under the bridge and c) the structural requirement for piers to support the centre of the bridge. There is insufficient width to accommodate the existing meander belt in combination with these additional constraints beneath a bridge, (see drawing in the Structural Options Report for Duck Wood Bridge, application document 'M25 junction 28 improvements Structures options report 39006 Duck Wood Bridge'). There is therefore no practicable alternative to realigning the brook.</p> <p>The adverse effect of this channel realignment crossing structures on river and riparian habitat is fully mitigated within the Scheme by provision of like for like mitigation elsewhere. This is principally achieved through re-introduction of meanders along an historically straightened sections of Weald Brook downstream of Duck Wood Bridge - identified as mitigation W02 in</p>	Under discussion (The EA are in agreement with the principles set out in the Highways England response, but prefer to keep the item under discussions until review of structure designs accompanying the DCO application)

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
				Table 5.1 of the WFD Compliance Assessment (application document TR010029/APP/6.7) and shown in the Preliminary Environmental Design (Figure 2.2, application document TR010029/APP/6.2).	
WFD09	Road Drainage and the Water Environment (Water Framework Directive)	Ephemeral drainage ditches	The EA commented that because of their potential local value, the impact on ephemeral ditches should be considered even though the effects of the Scheme on these features will not affect the status of the Ingrebourne River WFD water body.	As part of the scheme approximately 3,000 m unlined ephemeral drainage ditches will be created to manage 'clean' runoff from non-pavement surfaces. These ditches will generate habitat that mitigates for loss of existing ephemeral drainages ditches to the Scheme. These ditches are embedded into the Scheme as part of the drainage design (see 'unlined ditches' in Preliminary Environmental Design, Figure 2.2, application document TR010029/APP/6.2).	Under discussion (The EA are in agreement with the principles set out in the Highways England response, but prefer to keep the item under discussions until review of structure designs accompanying the DCO application)
WFD10	Road Drainage and the Water Environment (Water Framework Directive)	Mammal passage through Grove and Weald Brook culverts	The EA commented that a mammal passage through Grove and Weald Brook culverts should be considered as part of the Scheme.	Measures to facilitate a mammal passage through Grove culvert extension and Weald Brook culvert extension during higher than normal flows will be implemented as part of the Scheme. The form of such measures will be determined at detailed design, but often comprises a shelf along which mammals can move, together with ramps for mammal access and egress. The requirement for these measures is secured through the REAC for the Scheme (application document TR010029/APP/7.3).	Agreed

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
WFD11	Road Drainage and the Water Environment (Water Framework Directive)	Cumulative Assessment	The EA requested further detail on the Cumulative Assessment for the Scheme.	An assessment of cumulative effects is presented in Chapter 15 of the ES, application document TR010029/APP/6.1.	Agreed
WFD12	Road Drainage and the Water Environment (Water Framework Directive)	Maintenance of riparian trees on Weald Brook	The EA requested further information on how long term maintenance of riparian trees on Weald Brook would be undertaken – in particular on matters of responsibility, frequency of activity and duration of contract.	This information is set out in the Outline Landscape and Environment Management Plan (LEMP, application document TR010029/APP/6.3, Appendix 7.15). Responsibilities and duration of works are set out in section 2. Further information on frequency of and method of activities is set out for various habitat types including river corridors in section 5. In summary responsibility for maintenance is expected to lie with Connect Plus Services, the management period is 25 years and the riparian zone will be maintained in a way that generates a diverse vegetation structure (e.g. by rotational coppicing). The Environment Agency provided feedback on 21/04/2020 which we will consider and update the Outline LEMP as appropriate.	Agreed

3.2 Ground conditions and waste

3.2.1 The following table summarises the current situation on matters raised by the EA in their response letter to statutory consultation dated 28th January 2019.

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
GCW01	Ground conditions and Waste	Ground Investigation	The EA would prefer as much assessment information to be provided as possible however preliminary assessments based on desk study would be adequate/the minimum the EA would expect.	HE has completed a desk study for the entire scheme and have completed a preliminary ground investigation concentrated on the recently deposited material and historical landfill. The associated Geo-environmental Assessment Report forms part of the ES (Appendix 10.1, application document TR010029/APP/6.2).	Agreed
GCW02	Ground conditions and Waste	Controlled waste deposits	Chapter 12 of the PEIR does not adequately deal with recently controlled waste deposits, removal of historic landfill waste, redeposit of suitable waste to achieve landform and does not reference Environmental Permitting Regulations	HE has prepared a waste and materials assessment in Chapter 12 of the ES. Section 'Waste Arisings Baseline' provides a preliminary waste classification for both the historic landfill and the recently deposited waste. Chapter 12 of the ES also includes regulatory framework in Table12.1.	Under discussion
GCW03	Ground conditions and Waste	Controlled Waste	The EA is concerned that the recently controlled waste deposits have not been taken into account and suggest topics to be included in further assessment.	See above.	Under discussion

3.3 Geology and soils

SoCG issue ref.	Issue	Sub-section	Environment Agency comment	Highways England response	Status
GS01	Geology and Soil	Risks from Contaminated Land and Risk to Groundwater	The EA accepts that the impermeable bedrock geology of London Clay beneath junction 28 of the M25 means that the proposed sub surface elements of the Scheme are unlikely to impact deep groundwater or perturb deep groundwater flow.	Highways England concur with the EA view that sub-surface elements of the Scheme are unlikely to impact deep groundwater or perturb deep groundwater flow.	Agreed
GS02	Geology and Soils	Area north of Grove Farm balancing pond - risk to groundwater/surface water	EA considers that investigations should include measures to determine the direction of groundwater to ascertain any connectivity between the landfill and controlled waters (groundwater and surface water). Further, that the risk of any new any new pathways being created from drainage and balancing pond should be fully assessed.	The risks to receptors identified in the ES including from drainage and proposed balancing ponds, will be fully assessed and where unacceptable risks are identified appropriate mitigation will be implemented. Mitigation measures will be outlined within generic quantitative risk assessment, piling risk assessment, remediation strategy and where required detailed quantitative risk assessments. All documents will be produced in agreement with the Environment Agency. This is secured through item GS1.1 of the REAC and set in Requirement 6 of the draft DCO.REAC.	Agreed
GS03	Geology and Soils	Piling risk	The EA noted that limited site investigations had been undertaken and additional detailed information would be required for the whole footprint of the Scheme along with a remediation strategy and Construction Environment Management Plan (CEMP). They requested a piling risk assessment for the piled foundation to mitigate against the release of potentially contaminative substances during the works.	A piling risk assessment will be completed during detailed design, as secured by item GS1.1 of the REAC.	Agreed

Appendices

Appendix A. Correspondence

A.1 Meeting 1 – 20 October 2017



Meeting notes

Project:	Junction 28 M25		
Subject:	Environment Agency meeting – Junction 28 M25		
Date and time:	30 th October 2017, 13:00-16:00	Meeting no:	1
Meeting place:	Environment Agency, Welwyn Garden City	Minutes by:	
Present:	<ul style="list-style-type: none">- EA lead –- EA Flood risk –- EA Geomorphology –- EA Geomorphology –- Highways England –- Atkins –- Atkins –- Atkins –- Atkins –- Atkins –- Atkins –		

provided brief introduction to DCO and EIA proposals for the scheme. HE has undertaken screening and determined a DCO is required due to size of the proposals and potential for significant environmental effects.

Key environmental and planning programme dates as follows:

- EIA scoping report to be submitted to Planning Inspectorate November 2017
- Preliminary Environmental Information Report to be produced by December 2017 to feed into statutory consultation process
- Statutory consultation to be undertaken 17th January to 5th March 2018
- DCO and accompanying ES to be prepared and submitted in summer 2018
- Public Inquiry envisaged end 2018/early 2019

provided an introduction to the need for the scheme, optioneering and preliminary design processes. It was explained that we are currently at Stage 3 (preliminary) design which essentially provides an outline route, with further work to be undertaken finalising horizontal/vertical alignments, structures, layout and drainage. The main environmental consideration in the design will be the crossing of the Ingrebourne and Weald Brooks and associated floodplain.

identified three main considerations of the design in relation to the water environment:

- Watercourse crossings
- Effects on river geomorphology, for example the need for realignment of meanders
- Effects on floodplain

The following recommendations were made by EA representatives in relation to the emerging design:

1. FLOOD MODELLING: advised that the flood modelling for the proposal area was currently being updated, but unlikely to be ready until later 2018 and therefore probably not

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Environment Agency Meeting – J28 M25

suitable for use in the J28 flood model. Detailed flood modelling should be undertaken by Atkins taking into account climate change. [REDACTED] noted that if the new EA modelling data becomes available just prior or after DCO submission, Atkins would not be expected to incorporate the new data as long as we have used the 'best available data' available at the time of our assessment. [REDACTED] noted that if the Atkins flood model differs significantly from the published maps, there would be recourse to a 'flood map challenge'. The flood model would then be referred and reviewed by the EA Modelling Forecast team, the current turnaround time is c. 2 months at present. [REDACTED] advised that it may be worth modelling specific affected sections of the watercourses using simple estimates of levels which could then be consulted on, before developing the flood model in more detail. [REDACTED] offered to provide a contact between Atkins and the Forecast team if Atkins wish to discuss any aspects of the developing model and agreed to work with [REDACTED] to identify any possibilities of working together on the flood model in this area.

2. **FLOOD LEVELS:** [REDACTED] considered that the current assumption of 600mm design flood level (subject to further detailed modelling) 'sounds about right'. If the design is above 100 year flood level + climate change, it is likely to be sufficient. [REDACTED] noted that any alteration in flood risk would need to be assessed for ecological impacts e.g. disconnecting wetland habitat from the river if flooding reduced in an area.
3. **FLOOD COMPENSATION:** Any mitigation and compensation measures must be within the same WFD waterbody and not remote from the site. [REDACTED] noted that any ground raising on the floodplain would need compensation as well. [REDACTED] noted that there is restricted space to provide floodplain compensation adjacent to the M25 and it may have to be provided upstream to the confluence. [REDACTED] noted that this would likely to be acceptable if no increase in flood risk could be demonstrated.
4. **WFD COMPLIANCE:** [REDACTED] noted that provision of clear span bridges set back from the river channel, avoiding the natural floodplain and maintaining a minimum 8m riparian zone, would mean that WFD assessment could be limited to an initial screening and may negate the need for further assessment and incorporation of mitigation measures. He recommended we review current WFD compliance guidance. Although the Ingrebourne is classified as a 'main river' and the Weald Brook is not, [REDACTED] stated that this would not influence thinking and we would be expected to demonstrate compliance for both watercourses. The essential considerations would be whether the proposals result in any 'deterioration' of the waterbody and whether a 'good status' can be maintained or achieved.
5. **BIODIVERSITY:** [REDACTED] noted that design of structures should not only consider flood risk, but also ecological factors including fish passage and movements from species such as otters and bat flight routes. We would be expected to demonstrate lateral connectivity was possible under flood conditions, for example provision of mammal ledges. An 8m riparian zone on each side of the watercourses should be maintained, if a farm access is required this would not count as part of the zone and a wider zone would be required. A narrower zone may be acceptable if appropriate mitigation measures can be demonstrated. Native planting should be used, alder woodland is characteristic and may be appropriate. Invasive species need identification and we would need to demonstrate appropriate mitigation is included to address any risk.
6. **GEOMORPHOLOGY:** [REDACTED] stated that the design should ensure structures do not throttle water flood and maintain natural conditions, including provision of natural substrate on the river bed if realignment is required. If realignment is required, this would require further assessment under WFD, and may include the need to prevent upstream incision, such as artificial river bed sediment sizing to prevent erosion. The course of the Ingrebourne

appears to follow its historic route so should be maintained where possible. Culverts are not recommended as stated in the EA Culvert Position statement and would require WFD assessment and potentially mitigation and / or compensation. A semi-clear span bridge would have less impact than a culvert and may be acceptable, but there is likely to be a greater impact and requirement for mitigation in comparison to a full clear span bridge. [REDACTED] enquired regarding the realignment of the watercourse adjacent to the M25 which is currently shown as a linear feature in the preliminary design. [REDACTED] advised that provision of meanders would be preferable including wetland habitat creation potentially including marsh, scrapes and wet woodland as a priority habitat. [REDACTED] asked whether provision of wet woodland would be acceptable as flood storage given maintenance obligations – [REDACTED] agreed to discuss this further if taken forward. [REDACTED] noted that the provision of meanders adjacent to the M25 could potentially serve as mitigation for any river straightening upstream, although [REDACTED] stated EA would expect to see both compensation for any river straightening and additional meanders as a further enhancement. [REDACTED] highlighted that there are several other environmental issues in this area to consider, including the woodland as an existing ecological habitat and the significant likelihood of contaminated ground adjacent to the M25 (currently subject to Ground Investigation) which may mean provision of meanders in this area may not be appropriate.

7. CUMULATIVE EFFECTS: [REDACTED] noted that EA would expect to see the cumulative impacts of the scheme considered and all water, flood and ecology issues addressed holistically.
8. WATER QUALITY: [REDACTED] noted that EA would expect to see appropriate water quality control measures in the design, including oil interceptors if efficacy and measures to maintain can be demonstrated. [REDACTED] stated that EA would be keen to Sustainable Urban Drainage Systems (SUDs) to be incorporated into the design to be located outside the floodplain. [REDACTED] stated that there was plenty of scope to include these in the area involved and would include drainage ponds preferably located at the lower elevations.

A.2 Meeting 1a – 20 November 2017

Meeting notes

Project:	Junctions 28 and 25, M25		
Subject:	Environment Agency meeting – Junctions 28 [REDACTED] M25 – Ground Conditions and Waste		
Date and time:	20 th November 2017, 13:00-16:00	Meeting no:	1a
Meeting place:	Environment Agency, Welwyn Garden City	Minutes by:	[REDACTED]
Present:	<ul style="list-style-type: none">- EA lead – [REDACTED]- EA Contaminated Land – [REDACTED]- EA Waste and Permitting – [REDACTED]- Highways England Project Manager – [REDACTED]- Highways England Environment – [REDACTED]- Atkins J28 Project Manager – [REDACTED]- Atkins J25 Project Manager – [REDACTED]- Atkins Environment Lead – [REDACTED]- Atkins Ground Conditions – [REDACTED]- Atkins Waste – [REDACTED]		

Junction 28

[REDACTED] provided an introduction to the need for the M25 Junction 28 scheme, optioneering and the preliminary design. The scheme will be subject to a Development Consent Order (DCO).

[REDACTED] highlighted the presence of a historic landfill area within the proposed clover leaf loop. Parts of this landfill area are likely to be directly affected by the scheme. Ground investigations are scheduled to commence in January 2018 to test for contamination and identify the requirement for any specific mitigation measures. Test pits will be undertaken throughout the landfill area to visually inspect the material. There will be four monitoring locations including gas monitoring for the highways locations. The GI will commence in the offline areas of the site and then move into the road space, taking approximately 3-4 months.

Due to the DCO delivery programme, the results and analysis of the GI will not be included in the DCO application with results due to April/May 2018. Results and analysis will therefore be addressed post-DCO submission.

The current soils in the area are clayey with a high potential for redeposited material. There is a possibility that the landfill area was an earlier clay pit and therefore has the potential for collection of contamination.

Surface water sampling will also be undertaken to ascertain current water quality.

A materials balance and Bill of Quantities is to be developed.

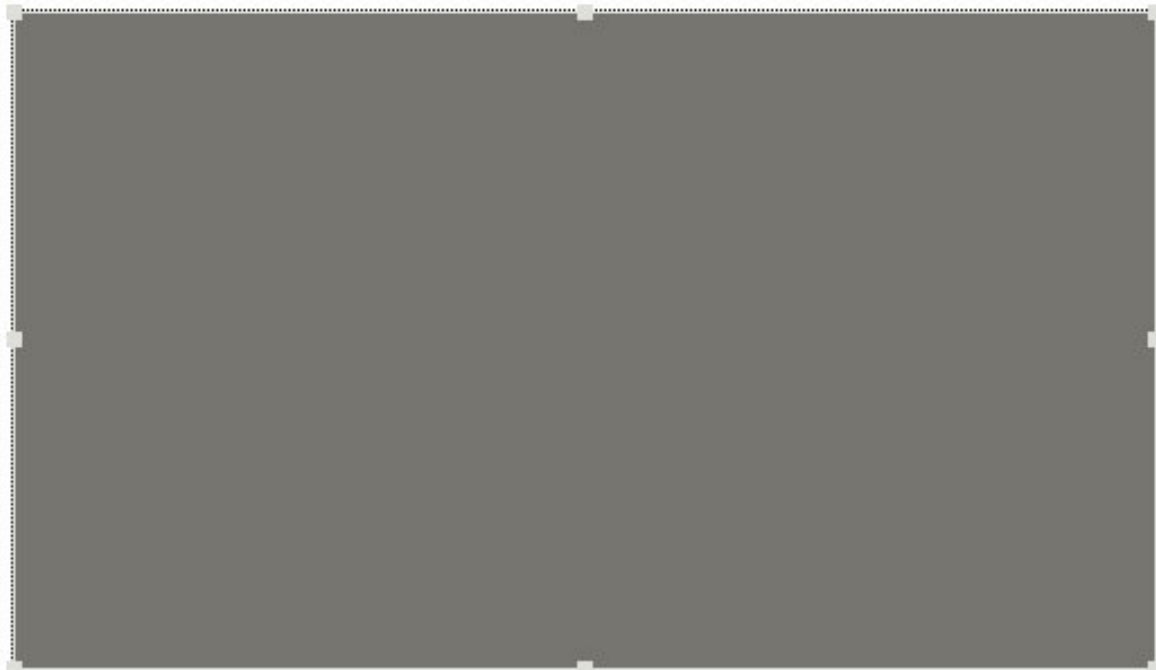
The following recommendations were made by EA representatives in relation to the emerging design:

NOTE TO RECIPIENTS:

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Environment Agency Meeting – J28 M25

1. **LANDFILL AND GROUND INVESTIGATION** - [REDACTED] confirmed that the EA had no data on this site other than information that it is related to 'M25 construction'. However, the fact the area is covered in healthy grass perhaps indicates that the area is not badly contaminated. It was recommended that trenching is undertaken to help delineate the area and ascertain the natural geology; this is not proposed currently. It was also recommended that the test pits could be upgraded to boreholes to achieve more detailed information. If nothing significant is found during investigations, EA does not need to be consulted further and this information only needs to be included in the EIA. If anything is found, then further consultation with the EA is recommended to review the data and agree appropriate next steps.
2. **MATERIALS AND WASTE** – If controlled waste is present that this would need to be treated and redeposited appropriately under an environmental permit, although is reused on site will be less of an issue. The timescales are normally 1-2 months for registration for a permit, and a further 13 weeks for review and issue. [REDACTED] agreed to send through a link to permitting guidance to Atkins. The planning application should not rely on being able to reuse the excavated material onsite, and the worst case should be planned for and assessed (i.e. 100% offsite disposal).
3. **GROUNDWATER** – Investigations should include measures to determine the direction of groundwater movement to ascertain any connectivity. If any new pathways are likely to be created, these should be sealed off and drainage considered.
4. **SURFACE WATER** – It is recommended that SuDS are built into the design. Soakaways would not be generally recommended, the geology does not lend itself to this solution in any case and attenuation to surface water is likely to be the end solution.



Meeting Notes

Next meeting:	5 December 2018	
Distribution:		
Date issued:	05 December 2018	File Ref:

NOTE TO RECIPIENTS:
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in writing within five days of receipt.

ITEM	DESCRIPTION AND ACTION
6.	<p><u>Junction 28 Project Update</u></p> <ul style="list-style-type: none"> • Junction 28 was put on hold and has recently started back up • Statutory consultation is to be held from 3rd December 2018 to 28th January 2019 • The project is in Stage 3 – preliminary design stage • Start of works are scheduled for June 2021 and will be open to traffic in 2025 • The Scheme hasn't changed significantly since the last update meeting. Minor changes include: <ul style="list-style-type: none"> • The reconfiguration of the A12 where the loop road ties in with the A12 will not be required anymore • Open span bridges will be used over river crossings as discussed at the previous meeting • The GI for Junction 28 is scheduled to start in December 2018. ■ highlighted that there was a comment in the scoping opinion that stated that results from the GI must be included in the ES and for the need to discuss this with the EA groundwater specialist. ■ suggested the EA could be issued an interim report of the GI information and risk assessments in advance of the DCO application. ■ advised that this needs to be discussed with the EA groundwater specialist and ■ should send an email prior to the meeting with all the information and queries for both Junction 28 and 25 <i>Post Meeting Note:</i> As confirmed in the email on 15th November, the EA would prefer as much assessment information to be provided as possible however preliminary assessments based on desk study would be adequate/the minimum the EA would expect. • ■ indicated that due to a number of lines of evidence (such as the date of the landfill and its location, the landfill being designated as Inert) the landfill at the site is thought to be a borrow pit for the construction of the M25. Atkins has requested information from the local council regarding this landfill. ■ queried if we can provide enough lines of evidence to indicate that this landfill is a borrow pit for the construction of the M25, this will reduce the risk to both human health and the environment during construction. In this case does the requirement to include GI data in the DCO submission for the landfill change. The EA indicated that this will likely change things but that further discussion is required with the relevant specialists.

7. Junction 28 Water

Flood Risk:

- [redacted] queried about flood models and whether the existing BIM model should be used as a basis for the assessment. [redacted] confirmed use the BIM model
- [redacted] also highlighted that the topo model is still being confirmed. Some information has been gathered on the river plan and further sensitivities are being undertaken to check the current data is sufficient. [redacted] informed that a hydro model is being built with existing topo survey on both rivers
- [redacted] queried whether the EA had any river survey data. [redacted] confirmed no data
- [redacted] queried the design standards of climate change and the freeboard. [redacted] confirmed that it should be designed to a 100 year climate change event, with the climate change allowance taken as a 35% addition to peak flow and a further sensitivity test should be reported with a climate change allowance of 70% addition to peak flow. [redacted] also confirmed that the Scheme should include a freeboard on top of design flow to allow for unforeseen events such as blockages. The freeboard should be taken as 800 mm and any reductions on this allowance will be considered if clear reasoning as to why no other viable option for the Scheme exists
- [redacted] advised that where the section of the River Ingrebourne that is being lost to the construction of the embankment (along A12), suitable sites for floodplain compensation are being considered and it is looking like floodplain storage from the Ingrebourne can be stored on the Weald Brook. Although not on same watercourse, it is in the same flood cell – backwater area of the confluence of the two watercourses. Opportunities to use the flood storage areas as biodiversity enhancement areas as well is being considered and explored
- [redacted] queried if floodplains can be shared from one river to another and are their similar flows on both rivers. [redacted] confirmed that flood storage can be shared on rivers and both rivers have similar flows

WFD – loop road crossing over Weald Brook:

- [redacted] advised that following on from the last EA meeting towards the end of 2017 the culverts have been changed to open span bridges. Currently the bridges are spanning the full width of the floodplain for a 100 year event. [redacted] advised that a large meander is located directly under the open span bridge crossing (at the north end of the loop) and for a bridge this width it would be more cost effective to construct with pillars in the floodplain. [redacted] and [redacted] queried whether the bridge span could be narrower and there are any opportunities to relocate this meander upstream or downstream. [redacted] stated that the preference is to not alter the exiting planform however, the EA would consider alterations to the planform provided:
 - Mitigation is provided that replicates the natural function of existing channel (e.g. possibly recreating similar planform or habitat upstream or downstream of current location)
 - Clear reasoning as to why no other viable option for the Scheme exists (cost and technicality argument of various options)





WFD – Ingreborne realignment:

- The realignment of the Ingrebourne was discussed and [redacted] advised that at the last meeting (2017) enhancement opportunities were discussed and the EA would expect environmental improvements from a scheme of this size in addition to any mitigation/compensation measures required for any losses/impacts on the watercourses
- [redacted] and [redacted] explained there are constraints around the alignment which include:
 - Cost of the land to accommodate a more sinuous channel
 - Realignment into an existing woodland
 - Construction process in this area complex

ITEM	DESCRIPTION AND ACTION
	<ul style="list-style-type: none"> The complexity around the realignment was discussed and the EA advised their preference is to realign the river to a more natural form however, they understand the constraints and complexity and would consider a less natural form provided mitigation could be proved elsewhere in the Scheme and there is clear reasoning why no other options for the Scheme exists. <p><i>Post Meeting Note:</i> [REDACTED] has clarified that a potential option that could be investigated to alleviate the constraints on this part of the scheme (where proposed realignment of Ingrebourne is proposed) and to achieve more sinuosity/meanders which includes detouring of the minor watercourses at the head of the catchment well. This included, topography permitting, looking to see if one watercourse could be diverted into another to bypass the work area because some sections are going to be heavily modified. This could also work well for drainage and creating a completely natural channel.</p> <p>Wet woodland and flood storage opportunity – Alder Wood:</p> <ul style="list-style-type: none"> [REDACTED] queried about Alder Wood and what designation it has and whether it has potential to be a wet woodland which could provide flood compensation and habitat enhancements to the woodland which is supported by the EA. [REDACTED] made reference to the EA's Natural Flood Management 25 year plan which is pushing for natural flood management and value this brings to the environment. [REDACTED] advised that landowners can receive grants to manage new habitats on their properties [REDACTED] queried whether planting takes up flood storage and it was advised that woodland can store up to 80% of flood volumes [REDACTED] advised that the case of multiple benefits for floodplain storage can be demonstrated through ES assessment and recommends it is considered [REDACTED] advised that a requirement of the DMRB is that when a driver enters a loop road, they have to be able to see the full extent of the loop and that this needs to be considered in terms of planting inside the loop. It was advised that tree heights can be graded at edge of highway by selection of species to accommodate sight lines <p><i>Post meeting note:</i> Alder Wood is within the Ingrebourne Valley Site of Metropolitan Important (local wildlife site). It is a broadleaved plantation divided down the centre by a wayleave for an overhead electric line and dominated by semi-mature ash, and the main shrub species was hawthorn. There are clear browse lines by deer and no obvious regeneration.</p> <p>River Basin Management Plan (RBMP):</p> <ul style="list-style-type: none"> [REDACTED] highlighted there are RBMP action points nearby the Scheme for example, there is a weir downstream on the Ingrebourne River that is earmarked for removal adjacent to 72 Ingreway and near Spittal Lane [REDACTED] will send GIS layer action points close to the Scheme area
8.	<p><u>Junction 28 Ongoing Liaison</u></p> <ul style="list-style-type: none"> The EA would welcome being involved in further consultation on proposed alterations to river floodplain required for the Scheme and any associated mitigation measures for options regarding the Ingrebourne realignment, Weald Brook Crossing and channel realignment and multiple use of flood compensation areas (different types of wet woodland).

A.4 Skype Meeting 3 – 5 December 2018

Meeting Notes

Project:  J28 RIP	
Subject: EA meeting - groundwater matters	
Meeting place: Skype call	Meeting no: 3
Date and time: 05 December 2018	Minutes by: 
Present: 	Representing: Atkins Atkins Atkins Environment Agency Environment Agency Highways England
Apologies: 	Highways England Atkins Atkins Atkins Atkins Atkins



Next meeting: TBC	
Distribution: All	
Date issued: 05 December 2018	File Ref:

NOTE TO RECIPIENTS:

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meeting no. 3 - 5 dec 2018.docx


1

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.			
2.	<p>J28 overview</p> <p>The proposed J28 development includes the development of a new off slip 'clover leaf' from the M25 west bound linking to Junction 28. The development is mainly located to the south west of J28 and traverses the Grove Farm Landfill crosses two streams and Maylands Golf course.</p>		
3.	<p>Based on the current desk study Atkins considers that the risk to controlled waters from the construction is low/moderate.</p> <p> confirmed that he agreed that he does not consider that the development poses a risk to groundwater.</p>		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
4.	<p>█████ indicated that HE was in the process of procuring a GI contractor to undertake a ground investigation at J28 and that we expect this to be completed in 2019. █████ also queried whether a desktop study would be sufficient for the submission of the DCO or for examination in the event of delays in getting data from GI works.</p> <p>█████ did not raise any concerns on this and a desk study would be acceptable.</p> <p>█████ also indicated that as the proposed development is considered to pose a low to moderate risk relative to contaminated land than we are still meeting requirements stated in the scoping opinion (which states that current data is required where a high risk is identified).</p>		

A.5 Meeting 4 – 16 April 2019

Project:	M25 J28 Road Improvement Scheme		
Subject:	Design development and environmental mitigation		
Date and time:	16 Apr 2019	Meeting no:	4
Meeting place:	EA offices	Minutes by:	
Present:	Representing:		
	Planning Sustainable Places		Environment Agency
	Biodiversity		Environment Agency
	Geomorphology		Environment Agency
	Flood Risk		Environment Agency
	APM		Highways England
	Design Lead		Atkins
	Environmental Coordinator		Atkins
	Flood Risk		Atkins
	Geomorphology		Atkins

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
1	Design outline		
	<ul style="list-style-type: none">  provided an overview of the new version of design as part of the Design Fix 3 (DF3) and the changes made from Design Fix 2 (DF2) in response to comments received during Statutory Consultation process, including those from the Environment Agency (EA). Key changes are concentrated around southern part of the scheme. These include: <ul style="list-style-type: none"> Moving the A12 slip road northbound Modifying the location of DF2 bridges Realigning Ingrebourne river Extending the existing Ingrebourne culvert Shifting Weald Brook and Ingrebourne crossings Scheme design has been about finding a satisfactory compromise between multiple constraints <ul style="list-style-type: none"> Highways Geometric requirements, in accordance to the Design Manual for Roads and Bridges (DMRB) Utilities, in particular to achieve the minimum vertical safety clearances to the overhead high voltage power cables, and the horizontal safety clearance from the BPA pipe Land take (and its effects on affected land owners, in particular at Grove Farm and on Maylands Golf Club. 		

- Environment, in particular to reduce the impact on water environment and floodplain, as previously requested by the EA. The revised design improves DF2 with regards to:
 - Available freeboard from the 1 in 100 years flood level to the soffit of structures. The design is still in progress but significant improvements have already been achieved compared to DF2. As design progresses it will aim to meet EA parameters as closely as possible. Further consultation will be held with more details once a first design iteration will be completed.
 - Realign Ingrebourne river to restore a more natural function. This has been achieved by the introduction of 9m high retaining structures over approximately 150m of road.
 - Provide a better connection between the river and floodplains of Ingrebourne River and Weald Brook
 - Compensation and enhancement of water channel loss on Weald Brook due to straightening under the loop crossing
 - Maintain at least 8m between the river banks and bridges abutments.
- EA are keen to see schemes delivering biodiversity net gain, and as custodians of the WFD need to ensure that the principles of that legislation are applied to the scheme. They will look to discharge these aims / duties in the context of the constraints placed on (and opportunities available to) the scheme design
 - Accept that trade-offs will be required between conflicting constraints
 - As a minimum mitigation should be "like for like", or as close as possible. The example quoted was that culvert extension should be compensated by culvert removal, if that is possible within scheme – but where not, creation of additional channel length would be acceptable

Post meeting note [REDACTED]: To clarify our comment was if an equal length of culvert cannot be opened up on site to compensation for the extension of existing culvert, then compensation off-site should be sought. This could include deculverting or in-channel restoration/enhancements such as

removal of hard banks/structures, softening of bed/banks or re-meandering where watercourses have been shortened/straightened in the past.

- Note that backwaters are viewed as enhancement by the EA, but not direct replacement for loss of channel. So, a channel with backwater offered as mitigation is considered better than a channel without backwater, but a backwater is not a replacement for loss of channel.
- EA objectives for protection of river environment is to sustain or improve
 - natural functioning of river and floodplain system
 - connectivity along river and its corridor
 - "naturalness" of river and floodplain

2 River Environment (WFD)

presented figure 1 attached to these minutes.

EA feedback on DF2 WFD assessment

- Be clearer about mitigation/compensation proposed with culverts and bridges – EA would expect more mitigation/compensation for culverts, given that they tend to have more pronounced effect on water environment – they represent a permanent loss of watercourse.
- Update raw WFD data sets used in assessment (2016 data has now been updated with 2017 data sets)
- EA will not provide comment on details of the assessment, given that it is for a previous iteration of the design. However, Atkins asked for comment on
 - Overall structure and approach of document
 - Proposals for WFD elements and scheme components screened in and out of assessment (common ground statement needed by PINS)

4 Flood risk

- advised the following on climate change uncertainty allowances
 - 100yr plus 35% allowance is appropriate for determining freeboard on structures (e.g. bridges)
- Post meeting note: Sacha Barnes clarifies: The 1 in 100 + 35% does not include a freeboard. This is the design flood event, and an additional freeboard would

then be required on top of this (e.g. we usually ask for 600mm on top of this for bridge soffit levels).

- EA would expect FCA area to be designed to accommodate 100 yr plus 35% allowance as a minimum but would like to see a design that allowed for greater uncertainty (i.e. towards or equal to 100 yr plus 70%).

-
- ACTION 1 – J28 team to investigate feasibility of restoring a section of a 500m section of straight channel subject to a WFD action immediately upstream of the M25J28 culvert (north east of the junction).
 - ACTION 2 – J28 team to investigate whether the Weald Brook meanders north of the northern loop road bridge can be retained.
 - ACTION 3 – [REDACTED] to provide EA with table of losses due to scheme (e.g. loss of channel length) vs proposed mitigation / compensation.
 - ACTION 4 – J28 team to confirm that trash screens will not be required at the culvert under the A12 slip road. This has implications in relation to flood risk and ongoing maintenance responsibilities for EA.
 - ACTION 5 – J28 team to consider interface between the edge of the proposed A12 slip road culvert and the start of the channel to ensure continuity along the channel (i.e. a stepped design not favoured)
 - ACTION 6 – J28 team to investigate potential to provide one larger culvert rather than a dual bore culvert at the A12 slip road. A single larger culvert is preferred by EA.
 - ACTION 7 – J28 team to organise an accompanied site visit for EA officers to view the existing conditions at the site. [REDACTED] and [REDACTED] to provide [REDACTED] with suggested dates.
 - ACTION 8 - EA to investigate status of Grove Farm waste management issues and advise J28 project team.
 - ACTION 9 – EA to provide outline comments on the draft WFD assessment to [REDACTED].
-

6 AOB

Atkins suggested to start preparing a statement of common ground, acknowledging that the design is only satisfactory pending further mitigation/compensation for the extension of culvert.

Table 1 – discussion points on effects of and proposed mitigation for scheme

Scheme component (see fig. 1)	Name	Discussion points
ING1	J28 Culvert extension	<ul style="list-style-type: none"> ○ Two options considered – a) part open channel / part culvert and b) full culvert ○ Part open channel / part culvert option severely constrained by lack of space: <ul style="list-style-type: none"> ▪ A central 40m of open channel would be in 'gorge' c 5m deep with engineered 1:1 slope banks. It may not be feasible to construct this whilst also retaining Grove Farm houses to north. Construction would be a severe challenge logistically (e.g. creating foundations in alluvial superficial geology) ▪ Channel habitat would be low value e.g. shaded and straight (though still better than culvert) ▪ still require 40m of culvert (20m at us and 20m at downstream) ▪ there would need to be bends in culvert, compromising conveyance ○ 80m (straight) culvert <ul style="list-style-type: none"> ▪ Extension on existing 100m + culvert length. i.e. a substantial barrier to connectivity already exists. The principle effect of culvert extension will be a loss of channel length with marginal worsening of barrier to connectivity ▪ Mitigation proposed (see table 2) in the form of substantial improvement to channel habitat and morphological diversity and floodplain connectivity downstream ○ Initial thoughts from EA <ul style="list-style-type: none"> ▪ Would expect "like for like" mitigation, so ideally de-culverting of similar channel length somewhere else within the scheme boundary or at least provision of an equal length of in-channel improvement/restoration to watercourse elsewhere. ▪ Can the culvert be extended with a single bore, as opposed to extending the two existing bores separately? (ACTION ■■■ to investigate) ▪ Are improvements to mammal passage and fish easement needed? If so could they be incorporated into the scheme? ▪ Will best practice require a trash screen on the downstream face of the new culvert (ACTION ■■■ to investigate). EA interest in the screen revolves around the maintenance access requirements – the infrastructure

Scheme component (see fig. 1)	Name	Discussion points
		<p>required for maintenance (e.g. roads and access ramps immediately adjacent to screen) may compromise potential for habitat improvements.</p> <ul style="list-style-type: none"> ▪ Need to ensure a barrier to biological continuity doesn't form at the transition between hard and soft bed at downstream end of culvert i.e. a step in the channel at the end of culvert (rock rolls suggested [alternative might be a more natural bed feature to retain bed level]) (ACTION ■■■ to reference in design). ▪ EA have recently become aware of a target improvement on the Ingrebourne water body in the RBMP – to restore the 500m of straight channel immediately upstream of the M25J28 culvert to a more natural form and process. (ACTION – ■■■ to investigate whether this improvement could be implemented as part of the scheme, either directly within the DCO process or some other route that can be protected within the DCO)
ING2	Moving of A12 slip	<ul style="list-style-type: none"> ○ EA interested in height of retaining wall (shading effect), and connection for wildlife into the corral created by the slip road. Atkins need to limit shade and ensure connectivity within design.
ING3	Loop Rd Xing of Ingrebourne and FP	<ul style="list-style-type: none"> ○ Design of both structures severely controlled by constraints beyond water environment (principally utilities). Atkins are homing in on a design that should meet flood risk requirements (see below) and minimise effect on river. So, flood freeboard and 8m between bank edge and bridge abutment should be provided. However, bridges will inevitably shade watercourse and riparian zone. Also, very likely that abutments will encroach into floodplain. ○ EA happy with FCA mitigation for floodplain loss and will comment on compensation measures proposed for shading (tree works and wetland habitat creation on Weald Brook).
WB1	Southern loop Rd Xing of Weald Brk and FP	
WB2	Section of loop road adjacent to Weald Brk	<ul style="list-style-type: none"> ○ Loop road alignment (forced by safety, environment and golf course constraints) now falls over a length of the Weald Brook. EA generally happy with proposed mitigation – restoration of a similar length of existing straightened channel to more natural form.
WB3	A12 slip road overbridge	<ul style="list-style-type: none"> ○ Relatively high and wide structure that should span full floodplain. At present not seen as significant effect on water environment.
WB4	Northern loop Xing of Weald	<ul style="list-style-type: none"> ○ Shift in bridge location (from DF2 location) forced by safety, environment (protection of woodland with potential veteran trees) and golf course constraints means that existing planform cannot be protected in scheme design.

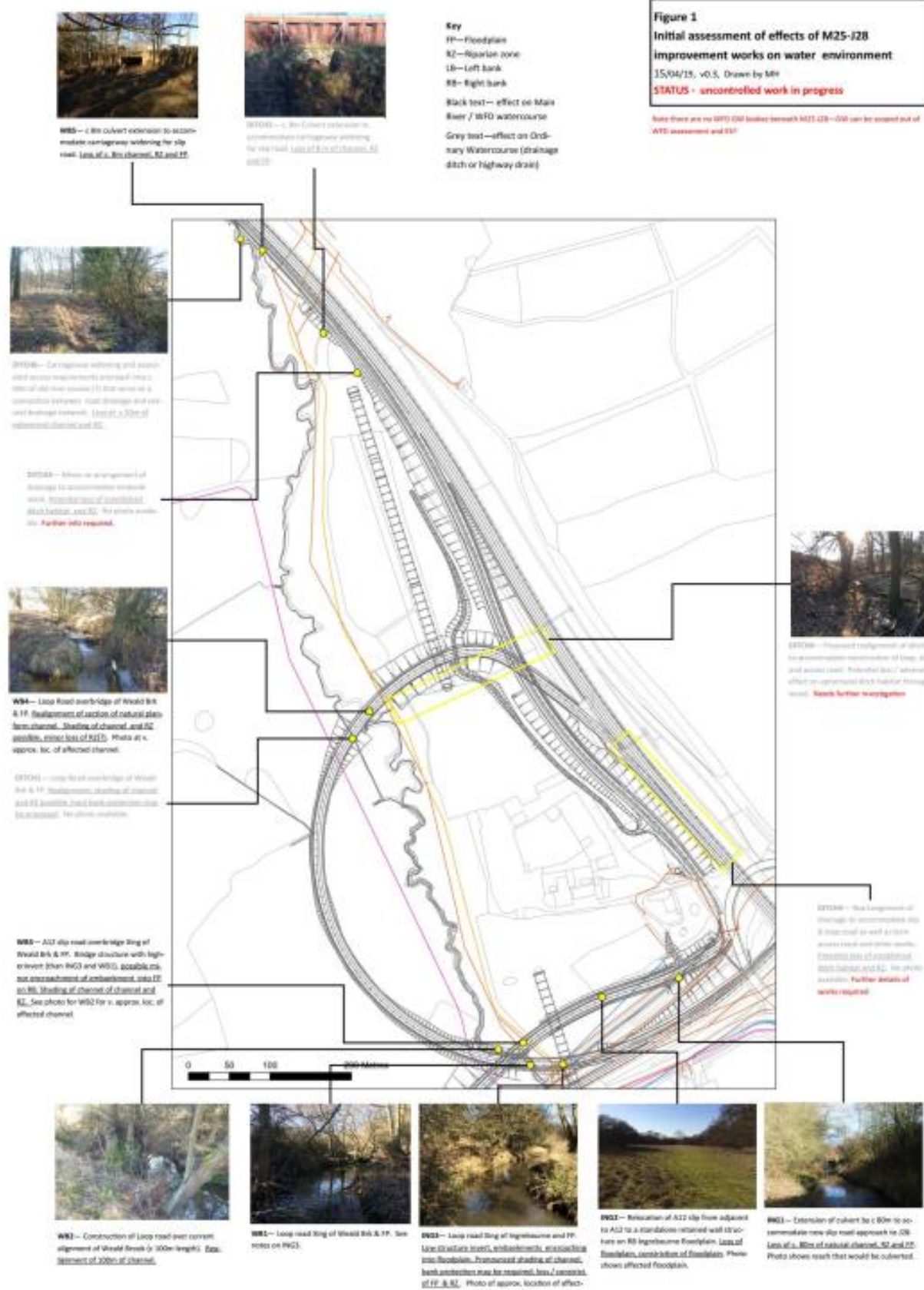
Scheme component (see fig. 1)	Name	Discussion points
	Brook and FP	<ul style="list-style-type: none"> EA asked if Atkins can investigate retaining the upstream two meanders in the proposed realignment (Action [REDACTED] – look into this design change) EA generally happy with proposed mitigation – restoration of a similar length of existing straightened channel to more natural form
WB5	Culvert extension on M25 Weald Brook Xing	<ul style="list-style-type: none"> Discussed briefly. Principles set out in "Initial thoughts from EA" for ING1 apply (though obviously at a much smaller scale, given the 8m extension here). (Action [REDACTED] – update mitigation, given that existing proposals are not adequate – can probably be included into proposed restoration elsewhere on Weald Brook)
Ditches		Not discussed at meeting (of lesser significance than effects on main river)

Table 2 – proposed mitigation and compensation

Measure Code	Description of measure		ENG1	ENG2	ENG3	WB1	WB2	WB3	WB4	WB5	Ditch 1	Ditch 2	Ditch 3	Ditch 4	Ditch 5	Ditch 6		
			200 QJ vent extension	Moving of A12 slip looped ring or Ingrebourne and PP	Southern loop ring of Woodfolk and PP	Section of loop road adjacent to Woodfolk	A12 slip road	Overbridge	Northern loop ring of Woodfolk and PP	QJ vent extension on Woodfolk and PP	NIS Woodfolk ring	Ditch under northern loop ring of Woodfolk	Ditch under NIS	Unknown ditch	Ditch being realigned to accommodate loop	Ditch work adjacent to Grove Farm	lockwater and drainage ditch	Notes
	Approx Length (m)																	
MIT1	Either a natural bed is installed in channel or in vent of culvert set sufficiently low to allow geomorphological processes to form a natural bed.		Y						Y		Y							
MIT2	Minimising scheme footprint by supporting new A12 slip on retaining wall.			Y														
MIT3	Minimising use of bank protection.				Y	Y												There is a presumption against use of hard and bed and bank protection except where it can be demonstrated that there is no other option to protect a critical asset
MIT4a,b,c	Within the restrictions defined by other constraints (most notably services, road safety and cost) structures have been set as high and wide as feasible.							Y	Y									
COMP1	Realignment of Ingrebourne, creation of backwaters, reconnection of floodplain.		Y	Y	Y	Y												Base width of channel is taken as 1m. Bankfull width taken as 9m. Channel is typically 1.5m deep
COMP2a,b,c	Ground lowering to increase floodplain storage.			Y	Y	Y												
COMP3	Riparian zone tree works to create varied light intensity, either by selected tree removal / copicing or tree planting, depending on conditions.				Y	Y		Y	Y	Y								Strategic tree felling / planting to vary intensity of light reaching river and riparian zone. Different light intensities encourage different habitats.
COMP4a-e	Floodplain wetting by retaining natural surface water drainage on floodplain, or lowering floodplain.				Y	Y			Y									Wetter floodplain created by a) reducing the rate (or preventing) water draining to the river or b) scrapes to lower floodplain. Limited earth movement anticipated.
COMP5	Channel realigned with natural cross section. Additional realignment / restoration of planform of modified channel further upstream.						Y		Y									
COMP6	Realignment of c. 40m of drainage ditch into naturalised channel with scrapes.										Y							
COMP7	Restoration of planform of modified channel further downstream. Backwaters at Crossing.								Y									
COMP8	Floodplain scrape to create wetland area.												Y					
COMP9	New backwater created, returning to river 20 m downstream.															Y		
COMP10	Floodplain scrape to create wetland area.									Y								
COMP11	Floodplain scrape to create wetland area.										Y							
COMP?												Y		?	?			




Figure 1
Initial assessment of effects of M25-J28
improvement works on water environment
15/04/19, v0.3, Drawn by MHE
STATUS - uncontrolled work in progress

Note: there are no M25 J28 loading between M25 J28 - J29 can be stopped out of
J28 assessment and J29



A.6 Site Meeting 4a – 21 May 2019

Meeting Notes


Project:	M25 J28 Project		
Subject:	EA site visit		
Meeting place:	Grove Farm and French's Farm	Meeting no:	4a
Date and time:	21 May 2019	Minutes by:	
Present:	 Apologies: 		
	Representing: Environment Agency Environment Agency Environment Agency Atkins Atkins Highways England Highways England Environment Agency Atkins Atkins		

1.1. Purpose of site visit

- To familiarise EA staff with the site and the opportunities / constraints this presents to the design of the Scheme
- To bring EA staff up to speed with current status of design, particularly those aspects to which the water environment is sensitive. Main focus for EA were the issues most likely to affect WFD compliance – so culvert extension passing Ingrebourne beneath M25 J28 and bridge complex upstream of existing A12 culvert.
- Initial looks at potential for compensating the effect of Scheme on water environment by works on Ingrebourne upstream of M25 J28

1.2. Review of proposed works west of M25 J28 (the main part of the scheme)

Extension to culvert passing Ingrebourne beneath M25 J28

- An approximate 80 m extension to an existing culvert of length of circa 160 m will result in loss of habitat (see notes on determining appropriate mitigation for effects of scheme on water environment below). It may also accentuate the disconnection between upstream and downstream habitats that already exist. Outcome of discussion on mitigation for disconnection as follows
- Securing formation and continuance of a natural bed through culvert. This can be achieved through setting culvert invert below natural bed level (a depressed invert). But  also raised

concern (from experience on Brent) about infrequent "wash-out" of natural bed from culvert, particularly when the culvert invert sits close to, or higher than, the natural bed (a poorly designed culvert, or an incising channel). Measures in addition to a depressed invert may be needed to retain bed and prevent "wash out" of bed in/from culvert.

- **ACTION** [REDACTED] Capture for implementation in detailed design through Register of Environmental Actions and Commitments)
- Protecting against excessive scour at downstream end of culvert. Excess scour at exit from culvert is a common issue. This can generate a step in bed elevation, which in turn creates a barrier to movement of fish and other fauna through the culvert, particularly during lower parts of the flow regime. Consideration will need to be given to managing this issue as part of detailed design. Ideas included preventing scour using rock rolls / bags, or raising water levels by creating riffle using gravel with calibre above competence of the river downstream of the culvert exit.
 - **ACTION** [REDACTED] Capture for implementation in detailed design through Register of Environmental Actions and Commitments.
- Inclusion of a mammal ledge/run both in existing and extended culvert to allow safe passage and continuity.
 - **ACTION** [REDACTED] Capture for implementation in detailed design through Register of Environmental Actions and Commitments.

Flood risk and bridge soffits

- The loop road descends as it approaches the A12. It needs to pass under the proposed A12 slip whilst also leaving sufficient freeboard for flood events passing along the Ingrebourne and Weald Brook. Low overhead power cables cap the maximum height of the A12 slip, cascading a height constraint downwards through the configuration of structures. Satisfying all demands for height in this cascade has been very challenging to the design team. This challenge is also exacerbated by the existing level of the A12 at the merge point, which is currently below the 100 years plus 35% Climate Change Allowance flood level. This forces the proposed loop road towards low surface road levels in proximity to the merge point.
- EA flood risk management standards stipulate 300 mm of freeboard above the 100 year plus 35% Climate Change Allowance flood level to account for uncertainties in hydraulic modelling. The current iteration of the preliminary design for the crossing over the Weald Brook and Ingrebourne delivers this 300 mm freeboard.
- EA standards also advocate allowing a further 300 mm freeboard (i.e. total of 600 mm) to provide clearance under structures for floating flood debris and to reduce the risk of blockage during floods. The current iteration of the preliminary design for the crossing over the Weald Brook and Ingrebourne delivers this 600 mm total freeboard along the majority of the length of the structure but does not provide the clearance for around 10-20m at northern (lower) end of the bridge.
- [REDACTED] accepted this departure from standard on the basis that the additional 300 mm freeboard was included primarily to avoid damage / risk of failure to bridge structures and could be waived when limited by other constraints. She advised that the case for waiving the requirement for the additional 300 mm would be strengthened by providing evidence about the integrity of the proposed structure.
- The current iteration of the preliminary design for the crossing over the Weald Brook and Ingrebourne is for a wide span bridge over the two rivers (and the pipeline running between the rivers). This wide span is challenging because of headroom constraints and the presence of the BPA pipeline which restricts room for an intermediate pier to provide an ideal span and deck depth. Nevertheless the design is being developed to aim to include 8m space between river and bridge abutments. The final design will be confirmed at the end of the preliminary design.

Discussion on approach to determining appropriate mitigation for effects of scheme on water environment

EA perspective

- EA policy is against developments that culvert watercourse. However, EA accept that the multiple constraints (particularly impacts on Grove Farm residential property and existing utilities) placed on M25J28 Scheme create a special circumstance that necessitates the culvert extension, provided adequate measures are incorporated as part of the Scheme to fully mitigate and compensate for the adverse effects of the culvert on the water environment.
- EA preferred mitigation/compensation is de-culverting of equivalent length of watercourse elsewhere, but again they accept there is not opportunity within boundaries of M25J28 scheme to implement this mitigation.
- In absence of opportunity to de-culvert, EA pressed for a mitigation package built around
 - a) creation of an equivalent length of additional watercourse to that lost to the culvert (i.e. 80m) or
 - b) improvement to watercourse habitat generating aquatic ecological value equivalent to that lost to the Scheme.
- Other forms of enhancements such as 'backwaters' would not be considered appropriate, instead they would be regarded as contributing to biodiversity net gain.
- Standard ecological mitigation hierarchies dictate that mitigation implemented as close as possible to the source disturbed is most effective. The watercourse most affected by the Scheme is the Ingrebourne, so this river is the preferred receptor for mitigation. The river Ingrebourne is also the watercourse in which WFD action measures are directed to, because it has been straightened/modified in the past, whereas the Weald Brook is already a more natural river and on its historic planform.
- The EA advocate that large schemes should include measures that deliver net gain in biodiversity.

Next steps

- HE / Atkins are committed to delivering a scheme that includes measures to fully mitigate effect on water environment.
- Appreciative of EA's pragmatic stance on how utility constraints have determined the form of the Scheme, and the departures from EA policy standards that have been required to accommodate these constraints
- A mitigation package built solely around provision of replacement watercourse is very challenging, given the constraints of available space and sensible channel sinuosity. HE / Atkins advocated that
 - a) provision of other sustainable, possibly wet habitat types should also be considered in when assessing the sufficiency of the mitigation package and
 - b) that demonstrable improvement to the quality of replacement habitat should also be considered in the balance.

1.3. Potential for compensating the effect of Scheme on water environment on Ingrebourne upstream of M25 J28 (French's Farm)

Background

EA have made reference in previous conversations that The Thames Cycle 2 River Basin Management Plan lists a 'WFD measure' on the Ingrebourne immediately upstream of M25 J28. This measure was identified by the EA through desk study as a river restoration intervention with potential to contribute to improvement of WFD status within the Ingrebourne catchment. It comprises improvement to hydro-morphology of the Ingrebourne, either by a) use of in stream measures (deflectors specifically mentioned) or b) by re-meandering (where possible).

As part of the site meeting a visit was made to the location of this proposed WFD measure on the Ingrebourne upstream of M25 J28 and adjacent to French's Farm to make an initial assessment of the feasibility of implementing river restoration. Two restoration approaches were considered:

- a) in river measures and
- b) reconnection to an historic course.


In river measures were considered not to be effective (because natural geomorphological processes are already generating features that in river measures would emulate). Based on this initial assessment, reconnection to the historic course was considered to be worthy of further investigation. A brief technical summary of this site visit can be found in Appendix A. This includes a 'straw doll' conceptual design based on discussions between all parties during the visit.


1.4. Summary of the discussion and next steps

Atkins to consider preparing an "effect and mitigation account" for the scheme for two scenarios, as a basis for discussion:

- Mitigation limited to within the current works area (broadly the floodplains of the Ingrebourne and Weald Brook between the M25 and the Ingrebourne A12 culvert south of M25 J28)
- Mitigation that includes works on the Ingrebourne, upstream of the M25 J28

ACTION (All) – feedback on conceptual design and notes above.

ACTION  – intelligence on why the Ingrebourne was originally realigned to the straight channel

ACTION  – search database for survey information on upstream A12 culvert and downstream M25 J28 culvert.

Technical Appendix A

Potential for compensating the effect of Scheme on water environment on Ingrebourne upstream of M25 J28 (French's Farm)

Background

This appendix sets out the findings of a short field visit to initially assess the feasibility of implementing river restorations measures on the Ingrebourne upstream of M25 J28 and adjacent to French's Farm.

Two restoration approaches were considered – in river and reconnection to an historic course, as discussed in the two sections below.

In river measures

Natural geomorphological process has re-established limited sinuosity and complexity in channel cross sectional and long sectional form. For instance, along reaches with trees, incision has exposed roots and boughs of trees, creating habitat complexity. Where incision has been into mineral material, complexity has been created by deposition of side bars and runs with a substantial gravel content (see photos in Figure 1).

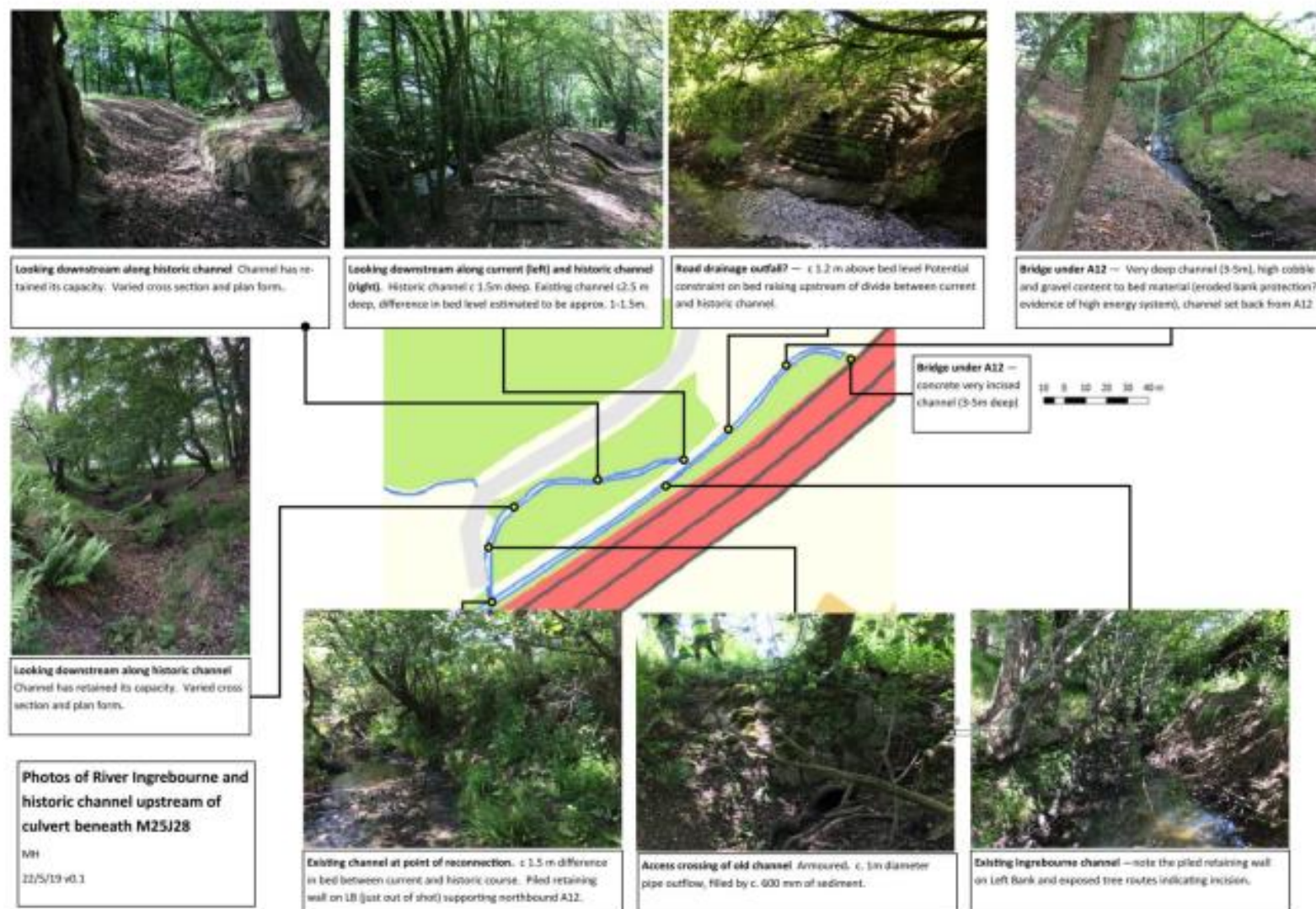


Figure 1 Ingrebourne River (French's Farm)

For this reason, the consensus during the site visit was that there was minimal ecological benefit to installing in channel restoration features along this reach of the Ingrebourne. Restoration features will achieve little more that is already developing naturally, given the substantial constraints of the deep and steep channel.

Reconnection of historic course

There exists an obvious potential opportunity to realign the Ingrebourne to an historic reach through woodland along the upper 250 m section of the WFD Action Reach, as shown by the green box in Figure 2. This reach was investigated during the site visit.



Figure 2 – Reach walked during site visit

Figure 1 (above) sets out photos of key features along current alignment of the River Ingrebourne and an historic course.

Key baseline features

- Existing course
 - **Summary** – artificially straightened and deepened channel. Consequent excess gradient and disconnect from flood plain creating active sediment system, expressed predominantly through incision and formation of regularly spaced gravel side bars together with shallow runs in sections without trees. Where tree roots have been exposed these strongly influence channel form.
 - Straightened channel running adjacent to A12. Left bank looking downstream (LB) of river runs very close to, and sometimes in continuity with, piled retaining wall

- supporting northbound carriageway of A12. Right bank looking downstream (RB) is steep and natural
- Recovering slight sinuosity through formation of predominantly gravel side bars at circa 10 m spacing. No excessive areas of bank erosion through vegetated failing bank protection observed in upper reaches.
- Evidence of recent incision (tree roots exposed by up to 0.5m, tree roots creating bed features) – possible source of sediment for bars.
- Common cross section – trapezoidal.
- Long section- flow depth varies between 2 and 40 cm, pools commonly formed behind root barriers
- **Historic course summary**
 - natural relict slightly sinuous channel with varied cross, long (?) and plan form. Channel still pronounced in landscape.
 - No active sediment processes evident, natural relict channel form still visible – variation in cross sectional shape (steep and shallow banks) and widths
 - Estimated 60 cm of soft sediment present in bottom of channel
 - Common cross section – varied: 1m base width, c 1 ½ m depth and c 4 m top width
 - Long section- bed obscured by soft sediments
 - Floodplain – woodland, estimated 30 + years old, dry at time of visit, but understorey vegetation suggests it is damp for extended periods of time

1.4.1. Restoration potential

- **Reconnection of the historic course would**
 - increase channel length by 156m -127m = 30m
 - recreate a length of approx. 156 m of (more) natural river habitat of varied plan, cross and long sectional form; in connectivity with floodplain, an under represented habitat on this reach of the Ingrebourne
 - facilitate more frequent reconnection with the floodplain, and creation of wet floodplain habitat. Frequency and duration of inundation can be further increased using in channel (e.g. wood) features
 - allow for creation of refuges for fish and other fauna as backwaters, along a reach where slow moving water during times of flood is rare
 - potential slackening of gradient to a more natural slope on reach upstream of reconnection (potentially up to 50m)
 - possibly allow for creation of SuDS features to improve treatment of runoff currently (possibly) coming direct from the A12.

1.4.2. Restoration feasibility

- Feasibility dependent upon
 - **Logistics**
 - Consultation with landowners and resulting DCO application impacts.
 - Delivery mechanism –There are contractors with skill sets specifically tailored to river restoration. Works are not logistically dependent on the main works and could be undertaken separately.
 - Additional impact on the national road network – key issue raised during consultation was increase in traffic congestion generated by construction traffic, with potential detrimental effects on the junction and on Brook Street (the site appears to be accessible only from Brentwood). Although river restoration schemes tend to be delivered using a limited number of small machines, and low volume of imported / exported material, some construction traffic is inevitable (e.g. import of gravel)

- Construction Access – construction machinery access (once in, once out) is probably feasible through French's Farm. Importing of large volumes of gravels, if needed, may require dedicated temporary route.
- **Scheme elements**
 - **Upstream reconnection**
 - Current difference in bed level levels between existing and historic channel was estimated on site in the order of 1-1.5m. To avoid a long impounded reach upstream of upstream reconnection would require a length of gradual bed raising. Flood risk implications of bed raising feature would need to be considered, particularly on the hydraulic performance of the bridge taking the Ingrebourne underneath the A12.
 - **Downstream reconnection**
 - National HP gas pipeline located immediately downstream of reconnection
 - Existing channel runs very close to piled retaining wall supporting A12 northbound carriageway at the obvious point of reconnection – reconnection design would need to reintroduce flow at an oblique angle to avoid an excess of erosive forces being directed at piled wall
 - A feature will be needed to manage existing step (1-1 ½ m) at return of historic channel to existing channel e.g.
 - Steepening of gradient along lower part of historic channel
 - Bed raising in existing channel downstream of reconnection to create a transition into the existing bed elevation
- **Utilities**
 - HP gas pipeline located immediately downstream of reconnection
- **Road Drainage**
 - Raising bed and therefore water levels in the existing channel may compromise functioning of road drainage outfalls, currently set at approximately 1.5m above bed level. An assessment will be needed to confirm compliance with DMRB, including HA107/04 requirements to discharge above the 1 in 30 years flood event.

1.4.3. Straw doll conceptual design

A conceptual design based on discussions during the field visit presented in Figure 3. This is intended as a starting point and a trigger for discussion on determining feasibility of this intervention

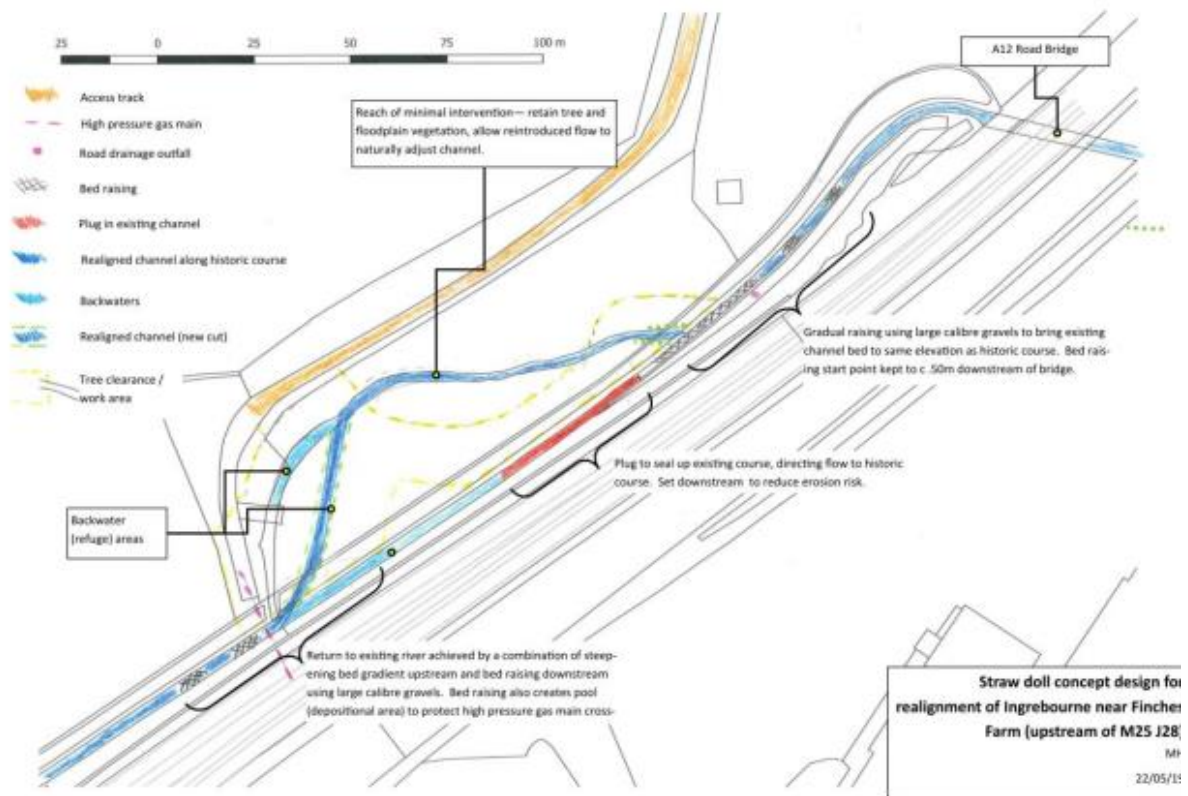





Figure 3 Action straw doll conceptual design schematic

A.7 Skype Meeting 5 – 11 June 2019

Meeting Notes

Project:	M25 J28 Project		
Subject:	EA site visit follow up call		
Meeting place:	Skype	Meeting no:	5
Date and time:	11 June 2019	Minutes by:	
Present:	 Apologies: 		
Representing:	Environment Agency Environment Agency Environment Agency Environment Agency Atkins Atkins Atkins Highways England Atkins Atkins		

1.1. Purpose of follow up call

- To follow up any queries the EA may have from the site visit and meeting notes.
- To update the EA on the progress made on following the site visit.

1.2. Review of proposed works west of M25 J28 (the main part of the scheme)

Extension to culvert passing Ingrebourne beneath M25 J28

- The EA advised that they were happy that preliminary design of scheme includes a depressed invert on culvert extension and protection against excessive scour at downstream end of culvert.
- **Added mitigation:** The EA also highlighted that the DMRB guidance requires the Scheme to consider provision of mammal passage during high flow through adjacent structures (like the existing culvert beneath J28). DMRB Vol 4 Section Part 7 looks at about fish passage and mammal runs. The EA are also happy to provide guidance on this.
- The EA recommend that for the smaller culvert extension to the north on the Weald Brook, the same principles as above should apply i.e. depressed invert and mammal shelf. Post meeting note – depressed invert in preliminary design.

ACTION:  to investigate and consult with ecology team on installation of mammal shelves on both culverts.

- [redacted] queried if mammal passages need to be installed on bridge structures. However, [redacted] advised that in open span bridges there are natural banks for mammals to run along.

1.3. Straw doll conceptual design (Figure 3 below)

- [redacted] queried what are the EA's thoughts on the mark up of the proposed concept design for the section of watercourse, north of the junction. [redacted] explained this has been based on the discussion on site, making use of the old channel. [redacted] explained that Atkins still need to undertake a feasibility study to ascertain viability of scheme. [redacted] advised that we will need to follow a formal process for consulting with landowners – and this requires us to develop a proposal before approaching them.
- [redacted] queried, if the option to restore the section of watercourse in the woodland to the east of the junction, is not feasible following the outcome of the feasibility study, what is the next step? [redacted] proposed a similar approach to that applied on the J10 scheme, in which the Environment Agency agreed a commuted sum with Highways England to cover the Agency's costs for implementing a restoration at an alternative location in the catchment.

General comments:

- EA queried when the flood modelling will be issued to them for sign off. [redacted] advised that Atkins are currently updating the model which will likely be ready to issue to EA in July.
- [redacted] mentioned they are actively looking at lowering floodplain to provide wet areas in the area between the new A12 Slip and the Loop road and Atkins have looked at the potential of the upstream section.

Other comments

- [redacted] advised the EA will follow u more detailed comments over the next week.
- [redacted] said Atkins will put more detail on the approach set out above for securing adequate mitigation / enhancement to cover the effects of the Scheme on the water environment. This will include a habitat loss/gains for the Scheme including ditch loss and ditch gained lengths to share with EA:
ACTION: [redacted] to provide habitat loss / gain assessment, and provide more detail on the approach set out above for securing adequate mitigation / enhancement.
- [redacted] advised that there is benefits to proceeding with the additional mitigation on the upstream section.
- [redacted] advised that during the site visit when we were walking the main Scheme, we identified a dry ditch running along north section of the Scheme. [redacted] advised that there is going to be a lot of unlined ditches provided for the Scheme so the Scheme will be creating far more ditch then it takes out. [redacted] advised that these ditches provide both terrestrial and aquatic habitat – and part of this habitat is the interaction of ditches and trees. He queried how these new ditches would replicate the current ditches. [redacted] advised that the drainage design isn't so detailed at the stage but we can include commitments to looking into the ditch design in the REAC.
- [redacted] advised that in a recent widening Scheme (A12 widening), made ground leached contaminants to watercourses. This may be a risk on the J28 [redacted] advised that the Contaminated Land Team was aware of this risk.

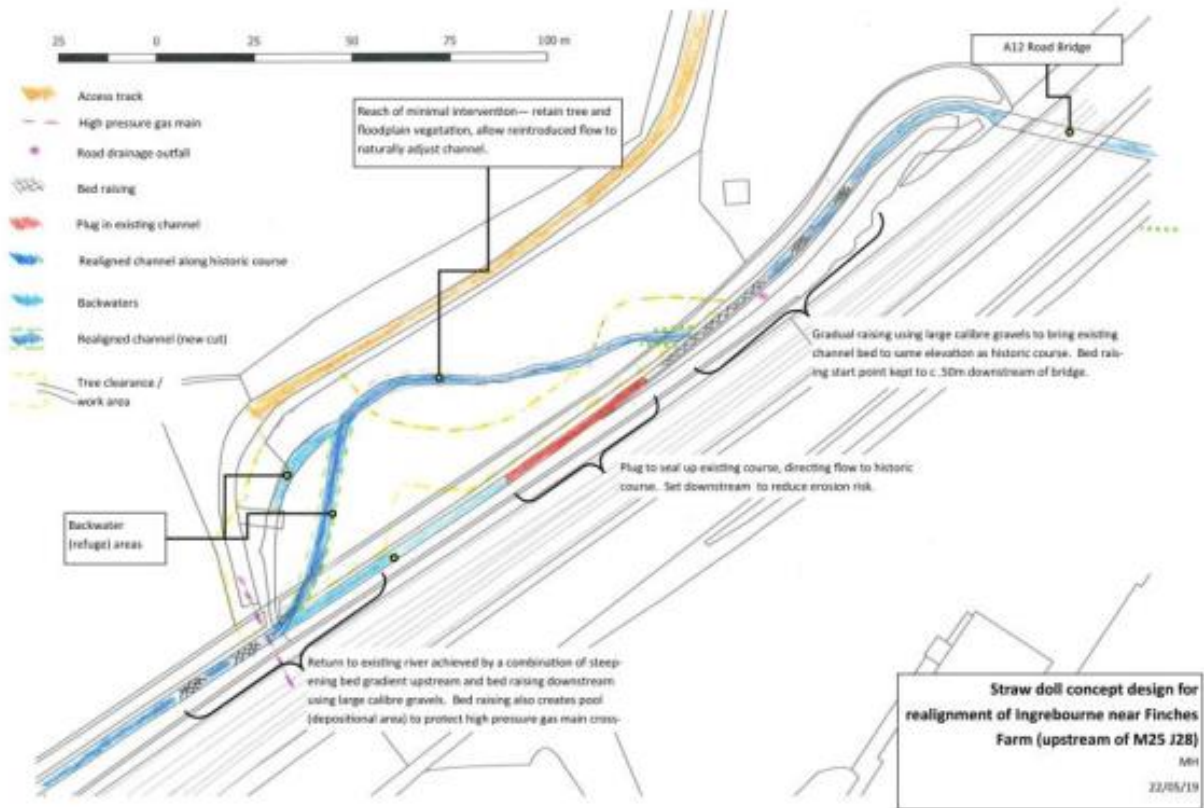


Figure 3 Action straw doll conceptual design schematic

A.8 Meeting 6 – 12 August 2019

Project: M25 Junction 28 RIP Scheme	
Subject: EA meeting	
Meeting place: London	Meeting no: 6
Date and time: 12 August 2019 at 10.30am	Minutes by: 
Present:  Apologies: 	Representing: Highways England Highways England Environment Agency Environment Agency Environment Agency Environment Agency Atkins Atkins Atkins Atkins Atkins Atkins Atkins Atkins Atkins Environment Agency

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	Health & Safety Moment		

Next meeting: TBC
Distribution: All
Date issued: 02 September 2019 File Ref:

NOTE TO RECIPIENTS:

These meeting notes record SNC-Lavalin understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

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ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p>█ and █ provided an overview on the deer culling incident.</p> <p>Last week when Atkins tree surveyors were out on site, they noticed that some deer cullers were present on the site. The surveyors immediately stopped work and rang the health and safety team who told them to stop work. All other surveys on the property have also been suspended until an appropriate system is agreed with the landowner to ensure the works are undertaken in a safe manner.</p>		Note
2.	Project Design Updates		
	<p>Design updates:</p> <p>Since public consultation in December 2018/January 2019 a series of design changes for the Scheme have occurred. A power point presentation has been prepared and is attached to the minutes.</p> <p>The main changes in regard to the water environment include:</p> <ul style="list-style-type: none"> - The feasibility study for potential realignment of the Ingrebourne River to east of junction 28 that Atkins are currently looking into - The realignment of the A12 slip road and Ingrebourne River - Realignment and new meanders to the Weald Brook 		
3.	Supplemental Consultation		
	<ul style="list-style-type: none"> - █ provided a high level overview of the supplemental consultation scheduled this autumn. See presentation attached. 		Note
4.	Ground Investigation		Note

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p>■ and ■ provided an update on the GI works.</p> <ul style="list-style-type: none"> - Within the site, there is a historical landfill at Grove Farm which the London Borough of Havering has confirmed is an old borrow pit from the construction of the M25. This is classified as low risk. - There is also recently deposited material on top of the landfill site and Highways England has previously made the Environment Agency aware of this. - A preliminary Ground Investigation (GI) has been undertaken in advance of the full programme of site wide GI to investigate the recently deposited material and reduce uncertainty in this area. - The pre-GI has been completed (end of July 2019). - The site-wide GI is expected to be completed by the end of December 2019 but this could slip due to access constraints on the Glebelands property. - Atkins' approach to the Geology and Soils (G&S) and Materials and Waste assessments, which form part of the Environmental Statement (ES), will be largely desk-based assessments and will take into consideration the pre-GI information and will not include site-wide GI data. - ■ advised that if Atkins include as much information in the desk-based assessment as possible and the pre-GI data this will be adequate for DCO submission however, ■ will double check with her technical specialist colleague. 	13/09/2019	■
5.	Water Framework Directive		
	<p>■ presented the mitigation measures incorporated in the preliminary design to support compliance with the WFD requirements. Please see presentation attached.</p>		

Summary of effects of the Scheme:

Ingrebourne:

- Extension to culvert under the junction, relocation of the A12 slip road, Grove bridge and slip roads located on retaining wall.

Weald Brook:

- Installation of Maylands and Duckwood bridges, realignment of a section of brook above the new slip road and culvert extension to the north of the Scheme

Summary of the mitigation for the Scheme:

Mitigation 1:

- Culver extensions – depressed inverts and natural bed will be installed
- Realignment of the Ingrebourne – lower levels of floodplain and provide backwaters
- Widespan bridge structures over rivers
- Realignment of the Weald Brook – to create natural meanders
- A12 slip road constructed on retaining wall – minimise footprint on floodplain
- Maintenance of riparian trees to create differences in light

Mitigation 2:

- Realignments – sections of straighten areas to more natural meanders,
- Lowering areas for floodplain compensation and floodplain connections
- Maintenance of riparian trees

Mitigation 3:

- North section culvert extension – depressed invert and natural bed will be installed

French Farm feasibility (Mitigation 4):

- Works include realignment of the Ingrebourne to old channel alignment (upstream of junction 28) and bed raising in existing channel upstream and downstream to facilitate realignment
- A topo survey has been undertaken which is being used to inform the study
- Constraints include existing drainage system and road drainage system which needs to be kept in operation, the mobile phone tower adjacent to the river, high pressure gas main and need to maintain local field drainage
- The feasibility study is still being undertaken and results should be available by end of August

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p>Assessment of biodiversity benefit:</p> <ul style="list-style-type: none"> - Atkins have undertaken an assessment of the biodiversity benefits. Assessment based on the product of a) conversation status (the "naturalness" of a channel and b) length of a reach. - Two scenarios compared: baseline and post scheme. The with-scheme scenario included more reaches with smaller lengths than the baseline. - Baseline biodiversity benefit assessed as 27.69 rising to 29.31 with-scheme (small net increase). Note this net increase is achieved whilst scores for some reaches scores go down and some go up depending on where the works and adverse effects are. - The assessment did not consider the benefits associated mitigation measures 4,5,6,7 because these measures do not directly affect flowing open water. They are improvements to other wet habitats (■■■■ has previously referred to these as enhancements not mitigations). <p>Other matters:</p> <ul style="list-style-type: none"> - ■■■■ confirmed that Atkins are proposing to put mammal shelves through the entire length of Grove and Weald Brook culverts (not just the extensions being constructed by the Scheme) and are ensuring that a geomorphologically sympathetic way of not having a step at the downstream end of the Grove Culvert extension will be implemented. - Woodland planting is also proposed in floodplain lowering areas. Full details of the draft prelim environmental design is provided in Appendix D of the WFD assessment that has been shared with the EA. Ideas on woodland planting or other modifications to draft prelim env design welcomed. - ■■■■ confirmed that the length of drainage ditches being lost from the scheme are being replaced with nearly 3 x as much in length. This increase in drain length not anticipated to increase flood risk because the drains will be serving green areas generating runoff at "greenfield" rate. Runoff from all hard surfaces in the Scheme drains via attenuation ponds. 		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
6.	<p>Flood Risk Assessment</p> <p>presented the key outcomes of the flood risk assessment. See presentation attached.</p> <p>Flood Model:</p> <ul style="list-style-type: none"> - explained the extent and details of the flood model including details of the flood compensation areas. - At the top of the scheme there are some small losses of floodplain due to the scheme however, an area cannot be found to replace this loss so the flood compensation area immediately north of the loop includes this flood compensation - The land around the realignment of the Ingrebourne river will be lowered to improve floodplain connectivity. This will increase floodplain storage but is not considered as formal floodplain compensation for the scheme as the volume is not provided at the levels where storage is being lost. - Overall the scheme increases the volume of floodplain storage. - will issue the flood model to EA for review and advised EA timescales are 1 month for review. - will provide full comments on the FRA. 		
7.	<p>DCO matters</p> <p>DCO applications can include other consents and powers (compulsory acquisition) within the one application.</p> <p>Atkins are currently looking in the other consents that may be required for the scheme.</p> <p>Atkins have identified the following consents/licenses which the Scheme would need to obtain from EA:</p> <ul style="list-style-type: none"> - Flood risk activity permit - Land drainage consent - Impoundment license - Abstraction license <p>asked whether EA would agree to include some of these licences/consents within the DCO application.</p> <p>is going to ask the EA water team if they have any general wording and requirements for drafting the consents.</p> <p>will put all queries and details of the consents into an email and send to to review and advise.</p>	<p>End of Sept 2019</p> <p>14/08/2019</p>	<p></p> <p></p>

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
8.	AoB		
	<p>■ queried what would be the next step if the feasibility study outcome is concluding that a suitable solution is not identified. ■ advised that a commuted sum would be the next option using a similar approach as M25 J10 where a sum was calculated using EA estimating costing tool for restoring a channel to equal loss of river.</p>		Note
	<p>■ confirmed that the amendments to the previous 2 meeting of minutes notes provided by EA have been accepted. The revised copies will be issued.</p>		■

A.9 Skype Meeting 7 – 24 September 2019

Meeting Notes

Project:	M25 Junction 28 RIP Scheme		
Subject:	EA meeting		
Meeting place:	Teleconference	Meeting no:	7
Date and time:	24 September at 2pm	Minutes by:	
Present:	<div></div>		
Representing:	Highways England Highways England Highways England Environment Agency Environment Agency Environment Agency Atkins Atkins Atkins Atkins		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	Purpose of the meeting		
	To discuss the outcome of the feasibility study on Ingrebourne River within French's Farm area.		Note
2.	Pre-meeting information shared with EA		

Next meeting:	Mid October 2019		
Distribution:	All		
Date issued:	25 September 2019	File Ref:	

NOTE TO RECIPIENTS:

These meeting notes record SNC-Lavalin understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

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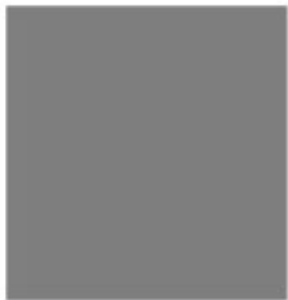
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ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p>Frenches Farm Feasibility Study was an investigation into feasibility of delivering additional mitigation needed to secure WFD compliance for M25J28 highway scheme through river and floodplain improvement works on the River Ingrebourne immediately upstream of J28.</p> <p>Atkins () issued copy of Technical Note to () by email on 22/9/19 as v0.7 of document HE551519-ATK-EWE-XX-TN-LW-000001.</p>		
3.	Water Framework Directive – French's Farm Feasibility Study Outcome		
	<ul style="list-style-type: none"> Atkins () talked through a short presentation summarising the feasibility study and its outcome (copy of presentation in Appendix A). Conclusions: <ul style="list-style-type: none"> None of the three packages considered in the study area are attractive propositions for delivering additional mitigation. HE / Atkins recommend exploring other mechanisms for delivering the necessary mitigation and potential betterment at technically less challenging locations in the Ingrebourne catchment. Works at alternative sites are likely to deliver substantially better value for money. EA () accepted the conclusions of the feasibility study. However, they are not yet in a position to propose alternative mechanisms for delivering the additional mitigation required. () requested some time to consider options – she is aware that the EA will shortly be making available tools and metrics to support staff in making decisions on matters like this. Atkins () to set up a meeting in mid-October to discuss way forward with EA 	End of Sept	()
4.	AoB		
	() noted that the supplementary consultation on M25 J28 Scheme will start in early Nov 2019 and run for 4 weeks.		
	() noted that () will be standing in as HE project manager on the M25 J28 scheme whilst () is on maternity leave.		

Appendix A – WFD Feasibility Study Presentation



A.10 Skype Meeting 8 – 22 October 2019

Project:	M25 Junction 28 RIP Scheme		
Subject:	EA meeting		
Meeting place:	Teleconference	Meeting no:	8
Date and time:	22 October at 10am	Minutes by:	
Present:		Representing:	Highways England Highways England Highways England Environment Agency Atkins Atkins Atkins Atkins Atkins

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	Purpose of the meeting		
	To discuss the WFD mitigation and commuted sum agreement and other matters.		
2.	WFD directive mitigation		

Next meeting:	Mid October 2019		
Distribution:	All		
Date issued:	25 September 2019	File Ref:	

NOTE TO RECIPIENTS:

These meeting notes record SNC-Lavalin understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

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ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p><u>Commutated sum</u></p> <p>■ thanked the EA for agreeing to the strategy for the commuted sum.</p> <p>The next step is to set up an agreement for payment of the commuted sum. ■ advised that HE would look to commute the sum during the DCO process. ■ expected this as it all relies on the outcome of the DCO application.</p> <p>Legal advice received from the lawyers (BDB) working on behalf of HE included:</p> <ul style="list-style-type: none"> The commuted sum would be private side agreement (outside of the DCO application). The side agreement would be referenced in the SoCG and WFD document. BDB suggested they could work with EAs legal team. <p>■ will send ■ email of approach for commuted sum, also including ■ (HE Legal) as well. ■ will check the approach with her EA legal team.</p> <p>Atkins / HE will check the EA is comfortable with wording that will go into the SoCG and WFD.</p> <p>■ queried how will we reference the commuted sum in the WFD.</p> <p>■ explained that we will provide context in the WFD, for example, <i>the habitat balance identifies x units of additional habitat were required to ensure the scheme would have neutral environmental effect. This could be used in other areas in the catchment as agreed with EA.</i></p> <p>■ suggested the wording can be agreed with EA.</p> <p>■ queried where are the mitigations measures and commitments going to be held in the DCO. ■ advised these will be in the following documents:</p> <ul style="list-style-type: none"> WFD REAC/Outline CEMP We are also looking to add more detail to the environmental prelim design to visually show the mitigations Landscape and Ecology Management Plan (LEMP) - we could add management type mitigations habitat commitments to support the WFD . The LEMP will be an appendix to ES Biodiversity chapter. <p>EA want to see where the commitments are held so the level of assurance is there.</p>	25/10/19	■

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
3.	Other updates		
	<p><u>DCO Programme</u> Programme for DCO – Q1 2020 submission</p> <p><u>Supplementary consultation</u> Supplementary consultation will be held from 4th Nov 2019 – 2nd Dec 2019, which is 28 days.</p> <p>The consultation comprises key changes to the design since the public consultation in Dec 2018/Jan 2019 in response to stakeholder inputs.</p> <p>████ advised that the EA had not accounted for this additional consultation round in their last agreement with HE, so we will need to recover the additional cost they incur from HE.</p> <p>████ will set up a meeting on Friday 25th October to run through changes in advance of consultation.</p>	25/10/2019	████
4.	Protective provisions update		
	<p>████ advised that the email sent by █████ has been passed onto HE's legal team to review and comment.</p> <p>CG advised that we are getting to a stage where the design is getting firmed up and the legal team starting to draft the DCO which we will share with EA – informally by end of the year and formally in new year.</p>	Dec 2019	████
4.	HAWRAT assessment		
	<p>████ advised that we have sent the EA screen dumps of the HAWRAT modelling tool.</p> <p>Atkins are finding a clear drawing of the outfalls to send to the EA to aid the understanding of the HAWRAT output.</p>	06/11/19	████
5.	AoB		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p>Response to Section 42</p> <p>█ advised that the EA commented on the chapter called materials and waste regarding recent controlled waste deposits and permits and the EA have not had any response on this.</p> <p><i>Atkins Response – post meeting note:</i></p> <p>Atkins have prepared a draft Preliminary Geo-environmental Assessment Report which will form part of the ES based on the pre-GI data. Within this report an assessment of the preliminary waste classification based on the pre-GI data has been undertaken. The preliminary classification shows that soils would be classified as non-hazardous with asbestos or inert. However, the main GI is still ongoing so we do not yet know what the rest of data will show.</p> <p>As far as treatment and potential environmental permitting goes, at this stage it's unlikely to be needed. The contractor (Grahams) have captured the potential need for this in their buildability report and Atkins have covered the potential re-use of waste soils in the ES chapter (Materials and Waste) through the use of CL:AIRE guidance (an MMP).</p>		
	<p>█ will send information about the recently deposited material within Grove Farm.</p>	01/11/2019	█

A.11 Skype Meeting 9 – 6 December 2019



Project:	M25 Junction 28 RIP Scheme		
Subject:	EA meeting –		
Meeting place:	Teleconference	Meeting no:	9
Date and time:	06 December 2019	Minutes by:	
Present:		Representing:	Environment Agency JBA Atkins Atkins

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	EA Model Review		
	Items in the table below are all the issues identified in the EA review of the J28 model that were categorised as 'Clarification required', 'Minor issue' or 'Major issue', all these comments required further details from Atkins. Atkins responded to the comments on 27 November 2019, and subsequently a telecon was held on 6 December 2019 to discuss the outstanding issues and agree how to resolve them. A summary of discussion and actions from telecon meeting is included in the table below.		

ID	Category	Topic	Summary of discussion	Status	Action
B-16	Clarification required	Channel survey	█ - Clarification required regarding source of the survey data for the channels.	Open	Atkins to update the modelling report to provide more detail on the source of the survey data.
B-17	Clarification required	Lidar date	█ - Clarification required regarding source of the lidar data for the channels.	Open	Atkins to update the modelling report to provide more detail on the source of the lidar data.
B-19	Major issue	Upstream boundary	█ – The culverts that form the upstream boundary on the █ and █ are affected by the scheme and should be included in the model. █ clarified the reasons behind these culverts not originally being included due to early designs having very limited or no effect on the culverts. As the nature of the proposed changes to the culverts in the current proposed design are unlikely to adversely impact flood risk, a simple approach to proving this was adopted. The approach used standalone 1d models of the culverts, rather than extend models further upstream where there was no survey data.	Open	Atkins to submit to the EA the models used to assess the culverts, along with commentary to support the approach. EA to review the models and supporting info.
B-23	Clarification required	Not 1d/2d	Information provided in the 27/11 response addressed the issue.	Closed	None
B-120	Major issue	Upstream boundary	See B-19	Open	See B-19

ID	Category	Topic	Summary of discussion	Status	Action
B-126	Clarification required	Flow constriction on 70%	<p>confirmed the flow constriction only required in the simulation with 70% climate change uplift, as only in this event are the water levels high enough to reach the soffit of the bridge.</p> <p>stated that irrespective of that, the schematisation of the model needs to be identical in all simulations, otherwise there is a risk that changes in the outputs are due to something other than the scheme. The likelihood of the changes being significant is very low but for consistency and the avoidance of doubt, this update should be made.</p>	Open	Model to be re-run to ensure the schematisation is consistent in all simulations.
B-127	Clarification required	Survey for channels	- Clarification required similar to B-16 regarding source of the survey data for the channels.	Open	See B-16
B-128	Major issue	Manning's roughness values	- given the grid size of the model and the changes in roughness associated with the trees and vegetation clearly evident from aerial photography, a more detailed roughness layer should be included in the model.	Open	Atkins to update the model with a more detailed roughness layer and update the modelling report to clarify the change in schematisation, and if necessary, update the results.
B-139	Clarification required	Initial water levels	Information provided in the 27/11 response addressed the issue.	Closed	None
B-146	Minor issue	Timestep	Information provided in the 27/11 response addressed the issue.	Closed	None
B-175	Minor issue	Sensitivity tests	Covered by B-128	Open	See B-128
B-176	Clarification required		Covered by B-19	Open	See B-19
B-185	Minor issue	Sensitivity tests	Covered by B-128	Open	See-128

A.12 Skype Meeting 10 – 17 December 2019

Project: M25 Junction 28 RIP Scheme	
Subject: EA meeting – HAWRAT and WFD discussion	
Meeting place: Teleconference	Meeting no: 10
Date and time: 17 December 2019 at 2pm	Minutes by: 
Present: 	Representing: Environment Agency Environment Agency Environment Agency Atkins Atkins Atkins

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	Purpose of the meeting		
	<ul style="list-style-type: none"> To talk EA team through HAWRAT assessment for Junction 28 Scheme, prior to issue of assessment. To talk EA team through proposal for setting out delivery mechanism for mitigation to be implemented under EA programme of works. 		
2.	HAWRAT Assessment		

Next meeting: Mid October 2019	
Distribution: All	
Date issued: 25 September 2019	File Ref:

NOTE TO RECIPIENTS:

These meeting notes record SNC-Lavalin understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

Meeting No. 10 - Dec 2019.docx

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<ul style="list-style-type: none"> ■ walked the EA through the water quality methodology, the resulting outputs of HAWRATs and the proposed mitigation features. With mitigation in place, the assessment concluded that the Scheme met targets for soluble and sediment pollutants. Proposed mitigations measures in the Scheme comprise the following (though note, not all measures are present in all catchments): dry attenuation ponds, filter drains, sediment catch pits, separation of clean water from dirty (pre-embankment drains). Initial response from EA team generally accepting. However: <ul style="list-style-type: none"> EA did reinforce the close proximity of the Scheme to two surface water receptors (Ingrebourne and Weald Brook). Discussion over absence of oil interceptors from the Scheme. ■ explained these hadn't been included because a) the methodology had identified a low risk, well below the threshold for considering mitigation b) HE are looking to phase out interceptors because they are difficult to maintain in an operational environment and become ineffective (note also that balancing ponds would act to contain pollutant and could be isolated in the event of a serious spillage incident). EA will review the assessment (HAWRAT output and map showing outfall locations) more closely when it is sent through. EA emphasised the importance of future proofing – citing traffic, climate change (CC) and increasing intensity of rainfall events, and that the Ingrebourne is already showing signs of suffering from road runoff (these have been taken into account in the scheme design which is based on future traffic projections and an allowance for drainage has been made for CC). <p>Action: ■ to issue HAWRAT assessment to EA in week starting 6/1/20, to include a map showing locations of road drainage catchments and outfalls relative to the river network.</p>	w/c 6/01/2020	■
3.	Water Framework Directive – off site mitigation (commuted sum)		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<ul style="list-style-type: none"> █ gave the EA team an overview of the text set out in draft WFD to secure the off-site mitigations. █ explained that she had begun internal consultation on the text. Initial view was that the works would be delivered through the Agency's Medium Term Plan. <p>Actions A draft copy of the WFD will be issued to EA for review.</p> <p>█ to provide a summary of key changes to WFD assessment since last issue of document to █ to accompany issue of WFD assessment.</p> <p>█ to provide comment on text setting out off site mitigation.</p>	<p>w/c 6 Jan 2020</p> <p>early Jan</p>	<p>█</p> <p>█</p>
5.	<p>AoB</p> <p>█ to issue response to Supplementary Consultation imminently [<i>post meeting note – response received by HE 18/12/19</i>].</p>		

A.13 Skype Meeting 11 – 12 February 2020

Project: Scheme at Junction 28 of M25 to improve traffic flow

Subject: Telecon, off site compensation

Meeting place: Telecon

Meeting no: 11

Date and time: 11 February 2020 at
14:30 - 15:45

Minutes by: [REDACTED]

Present:



Representing: Environment Agency
(Sustainable Places Planning
Lead)

Environment Agency (Catchment
Co-ordinator)

Environment Agency
(Biodiversity)

Environment Agency
(Geomorphology)

Atkins (Environment Lead)

Atkins (Rivers)

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	Introductions [REDACTED] role is focussed on delivery of WFD measures, linking between the EA and catchment partners to implement measures that contribute to catchment health and WFD compliance.		

Next meeting:

Distribution:

Date issued: 13 February 2020

File Ref: 5158157 (WFD) / 7.1 /
meeting / DG / 007

NOTE TO RECIPIENTS:

These meeting notes record Atkins understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

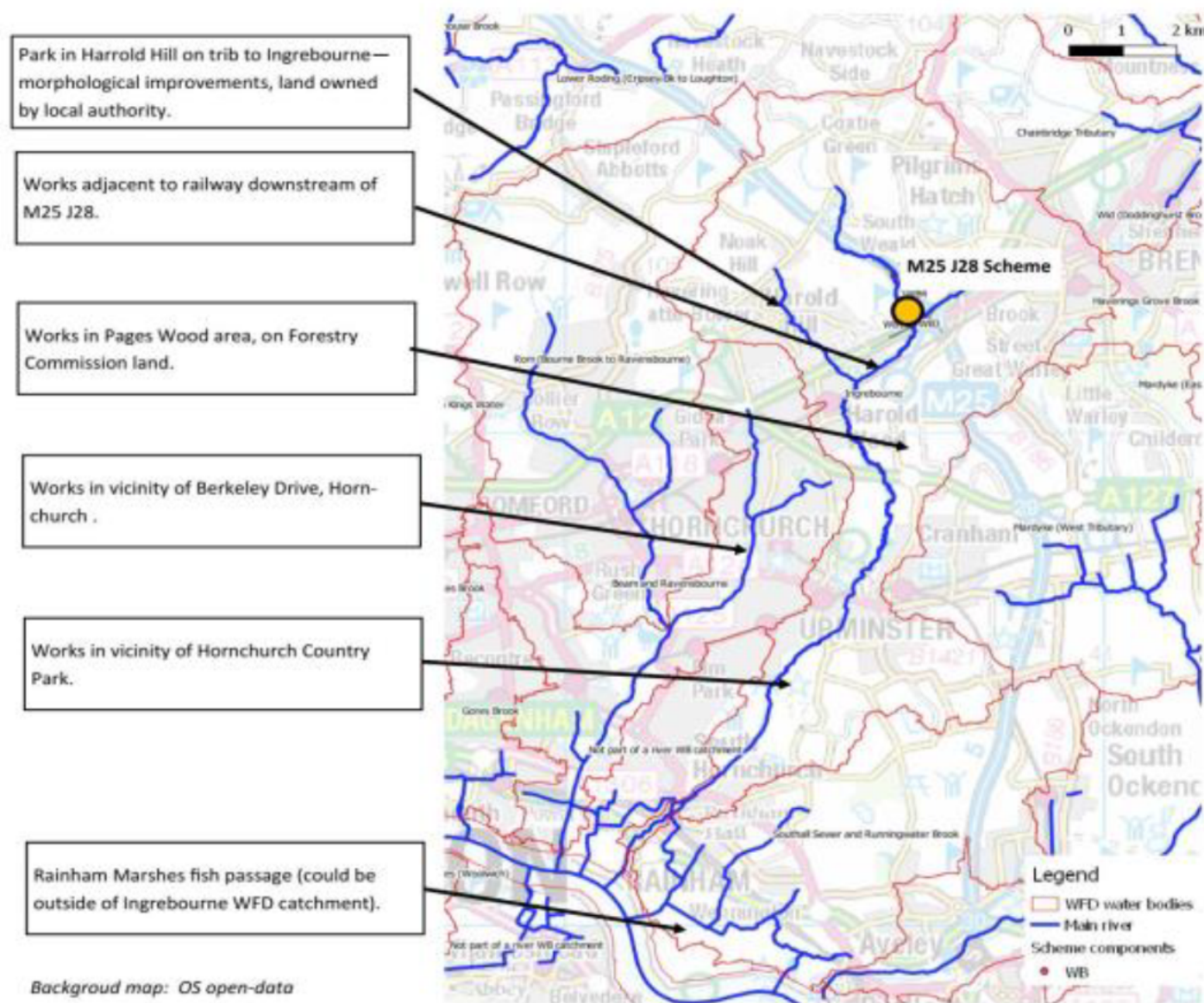
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ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	<p>Background and meeting purpose</p> <p>Mitigation and compensation measures proposed within the DCO boundary for the M25 Junction 28 scheme (the Scheme) do not fully address the adverse effects of the Scheme on the water environment. Additional measures are required (further details on this can be found within WFD Compliance Assessment for the Scheme). EA has agreed to implement these additional measures as part of their catchment programme with funding from HE. To contribute to WFD compliance these measures need to be implemented within the Ingrebourne WFD water body (the water body affected by the Scheme).</p> <p>This telcon was called to explore whether the EA would be in a position to commit to implementing measures solely within the Ingrebourne WFD water body.</p>		
3.	<p>Discussion on potential locations of measures</p> <p>Location of potential measures (called works in this note) within Ingrebourne WFD water body identified during telcon show on attached plan (rough locations).</p> <p>EA planning windscreen survey / walkover of key areas of Ingrebourne catchment to identify potential river / floodplain improvement works – some could be candidate sites for off-site compensation for J28 Scheme.</p> <p>Local Authority 'forum' being organised for the J28 Scheme to bring together appropriate specialists from the J28 project team and local authorities to address key issues such as consenting. Off-site compensation will be included as a topic for the forum. EA welcome to attend the forum, particularly on this issue, either in person or by telcon. Provisional date 3rd March 2020.</p> <p>Landowner appetite for river improvement works will always be a fundamental constraint – this risk can be managed by identifying works on land owned by aligned partners (e.g. local authorities and Forestry Commission) and identifying multiple river improvement works, in the expectation that some will fall by the wayside because landowners are unable to provide support.</p> <p>In summary – EA team were positive about being able to identify a sufficient number of candidate river improvement works within the Ingrebourne WFD body but needed some time to investigate further before being able to commit to this.</p>		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
4.	<p>Misc points</p> <p>Need to keep flexibility in location of river improvement works - should use wording "one or a number of schemes" in any agreement documentation, so that EA commitment retains flexibility.</p>		
5.	<p>Programme and dates</p> <p>To meet DCO programme, HE needs decision from EA on whether off-site compensation can be implemented within Ingrebourne WFD catchment before mid-March, in order to finalise wording in draft DCO requirement and associated documentation (WFD assessment, Water and Biodiversity chapter of ES, first draft of Statement of Common Ground (SoCG) etc). Further detail on this can be added in iterations of SoCG and written responses through the Examination process. It is very desirable to pre-emptive in this process – so addressing an issue earlier in the examination process is preferable to later resolution.</p> <p>Construction programme for Junction 28 scheme: starting in 2021/22, ending 2023/24, 3 year duration.</p>	Before mid-March	HE
6.	<p>AoB</p> <p>██████████ only in attendance</p> <ul style="list-style-type: none"> briefly went through feedback on WFD assessment (email ██████████ Mon 10/02/2020 11:10), Atkins agreed to implement EA proposed changes. discussed need to clarify how EA consents are being addressed by the Scheme. At present ██████████ only aware protected provisions for FRAP. She is not aware of how other consents are being addressed by the Scheme. Comms needed between ██████████ and ██████████ (Atkins) to confirm how EA consents are being addressed by Scheme. 		██████████

Planning Inspectorate scheme reference: TR010029
Application document reference: TR010029/APP/8.1



**Potential works identified
during telcon of 11/2/20
(locations approximate)**
v0.1, 11/2/20

A.14 Skype Meeting 12 – 27 February 2020

Meeting Notes



Project:	Scheme at Junction 28 of M25 to improve traffic flow		
Subject:	Telecon, off site compensation (follow up meeting)		
Meeting place:	Telecon	Meeting no:	12
Date and time:	27 February 2020 at 10:30 - 11:30	Minutes by:	
Present:			
	Representing: Environment Agency (Sustainable Places Planning Lead) Environment Agency (Catchment Co-ordinator) Environment Agency (Biodiversity) Atkins (Environment Lead) Atkins (Rivers)		





ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	<p>Update on search for candidate sites</p> <p>██████████ provided an update on walkover surveys carried by Environment Agency staff within the Ingrebourne WFD catchment to investigate candidate sites for implementation of off site compensation. A number of potential candidate sites have been identified including:</p> <ul style="list-style-type: none"> • Ingrebourne at Harrold Wood Park in Harrold Wood (NGR TQ 55218 90244) • Sites on Ingrebourne close to Harrold Wood Park (upstream of Squirrels Heath Road and in Pages Wood) • Ingrebourne at A127 crossing near Hornchurch • Pains Brook in Harrold Wood upstream of A12 (TQ 54985 91408) <p>Based on these walkover surveys, the Environment Agency are reasonably confident that there are sites within Ingrebourne WFD catchment at which works could be implemented to make an effective contribution to improving the condition of watercourses the catchment.</p> <p>Action – ██████████ to continue research into candidate sites and share a draft list of sites amongst those attending the meeting by 6th March 2020. Ideally the list should include the location of each site, a brief description of the proposed works and a note of their intent. Agreed to include all potential sites at which works could be implemented to improve condition of watercourses in the catchment (i.e. don't discard any potentially viable ideas at this stage).</p> <p>Action – ██████████ to determine whether the A127 north of Hornchurch is a road managed by Highways England.</p>		
2.	<p>Securing off site works in Scheme documentation</p> <p>It is likely the that works will be secured by a) a summary requirement in the draft DCO document; b) inclusion in the Statement of Common Ground between the Environment Agency and Highways England and c) a further agreement between the two bodies.</p>		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
3.	<p>Environment Agency comments on WFD Assessment Report</p> <p>The Environment Agency provided comments on the version of the WFD assessment for the Scheme issued to PINS in early January 20. Their comments were in an email of 10th February 20. A proposal from Atkins on how to address these comments is in an email of 14th February 20.</p> <p>All comments on the WFD are closed.</p> <p>█ would like to see how the water matters were addressed in the cumulative effects section of the ES. Also, █ would like to see the monitoring and management plan proposed for the landscape and ecological mitigation areas.</p> <p>Action – █ to forward 'Water' section of the ES Cumulative Assessment report to Environment Agency.</p> <p>Action – █ to forward Landscape and ecology monitoring and maintenance plan to Environment Agency for information.</p>		
4.	<p>AOB</p> <p>Highways England expect to submit the DCO application for the Scheme to PINS in mid May 20.</p>		

A.15 Skype Meeting 13 – 20 April 2020

Meeting Notes



Project:	Scheme at Junction 28 of M25 to improve traffic flow		
Subject:	Telecon, off site compensation (follow up meeting)		
Meeting place:	Telecon	Meeting no:	13
Date and time:	20 April 2020 at 14:00 - 15:00	Minutes by:	
Present:			
Representing:	Environment Agency (Sustainable Places Planning Lead) Environment Agency (legal) Atkins (Environment Lead) Atkins (Rivers) BDB (Highways England legal)		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	Purpose of the meeting was to discuss the following: <ol style="list-style-type: none"> Side agreement for the off -site mitigation agreed between EA and HE Draft Statement of Common Ground (SoCG) 		
2.	Legal agreement between EA and HE  and  discussed the approach to the legal agreement between parties.  and  to provide input into the head of terms. It was agreed that the information outlining the possible schemes which would be suitable for off-site mitigation are going to be appended to the legal agreement.		
3.	Statement of Common Ground		

4.	<p>■ issued a draft of the SoCG to ■ earlier in the month.</p> <p>■ confirmed that this is currently being reviewed by the relevant specialists within EA and a response will be issued to Highways England early/mid May.</p> <p>WFD heading if SoCG - ■ noted that some of the points in the draft SoCG refer to the preliminary environmental design drawing.</p> <p>■ to issue the drawing to ■</p> <p>Waste heading – ■ to issues feedback received from the waste specialist. ■ asked whether a draft copy of the waste chapter could be issued to EA. ■ to get back to ■ on this.</p>	21/04/2020	■
5.	<p>AOB</p> <p>■ to issue feedback on the Outline LEMP by end of the week.</p>	23/04/2020	■

A.16 Skype Meeting 14 – 5 May 2020

Meeting Notes

Project:	Scheme at Junction 28 of M25 to improve traffic flow		
Subject:	Telecon, off site compensation (follow up meeting 2)		
Meeting place:	Telecon	Meeting no:	14
Date and time:	05 May 2020 at 14:00 - 15:30	Minutes by:	
Present:			
	Representing:	Environment Agency (Sustainable Places Planning Lead)	
		Environment Agency (Catchment Co-ordinator)	
		Environment Agency (Biodiversity)	
		Environment Agency (Geomorph)	
		Highways England PM	
		Atkins (Environment Lead)	
		Atkins (Rivers)	
		Atkins (Rivers)	

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1.	<p>Legal agreement for offsite mitigation</p> <p>So far the EA have undertaken an initial assessment to identify Candidate Sites, combining desk study with site visits to most sites. Further investigation required to determine whether work at all sites is feasible.</p> <p>This uncertainty needs to be reflected in the legal agreement – to ensure there remains flexibility over the sites on which off site mitigation is delivered. It may be that works cannot be implemented on some (or in a worst case) all of the proposed candidate sites. There needs to be flexibility in the legal agreement to allow for this eventuality.</p> <p>Agreed that</p> <ul style="list-style-type: none"> a) The requirements on the EA in the legal agreement to be outcome based (i.e. a target range of river habitat improvements anywhere within the Ingrebourne WFD catchment, and not tied to any specific location b) The purpose of the list of Candidate Sites to be appended to or associated with the legal agreement is to demonstrate that this outcome is realistic for the EA to deliver, by providing a list of sites that deliver a multiple of the target outcome <p>Action (Atkins / HE) – Draft Legal agreement to be shared with EA will include text in line with the points above</p>		
2.	<p>Run through of current candidate sites</p> <p>The following documents, as supplied in an email from [REDACTED] to [REDACTED] (Mon 04/05/2020 18:25) were reviewed by those on the call</p> <ul style="list-style-type: none"> • Offsite Mitigation Habitat Assessment.pdf • Offsite Mitigation Sites 1-5.pdf <p>The following comments were made by EA team</p>		

Site 1 – PB A and PB B

- Little or no upstream impounding effect associated with structure in PB A, hence benefit does not extend into PB B
- Note potential for services under PB A
- Limited opportunity to implement restoration measures in PB B

Site 1 – PB C and PB D

- Little or no upstream impounding effect associated with structure in PB C, hence benefit does not extend into PB D
- Relatively deeply incised channel, exposing London Clay banks, school boundary fence running close to RB boundary. May be limited opportunities for restoration measures along LB
- Limited opportunity to implement restoration measures in PB B

Site 2 – ING OM A

- Potentially different landowners on either side of the river – both thought to be private
- Land on RB thought to be given over to horse paddocks
- Concept for works could be modified to only affect one bank
- Plan looked feasible, assuming landowner willing

Site 4 – ING OM E

- Allotments Council owned, trees already present along RB (the eroding bank).
- ■■■■■ concept for scheme was around increasing backwater habitat, rather than channel length.
- Proposal generates a loss in channel length and therefore doesn't align with the requirements for offsite mitigation. Not a suitable Candidate Site

Site 3 – ING OM B, C and D


- ■■■■■ concept for scheme was around use of reedbeds to improve water quality in discharge from STW, or possibly railway drainage.
- Riparian Zone of reach upstream of OM C is currently occupied by Travellers. Downstream is used for grazing horses. Hence space proposed for river realignment already in active use
- Flood risk to houses, limited space and existing use of space means realignment not really viable.
- Proposal generates a loss in channel length and therefore doesn't align with the


ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	<p>requirements for offsite mitigation. Not a suitable Candidate Site</p> <p><u>Site 5 – ING OM F</u></p> <ul style="list-style-type: none"> • Gauging station is currently in operation • Some river restoration measures have already been implemented along this reach – deflectors and backwater • Reach used by local school for pond dipping • EA think that land on either bank is owned by LA, but this needs confirming • May be potential to implement further measures to improve river habitat downstream of GS (need to avoid backwatering that would drown out the gauge) <p>Action (Atkins) update habitat assessment in light of the above information. Likely that further sites will need to be developed – will need discussions with EA to do this [] suggested issuing update to EA with minutes to keep the ball rolling]</p>		

Appendix B. Environment Agency letters


B.1 Environment Agency letter – 28 January 2019

creating a better place




M25 J28 Project Manager
Highways England
Bridge House
1 Walnut Tree Close
Guildford
Surrey
GU1 4LZ

Our ref: NE/2018/129574/01-L01
Your ref: S42(1)(a)/December 2018
Date: 28 January 2019

Dear 

M25 J28 Improvement Scheme.

Planning Act 2008 Section 42: Duty to consult about a proposed Development Consent Order application.

Thank you for consulting us on this Section 42 pre-application consultation prior to the submission of the Development Consent Order (DCO) for the M25 J28 Improvement Scheme.


We would like to take this opportunity to thank your consultants, Atkins, who have been engaging with us in early discussions. Some of the matters we raise in this response will be subject to ongoing pre-application discussions.

In setting out this response we have focussed on the Preliminary Environmental Information Report (PEIR) and General Arrangement Drawings. We look forward to continuing to work with you and Atkins as you develop the DCO for the proposed scheme.

Works to River Ingrebourne and Weald Brook

The proposed scheme involves works to the River Ingrebourne to divert the channel, two crossings of the Weald Brook and the extension of a culvert on the Weald Brook. As stated in our response to the scoping opinion, we expect environmental improvements from a scheme of this size to the main watercourses affected by the scheme, in addition to any mitigation / compensation measures required. Providing net gains for biodiversity is a principle supported by paragraph 170 of the National Planning Policy Framework (NPPF).

The River Ingrebourne has 'moderate status' under the Water Framework Directive (WFD). As it is largely a natural watercourse, it must reach 'good status' by 2027. The Ingrebourne is currently failing to achieve good status for invertebrates, water plants, algae and fish, and is also poor on levels of phosphate. The sources of the pollutants effecting the Ingrebourne are identified as agricultural and urban runoff, misconnections and discharges from Sewage Treatment Works. The Weald Brook is a main tributary of the River Ingrebourne. Although the Weald Brook is not classified under the WFD its condition contributes to the overall WFD status.



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of the Ingrebourne river catchment. The Thames River Basin Management Plan (2015) sets out our objectives to help all waterbodies achieve good status, and we aim to work in partnership with others to tackle the pollutants and improve waterbodies. Our Catchment Data Explorer provides further WFD data and information for the River Ingrebourne.

We have made some detailed comments on the options proposed to mitigate or compensate for the identified impacts on the watercourses and their value for biodiversity and water quality. However, we will need to review the WFD compliance assessment when available as part of our ongoing discussions. The WFD assessment will need to outline the plans for mitigation and compensation for any potential degradation of the watercourses as a result of the scheme, and demonstrate commitment for biodiversity net gains/environmental improvements. We will then be in a position to approve the proposed mitigation and compensation measures for the impacts on the watercourses.

River Ingrebourne re-alignment

We support the option to re-meander and re-align the straightened channel section of the River Ingrebourne which runs parallel to the A12. Paragraph 2.6.1 of the PEIR includes consideration of *'existing straight channel with uniform profile realigned to a more natural plan and cross-sectional form, regenerating a section of more natural river habitat. Backwaters and floodplain scrapes to create still water habitat and some connectivity with floodplain.'* We encourage any options to enhance floodplain connectivity and improve flood storage potential. However, any changes in alignment to a main river will require flood modelling to demonstrate the impact on flood risk, so this will need to be factored into project timescales. We would also need to see the WFD compliance assessment and detailed designs. We also support the ideas presented in paragraphs 7.8.13 and paragraph 8.8.2 of PEIR of the design reflecting the natural geomorphology and hydrology of upstream and downstream and exploration of wet-woodland. It would be good to maintain an open dialogue so the flood risk and ecology benefits are maximised.

Bridge crossings

Although we appreciate design options are at early stages, paragraphs 2.5.1, 2.6.1 and 8.7.9 reference 'multi-span,' 'open-span' and 'single span' bridges and culverts. For bridges we strongly recommend clear span bridges (otherwise referred to as open span or single span), avoiding any supports located within the river channel or floodplain, as this can increase flood risk by disrupting flows and increasing the risk of blockages. We support setting back of abutments no less than eight metres from the watercourse, as well as the intention to reduce any impact of the scheme on floodplain processes referred to in 2.5.1 and 2.6.1. This is also reinforced by paragraph 8.8.2 where it states *'single span structures are the preferred type of crossing because they minimise impact on the water environment if designed appropriately. They will be designed and constructed in such a way as to minimise disruption to the river and riparian zone. Abutments should be set well back from the bank edge to allow the river to function naturally and to maintain a wildlife corridor along the banks.'* If any in-channel structures are considered, detailed flood modelling is expected to assess any impact on flood risk and any decrease in flood storage or disruption to flood flow routes would require mitigation. The compensation options set out in paragraph 7.8.14 although beneficial need to be revisited in light of the WFD compliance assessment. The options to create a meander/backwater and to re-profile banks to create a more natural profile are preferable to vegetation management and coppicing the effects of which are likely to be more temporary. The mitigation and compensation measures to address the impacts of the bridge crossings will need to be consider options such as in-channel restoration/enhancements on a reach where the enhancements are needed and will be most beneficial.

We support paragraph 7.8.15; *'On both the Weald Brook and the River Ingrebourne, in-channel features such as dead wood, and pool and riffle sequences will be incorporated where possible. Management of Himalayan Balsam will also be undertaken throughout the scheme.'*

Extension of culvert

We are strongly opposed to any culverting unless it can be demonstrated that it is the only feasible and available option and all other options have been considered. The General Arrangement Drawing (No: HE551519-ATK-HGN-XX-DR-CH-000003 shows the extension of a culvert on the M25 over the Weald Brook. This will require full justification in the WFD compliance assessment, along with mitigation and compensation for the impact and given the permanent loss of a section of watercourse.

Surface Water Outfalls

More information is needed on any new outfalls into the Weald Brook or Ingrebourne. These must be as small as possible and preferably not pre-cast concrete. It would be beneficial if we could comment on designs of these before the DCO application is submitted. Please note that we are generally opposed to any loss of natural bank resulting from surface water outfalls. Wherever possible, outfalls should be set back away from the river bank to provide a semi-natural entry that doesn't necessitate bank modification.

EA consents for works

A Flood Risk Activity Permit will be required for any works within eight metres of a main river. It will be useful to discuss what the intentions are with regard to the DCO protective provisions in due course.

Flood risk

The application site is partially within Flood Zone 2 and 3 which represent zones of medium and high annual probability of flooding from rivers. As such the scheme design should be informed by an appropriate Flood Risk Assessment (supported by detailed flood modelling) to ensure there is no increase in flood risk to third parties as a result of the scheme, and a reduction in flood risk is achieved overall. It is important that the future impacts of climate change are assessed and factored into the design requirements to ensure the scheme is resilient for its lifetime.

Flood modelling

The production of detailed fluvial flood modelling of the 1 in 100 year plus an allowance for climate change to identify the baseline flood situation will be essential in informing the scheme designs. This is particularly important for any impact on flood storage and the resilience of the proposed scheme to future flood event. This appears to be the intention as referred to in paragraph 8.6.15 of the PEIR that the flood zones *'are not currently derived from detailed river modelling'* but *'work will be undertaken to improve the predicted flood extents'*. We do not currently have detailed flood modelling available for this area as the site falls at the edge of our Beam, Ingrebourne and Marshes (BIM) fluvial model. Therefore our BIM fluvial model should be used as a starting point for the creation of an extended model to inform the assessment of flood risk at the site and inform the detailed designs of the scheme.

Our existing BIM fluvial model is in the process of being updated with the 25%, 35% and 70% climate change allowances, with outputs expected by April 2019. If possible, we recommend this updated fluvial model is used so that the most up-to-date information can feed into any

model extension created. However, we appreciate that this may not be feasible in terms of project timescales, and would have no issue with the existing BIM fluvial model being used as a starting point. We will need to review the extended modelling to determine whether the outputs are suitable. Flood modelling reviews can take several weeks which should be factored into project timescales.

Climate change

We are concerned that the impact of climate change on future flood risk has not been mentioned in terms of the design flood event. During our 6 November meeting we advised that the scheme should be designed as a minimum to the 1 in 100 year plus 35% climate change allowance, but that the 70% climate change allowance should still be assessed to ensure there is not a significant increase in risk between the two scenarios. If the extent / depth of flooding was significantly higher in the 70% climate change scenario then this would need to be designed to instead. Paragraph 2.5.5 of the PEIR says *'the scheme has an indefinite design life, and therefore decommissioning will not be addressed in the environmental assessment'*. The climate change allowances recommended are based on a design life of 100 years. To address any future uncertainty of the impacts of climate change on flood risk, and to improve the scheme's flood resilience beyond the 100 year life, we would encourage the 70% climate change to be designed to.

Flood storage

For this size of scheme, options to increase the amount of flood storage should be investigated, as opposed to merely ensuring the scheme compensates for any loss in flood storage. The PEIR does mention various options to improve floodplain connectivity and the need to compensate for any loss in flood storage is acknowledged. However, we expect the Environmental Statement and supporting Flood Risk Assessment referred to within the PEIR to provide more detail on the storage options being proposed. For any flood storage that is provided as a means of compensation, we will expect it to match the area of storage that has been lost on a level-for-level and volume-for-volume basis and be hydraulically and hydrologically connected to the area of floodplain that has been lost. Based on the General Arrangement Drawing (HE551519-ATK-HGN-XX-DR-CH-000001), the location of possible flood compensation areas seem acceptable in terms of floodplain connectivity, but this will need to be revisited once the detailed modelling is available.

Water Quality

We consider the main risks to water quality are to the watercourses both on and surrounding the site. It is important to protect groundwater quality; as noted in paragraph 8.6.12 there are no groundwater Source Protection Zones however there are superficial aquifers (the Alluvium in continuity with the rivers) and numerous surface and groundwater abstractions in the area (8.6.13).

Under the WFD the River Ingrebourne is at 'moderate status' and the reasons for not currently achieving good status are partly due to polluted surface water runoff from urban areas, transport and agriculture. We support the commitment to undertake the WFD compliance assessment in 8.4.9 and would expect this to take account of the reasons for the Ingrebourne not achieving 'good' status. The WFD compliance assessment should demonstrate how the scheme can address any impacts from construction and operation to avoid further deterioration of the waterbody and also how additional improvements to water quality can be made to ensure future resilience.

As the PEIR paragraph 8.7.1 identifies, construction works pose a number of water quality risks, such as sediment run off and spillage of hydrocarbons. Therefore, we support the intention in paragraph 8.8.1 for a Construction Environmental Management Plan which will include measures to control and prevent polluted runoff. This would need to detail how potential water quality threats are to be protected and mitigated against. We would like this to outline how suspended solids from surface water runoff will be treated and removed.

Paragraphs 8.7.5-8.7.10 identify there are likely to be significant risks to water quality when the scheme is in full operation. Urban rainwater runoff carries with it pollutants such as poly-aromatic hydrocarbons and heavy metals. We would like to see emphasis placed on how water quality will be protected against urban runoff during operation. As noted in paragraph 8.8.2 this could potentially be through use of Sustainable Urban Drainage Systems (SuDS), which could also have potential to mitigate against local flooding, in high flow events. Paragraph 8.8.2 states that *'preference will be for discharges to ground with appropriate SuDS.'* An assessment of the pollution risks associated with any infiltration drainage scheme will be required and appropriate mitigations will need to be adopted. There will also need to be a management plan in place for any SuDS scheme to ensure the measures maintain their effectiveness for the lifespan of the scheme in operation.

Ground contamination

Having reviewed chapter 10 'Geology and Soils' we believe that that the baseline conditions have been adequately characterised and the scheme could be implemented without presenting an unacceptable risk to controlled waters. A remediation strategy will be required. The remediation strategy should be developed based on the findings of a site investigation and detailed quantitative risk assessment considering all potential receptors.

Limited site investigations have been completed however additional detailed information will be required for the whole footprint of the scheme. Several point sources of contamination have been identified within the scheme including (but not limited to) the decommissioned South Weald service station, the current Shell South Weald service station, Brook Street Landfill and a sewage treatment works; the soil and groundwater conditions in the vicinity of these areas will need to be established to inform the remediation strategy.

We also understand that piled foundations will be required for the proposed bridge crossings; a piling risk assessment will also be required. It is our expectation that good environmental practices will be adopted during the construction works to mitigate against the release of potentially contaminative substances during the works.

Waste

Chapter 12 on 'Materials and Waste' considers new waste generated from the construction works. We are concerned that it does not identify recent controlled waste deposits present on the site or the historic landfill site, which are unlikely to be suitable for use in the scheme and will require testing, excavation and removal from site. This chapter fails to reference the Environmental Permitting Regulations or the need for an Environmental Permit to complete these works and allow the treatment, or redeposit of suitable waste to achieve the desired landform. This is an issue we raised in our response to the scoping consultation in December 2017.

We believe the following topics need to be scoped in to further assessments (with reference to Table 12.1):

- Compliance with Environmental Permitting Regulations, for the treatment of waste and the reuse/recovery of suitable wastes within the scheme.
- The investigation and removal of recent controlled waste present on site prior to the commencement of construction.
- The investigation and removal of historic landfilled waste present on site prior to the commencement of construction.

Brook Street historic landfill

The scheme includes extensive groundworks in the historical Brook Street landfill. The waste disposed in the historical landfill will remain as waste unless it is fully recovered. Soil reuse under a CL:AIRE Definition of Waste Code of Practice arrangement may be possible in other areas of the scheme however this will not be possible for materials deposited as waste in the historical landfill as waste recovery activities will require an Environmental Permit.

Recent unauthorised waste deposit

We are investigating an ongoing unauthorised deposit of waste on the site which is not in accordance with an Environmental Permit. Part of this deposit is within the footprint of the proposed slip road and within the footprint of the proposed compound for the construction works. This waste will require testing, excavation and removal from site and sent under duty of care to an appropriately authorised landfill in accordance with current legislation.

We look forward to continuing our discussions with you on this project. If you have any questions regarding our response please contact me.

Yours sincerely


Planning Specialist

Sustainable Places Team, Hertfordshire & North London
Environment Agency
Direct dial: 
Email: HNL.Sustainableplaces@environment-agency.gov.uk

B.2 Environment Agency letter – 25 April 2019

creating a better place



Atkins Ltd

Our ref: NE/2019/129998/01-L01
ENVPAC/1/HNL/00068

Date: 25 April 2019

Via email:
@atkinsglobal.com

Dear

Water Framework Directive Scoping Assessment Preferred Option 5F (September 2017) for M25 Junction 28/A12 Improvement Scheme.

Thank you for consulting us on the Water Framework Directive (WFD) Scoping Assessment report dated September 2017.

Generally although we accept many of the findings of this report there are some assumptions which are not supported by the available evidence or haven't been factually checked yet via surveys. It's likely that further surveys will be required to ascertain what the current conditions are of the watercourses including the minor watercourses to inform future versions of this assessment.

Section 4.4 Screening WFD Quality Elements and Water Bodies

Surface Water Bodies and Groundwater bodies

We support the screening in of biological, physico-chemical and hydro-morphological WFD quality elements. We agree that there are no lake waterbodies or WFD groundwater bodies and therefore these should be screened out. We support the inclusion of the Weald Brook within the WFD Assessment; it is a key tributary of the Ingrebourne and directly impacted by the development.

We disagree that WFD specific pollutant and Chemical WFD elements have been screened out of this assessment. Works in this area could mobilise contaminants which could enter the Weald Brook through surface water drains bordering the historic landfill boundary. These could include metals and hydrocarbons which are included within the 'Specific Pollutant' and 'Chemical Status Elements.' There are already contaminants leaching into the watercourses (in particular the tributary of Ingrebourne, south of A12) from historic works for the M25 including embankments created from spoil. This supports the need to scope in specific pollutant and chemical WFD elements to ensure there isn't a repeat occurrence and rectify the situation where possible.

Section 4.5 Baseline WFD Status

This states that "*The most recent assessment...was 2015 Cycle 2 when [the Ingrebourne] was given an overall water body status of moderate*" (page 11). This is not the most recent assessment, all WFD water bodies were also classified in 2016. This information is available externally on the [Catchment Data Explorer](#), and should be used to inform your baseline. Additionally, these water bodies are due to be reclassified in 2019.



Watercourse Impacts (Section 4.6 Scheme components potentially affecting WFD water bodies, Section 5 and Ap C WFD Assess M25J28 Option 5F310317)

Open span bridge or culvert

Section 4.6 specifically references consideration of “either single span bridge or culvert” for both the WFD assessed water course and minor water course” (page 12). The ‘Reasons for Not Achieving Good’ are available on the [Catchment Data Explorer](#). For the Ingrebourne waterbody, physical modifications as a result of urban and transport activities are considered to be adversely impacting on the invertebrates and macrophytes and phytobenthos combined elements. Therefore, the introduction of new, and extension of existing culverts, would exacerbate the impact of these pressures.

Fish were classified as ‘Good’ in 2016. The introduction of additional culverts will create habitat and light severances, which could have a negative impact on this element.

Throughout the table detailed in document Ap C WFD Assess M25J28 Option 5F310317, there is justification of a ‘minor/localised adverse effect’ on the basis that “this re-alignment/crossing will be carried out in accordance with the design principals set out in Section 5”. On review of Section 5, whilst there is indication that “single span structures are the preferred type of crossing” (page 17), there is admission that “culverts are...generally cheaper and easier to build” (page 17). This cannot be considered sufficient justification for utilising a culvert rather than single span bridge. Also we disagree with single span bridges and culverts being classified as having the same impact, culverts will have a much greater impact and represent a significant loss of open channel. Culverts are also prone to blockages (e.g. trash screens) and significantly reduce habitat connectivity.

Channel Re-alignment

Ap C WFD Assess M25J28 Option 5F310317 continually indicates that the river re-alignments upstream and downstream of the bridge and culvert structures present potential opportunities to improve existing habitats. There needs to be a detailed assessment of the existing habitat value, and therefore impact of each option, to determine whether the upstream and downstream alignment will be sufficient mitigation for these works. It is expected that the WFD Compliance Assessment will be an iterative document which is reviewed and updated as the development progresses, to take account of new data available (such as catchment walkovers) and the detailed proposals.

Surface Water Drainage

Finally, it is noted within Ap C WFD Assess M25J28 Option 5F310317, that the drainage of road run-off will be discharged into the Ingrebourne and Weald Brook at multiple locations, currently identified as having “no effect” on the WFD elements detailed. This is provided the “industry standard measures to manage road runoff (as set out in section 5) will be implemented”. On review of Section 5, there is reference to the possible implementation of SuDS, specifically indicating that they “should be designed in accordance to industry standard, with particular emphasis on appropriate pollution prevention and control measures” (Sub-section: Drainage of road run off (to surface water); page 18).

Any SuDS implemented should be ‘future proofed’ to the expected loading from increased use. Additionally, we would expect a SuDS maintenance strategy to be included as part of their implementation to ensure that there is no future deterioration in the quality of run-off which is discharging into the local water courses. Impact from road run-off can be identified as a pressure under WFD and could be seen as a deterioration in this water body if not managed appropriately.

Section 4.7 Permanent Works - Proposed Scheme

This states that “there are no measures assigned to the Ingrebourne water body in the RBMP or associated datasets” (page 15). This is incorrect, a subset of Measures were detailed within the RBMP, additionally a full list is available (via a Freedom of Information request) from the Environment Agency. This does include Measures for the Ingrebourne water body. One of

particular relevance is the intention to re-meander the water course directly upstream of Junction 28 of the M25. This has been detailed below for ease:

Measure ID	Title	Description	NGR
22480	Re-meander straightened section of channel (550m) upstream of the M25 Junction 28	Re-meander 550m section of straightened section of the Ingrebourne upstream of the M25 Brook Street junction (Jcn. 28) by installing deflectors or re-meander where space allows. CB2013.	Upstream extent: TQ5718592817

This 550 metre stretch of the River Ingrebourne upstream of Junction 28 is included within the 'red-line site boundary' when checking the General Arrangement drawing HE551519-ATK-HGN-DR-CH-000002 from the Section 42 consultation. Therefore this WFD action measure could be included as part of this development, with Highways England taking a lead role for delivery of this action as part of the overall scheme.

Section 6. Future Technical Investigations

We are concerned about some assumptions in this report, for example, on page 20 it states *'Both the Ingrebourne and Weald Brook are assumed to be very low energy river systems...'*

This is inaccurate as the Ingrebourne and tributaries are clay based, urbanised spate rivers and not groundwater fed chalk streams which are low energy. This means the rivers respond quicker to rainfall events, e.g. Gaines Parkway Gauging Station on the Ingrebourne, south of the M25, has recorded up to 43.3 cumecs (metres cubed per sec) in 2016 at TQ 55165 86168. We also have a flood warning sites in the vicinity. Although this might suggest a more robust design is required, there are many new techniques and materials that are available now in soft engineering terms.

We hope our feedback at this stage is helpful and if there are any queries please contact me.

Yours sincerely


Planning Specialist

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B.3 Environment Agency letter – 2 September 2019

creating a better place



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Our ref: NE/2019/130617/01-L01

Date: 2 September 2019

Dear [REDACTED]

Draft Flood Risk Assessment and Water Framework Directive Assessment

Thank you for consulting us on the draft Flood Risk Assessment (FRA) and draft Water Framework Directive (WFD) Assessment both dated 5 August 2019. We appreciated the opportunity to hear the updates on the scheme during the meeting on 12th August, and these are our comments based on the current drafts.

Draft Flood Risk Assessment

Please note that we are still undertaking a detailed review of the flood modelling produced in support of this FRA, so further comments on the suitability of the data used to inform the FRA will be provided once the review is complete. However, please see general comments below which are based on the principle of the scheme, as opposed to whether or not we agree with the flood extents / depths the FRA is based on. Comments have been split into 3 themes: design flood, flood storage compensation and bridge design.

Design flood

During a meeting attend by EA, Atkins and Highways on 06/11/18 it was discussed that both the 1 in 100 year 35% allowance for climate change and 70% allowance for climate change be assessed due to an undefined life expectancy for the scheme. It was agreed that the 1 in 100 year 35% allowance for climate change flood event was acceptable to design to, provided there was not a significant increase in risk between the 35% and 70% scenarios. Based on the submitted FRA, it would appear that the 35% scenario has been used as the design flood event. However, we would still expect the FRA to include details of the depths and extents for both modelled scenarios so we could decide whether we agree that the 35% is suitable for use.

In determination of the design flood event, attention should be drawn to the PEIR document previously submitted for consultation, which stated that the scheme had an indefinite design life and recommended that to improve the scheme's resilience beyond the 100yr life the 70% allowance was encouraged for use.



Flood storage compensation

Within our comments to the Scoping Opinion for this scheme we requested that, in terms of flood storage compensation, a scheme of this size should look to produce an overall reduction in flood risk, as opposed to just ensuring the situation is not made worse. In a previous meeting Atkins confirmed that, with the amount of flood storage compensation being proposed, they were confident they would exceed any compensation required for the 1 in 100 year 35% climate change scenario, but weren't yet sure whether this would still be the case for the 1 in 100 year 70% scenario. Further comments on the flood storage proposal will be dependent on the modelling being approved for use, but first we would like to be provided with a detailed comparison between the 35% and 70% flood scenarios to agree whether the 35% scenario is suitable for use as the design flood event as stated above.

The submitted FRA does cause some uncertainty with regards to the flood storage compensation considerations, with the text suggesting that any loss of flood storage is compensated for up to the 1 in 100yr 35% climate change scenario, but Figure 2.3 suggesting that only loss in flood storage within the 1 in 100yr extent has been considered. Therefore, please can this be made clearer within the FRA? It is our expectation that any built footprint / raising of ground levels within the 1 in 100 year allowance for climate change scenario be compensated for to account for any increase in future flood risk as a result of the development.

Although the modelling study undertaken in support of this scheme will demonstrate whether or not there is an increase in flood risk as a result of proposed works, it is still best practice for the FRA to include details of not just where compensation areas will be provided, but also calculations for the amount of storage lost and the amount of storage certain areas can provide. It could be useful for this to be shown through cross-sectional drawings of the lost and gained storage areas.

Bridge design

It has already been agreed that setting soffits 600mm above the 1 in 100 year 35% climate change flood level will be accepted, regardless of whether it is agreed that the 35% or 70% climate change allowance be used within the design flood event. This is due to other site constraints preventing the crossing being raised any higher than this. If bridge design details are not yet finalised, it would still be advisable for the FRA to include details of the key principles of the bridge design, such as whether it is clear span and the height of the soffits.

Draft Water Framework Directive Assessment

Thank you for taking on board our previous feedback given in April this year. We are broadly satisfied with the mitigation measures identified for the watercourses. As the WFD assessment has progressed there are some assumptions and data interpretations we have identified that require amendment or clarity (see detailed comments below).

Phosphate Classification

Paragraph 4.4.3 states that "the ecological status of the Ingrebourne for 2016 (cycle 2) is moderate." This status is driven by a moderate score for a) invertebrates and b) Macrophytes and Phytobenthos combined. However, note that the supporting Physico-chemical quality element was assigned a score of 'poor' (page 18-19). Whilst it is important to note the poor classification for phosphate independently, this is failing to recognise that the phosphate classification has resulted in the supporting Physico-

chemical quality elements element, also being classified as moderate. This will, along with Invertebrate and Macrophytes and Phytobenthos combined, be contributing to the overall moderate classification.

Less Stringent Objectives

Paragraph 4.4.5 states that “the objective...for this water body is moderate, which was achieved by 2015...It is considered technically infeasible for the water body to achieve good status because of the following reasons that limit the status of the biological quality element to moderate: continuous and intermittent point source sewage discharges, urbanisation, impoundments, flood protection structures and ecological barriers due to physical modification, urban diffuse pollution, point source urban misconnections, poor nutrient management due to agricultural and rural land diffuse pollution sources and invasive non-native species”(page 19).

This information, available from the [Catchment Data Explorer](#), has been mis-interpreted. The Objectives section of Catchment Data Explorer, indicates that there is ‘no known technical solution available’ to improve the Phosphate, Invertebrate and Macrophyte and Phytobenthos Classifications. This is due to the heavy phosphate loading from the continuous discharge of sewage treatment works in the catchment. Whilst the other ‘Reasons for Not Achieving Good’ listed above will be impacting on these elements, they aren’t the justification for setting of a Less Stringent Objective. The intention will still be to implement measures which work towards resolving these ‘Reasons for Not Achieving Good’ to help this water body improve.

Additionally, the objectives for water bodies are re-assessed within each round of the Thames River Basin Management Plan. As an organisation, we will still be aiming for Good for this water body, and would review whether the circumstances around the less stringent objectives have changed and, if appropriate, update the water body objectives accordingly. It is recommended that the report is updated to reflect this information more accurately.

Test B Potential to prevent future attainment of Good Ecological Status

Paragraph 4.6.7 states that “the Scheme will not compromise other planned RBMP Measures in the catchment, hence the Scheme is not considered to prevent future attainment of Good Ecological Status” (page 22) of the Ingrebourne. Paragraph 4.6.12 (page 25) also states the same for the Weald Brook. Whilst this is an aspect of preventing future attainment of Good Ecological Status for this water body, this statement fails to recognise the potential impact on water quality of the scheme due to additional pollutant loading from road run-off. If not managed appropriately, this could make obtaining Good Ecological Status harder to achieve.

It is acknowledged that the risk of deterioration from this aspect will be managed (as detailed in paragraph 4.6.5, page 21). The intention is for improvements to be made to existing road drainage, such that there will be a ‘Minor / localised beneficial effect’ to the Biological, Physico-chemical and Hydromorphological Quality Elements for both the Ingrebourne and Weald Brook (as per figures 4.2 and 4.3, pages 23 and 26 respectively). Therefore, if done correctly, this should address this concern. As a result, it should be included within Test B, both as a risk and with appropriate mitigation, for the Ingrebourne and Weald Brook which would be consistent with details provided against Test A.

However, with regard to paragraph 4.6.5, we would like to review the assessments (i.e. HAWRAT) that underlie the conclusion that there will be a ‘minor/localised effect’ to the Ingrebourne and Weald Brook as a result of the proposed drainage system, including

the mitigation measures chosen as a result of the assessment. Is it possible to review these prior to the submission of the DCO so we can further understand the conclusions made?

Grove Farm Landfill – Risk to Specific Pollutant Quality Elements

It is noted in paragraph 4.6.5, that “physical modification of the Grove Farm landfill area associated with construction of the balancing pond has the potential to cause minor deterioration to the specific pollutant quality elements [of the Ingrebourne], it is assumed that further investigations proposed in Chapter 10 Geology and Soils of the Environmental Statement will identify mitigation to ensure no effect on the water environment” pages 21 and 22. This is also true of the Weald Brook (as per paragraph 4.6.11, pages 24 and 25).

Within Appendix C WFD Assessment Matrices (page 65 – 68) this impact has been assessed as Green ‘No Effect’ for the Ingrebourne (page 66) and Weald Brook (page 67), with the explanation that “Physical modification of the landfill area associated with construction of balancing pond has the potential to cause minor deterioration to the Specific Pollutant quality elements. However, further investigations are underway to ensure this effect is mitigated (Environmental Statement Chapter 10: Geology & Soils) No effect assumed (with mitigation in place). Whilst the Ditches assessment (page 68) concluded Yellow ‘Minor / Localised adverse effect’, stating that “Physical modification of the landfill area may cause a minor deterioration to the specific pollutant quality elements. Further investigations are underway and the results will be used to update the specific details when finalised”.

This indicates that the assessment of this potential impact is inconsistent among the three receptors. Additionally, for the Weald Brook and Ingrebourne, there is a large assumption that any risks can be firmly mitigated against which, considering investigations, aren’t yet complete seems premature. It is strongly recommended that the assessments are updated to take a precautionary approach to the level of risk posed by the mobilisation of contaminants by construction of a balancing pond within the landfill area with, an acknowledgement that they will be updated once investigations are complete.

Disturbance of Invasive Non-Native Species – further consideration of Cumulative Effects

It’s noted, within paragraph 4.7.1, that an effect of temporary works could include “disturbance of non-native invasive species...along surface water bodies and their riparian zone” (page 34). Disturbance of such species could transfer downstream via the river channel and associated flow, as recognised in section 5.4 under the heading ‘Temporary activities during construction.’ However, this risk isn’t considered as part of Section 4.8 Cumulative Effects. It is considered that this risk is appropriate for inclusion within this section as it’s directly considering “the effects of the scheme most likely to pass downstream” (paragraph 4.8.4; page 34). As a result, it is recommended that Section 4.8 is updated to reflect this risk, and include consideration of how this will be managed.

Minor Comments

It is noted within paragraph 4.2.2 (page 14), that specific surveys were undertaken for fish and macroinvertebrates. Given macrophytes and phytobenthos form part of the classification process for the Water Framework Directive (WFD), it is assumed these were assessed to inform impacts of the scheme on these elements as detailed in Figures 4.2 (page 23) and 4.3 (page 26). Therefore, it is recommended that these are

referenced within paragraph 4.2.2, either as part of the ecological walkover survey or specific macrophyte surveys, to ensure there's no ambiguity.

Table 4.1 (page 17)

Please note, within Table 4.1 (page 17), Iron is omitted from inclusion of the list of Specific Pollutants, as detailed on the [Catchment Data Explorer](#). This should be incorporated and any potential impacts considered, and updated within the assessment figures as required.

It is understood that MIT7 is the “maintenance of riparian trees on Ingrebourne and Weald Brook”, described as “regular maintenance works to manage riparian trees...in a way that creates varied light intensity on the channel and riparian zone of the river” (Table 5.1: Summary of embedded mitigation; page 37). There has been no definition of what is meant by ‘regular maintenance’, however, it is expected that this will continue beyond the length of the scheme’s development and be considered ongoing long term maintenance to be undertaken as required.


Within Table 5.1, and following text, we consider the proposed realignments (MIT1-3) need to be full restorations of channel functioning e.g. gravel introduction, appropriate planting, channel bank gradients (etc), rather than simple realignments.

Paragraph 5.3.1 indicates additional mitigation is required to “prevent excessive scour or ‘wash-out’ of bed material immediately downstream of Grove Culvert Extension (ING1)”. It is unclear why the Grove Culvert Extension is unique in this risk, and why this is not considered to be required for the Weald Brook Culvert Extension (WB5). If not required for technical reasons, it is suggested that this is justified within the document. Additionally, surely MIT3 Weald Brook Realignment would contribute appropriate mitigation for the Weald Brook Culvert Extension (WB5), however, these haven’t been linked within paragraph 4.6.11 (page 24).

As a general comment, the WFD assessment has been produced on the assumption that MIT1 ‘Ingrebourne realignment upstream’ will be feasible. We recommend that if this project is not found to be feasible, an appropriate commuted sum towards a different project is determined using an appropriate tool or metric. We will endeavour to provide further guidance on this soon.

We hope you find the comments above useful in progressing with both these important assessments. If you do have any queries regarding the comments, please do not hesitate to contact me.

Yours sincerely


Planning Specialist

B.4 Environment Agency letter – 18 December 2019

creating a better place



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Our ref: NE/2019/131101/01-L01
ENVPAC/1/HNL/00068

Date: 18 December 2019

Via email: info@highwaysengland.co.uk

Dear ██████████

M25 J28 Improvement Scheme, Supplementary Consultation

Thank you for consulting us on the supplementary consultation highlighting the proposed changes to the scheme design. Also thank you for providing us an extension to respond to the consultation. I have structured our comments in response to each of your consultation questions as set out in your consultation brochure.

Question 1: Do you have any comments on the area that we are proposing to use, to reduce the impacts of the scheme?

We have no comments.

Question 2: What is your view on our proposals for Weald Brook?

In general we support the alterations to the Weald Brook to provide a more natural channel. The proposed changes to the channel will need to be modelled to ensure there is no adverse impact on flood risk either upstream or downstream.

We would not have any concerns about the loss in floodplain storage resulting from the development of the bridge pier and the loop road embankment provided flood storage compensation is provided on a level-for-level and volume-for-volume basis. Final calculations for the amount of flood storage compensation required can only be determined following conclusion of the modelling study currently being undertaken by Atkins to understand the baseline flood conditions.

The proposed improvements to the Weald Brook will require consent from us whether this is via a Flood Risk Activity Permit or covered as part of the Protected Provisions for the Development Consent Order. We look forward to working with you in the future on the final designs.

Question 3: Do you have any comments on the corridor identified for the proposed gas diversion?

The indicative corridor identified on the plan for the diversion of the existing gas main coincides with a length of the river Ingrebourne to the south, and abuts a small section of the Weald Brook to the north. If parts of the diverted gas main do intersect either of these main rivers whether directly or within byelaw distance of top of bank our consent will be required. We'd recommend



working with us as the designs for the diversion progress or when our formal consent is required for the detailed works.

Question 4: Is there anything we need to consider as we develop our plans for the proposed construction and satellite compounds?

We understand that a draft Outline Construction Environmental Management Plan (OCEMP) will outline the measures to be adopted to minimise the impact of the works associated with these compounds on the local environment. We would expect this to outline how the watercourses are to be protected including from surface water runoff.

The brochure indicates that when these are no longer needed, the land would be reinstated to its current use. Post-construction we would like to see all hard surfacing removed and improvements to biodiversity in these areas.

Question 5: Do you have any comments on our proposals for the Ingrebourne River and Ingrebourne Valley SMI?

We support the Ingrebourne River mitigation works. The mitigation included in the brochure covered realigning the section of river between the new A12 eastbound exit road and the loop road, floodplain reconnection and lowering banks. We thought the summary could have also mentioned the mitigation proposed for the culverts on the Ingrebourne and Weald Brook, for example, to support mammal passage and maintaining a natural river bed material. We look forward to seeing these mitigation measures captured within the DCO application.

The proposed improvements to the Ingrebourne will require our consent whether this is via a Flood Risk Activity Permit or covered as part of the Protected Provisions for the Development Consent Order. We look forward to being consulted on the final designs.

Question 6: What is your view on the location of the drainage ponds and access tracks?

We have no comment on the access tracks. The drainage pond furthest north is located in the area north of Grove Farm. This appears to be where the historic landfill and unauthorised waste deposit is situated. We commented on the mention of a balancing pond in this location in our latest response to the Water Framework Directive Assessment dated 2 September 2019 (our reference NE/2019/130617). As far as we're aware the ground investigations are not yet complete and there was an assumption made within the Water Framework Directive Assessment that any risks can be firmly mitigated against. We would caution against this as a definite location until the results of the ground investigations are complete so we know what the potential risks are. We want to avoid the mobilisation of contaminants from this area and ensure the risks can be managed through appropriate mitigation. Although there are no sensitive groundwater receptors the watercourses present sensitive surface water receptors. The location of the other drainage ponds seems ok.

Your brochure explains that the function of the drainage ponds is to capture heavy rain and ensure the 'local water system is not flooded' but does not mention water quality. The Ingrebourne and Weald Brook are currently not achieving good status partly as a result of urban diffuse pollution, for example, polluted road-runoff entering the watercourse. We will not be able to accept any further deterioration as a result of the scheme, and there should be an aim to improve which we'd like to see reflected in the Water Framework Directive Assessment. These ponds as part of a comprehensive sustainable drainage strategy need to be located and designed to prevent further deterioration and improve water quality in both these rivers. Their design also needs to be 'future proofed' to the expected loading from increased use taking into consideration the future lifetime of the scheme and climate change. The ponds along with the other SuDS measures need to be maintained to ensure there is no future deterioration in the quality of run-off which is discharging into the local watercourses as part of a SuDS maintenance strategy. They should also benefit biodiversity whilst delivering benefits for sustainable drainage and silt mitigation. The drainage/flood risk function of these ponds falls under the remit of the relevant Lead Local Flood Authority.

Question 7: What do you think about the location of the replacement gantry?

We have no comments.

Question 8: Do you have any comments on the potential use of the existing access track?

We have no comments.

Question 9: Do you have any further comments on the scheme changes and newly identified impacts detailed in this brochure?

We hope our comments above are useful and help progress with the DCO application. Again we recommend referring back to our response to the Section 42 consultation in January 2019 to ensure our points on other aspects that we have not covered in recent pre-application discussions are taken on board as part of the DCO application.

If you would like to discuss any of these matters further please contact me.

Yours sincerely


Planning Specialist

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