

M25 junction 28 improvement scheme

TR010029

9.27 Appendices relating to Applicant's Response to ExAQ Written Questions

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Appendices

Appendix A. Response to ExAWQ AQ1.16

A.1 Uncertainty Log

- A.1.1 The uncertainty log below outlines the list of developments that have been included in the Scheme traffic forecasting and modelling that are shown in Figure 5-2 of the Transport Assessment Report (APP-098). The uncertainty log has been provided to support the response to ExAWQ AQ1.16.

Core Scenario Uncertainty Log

Log ref	Local authority	Name / description	Type	Total dwellings by 2037	Employment type	Total floor space by 2037 (sqm)	Probability (by 2037)
153	Broxbourne	Plots F and L, Essex Road, Hoddesdon Business Park	Employment	-	Mixed B use (B1, B2 & B8)	3,844	Near Certain
157	Broxbourne	Magnum 25, Lea Road, Waltham Cross	Employment	-	B1a - offices With some warehouse use	9,487	Near Certain
167	Broxbourne	Land at Ratty's Lane, Hoddesdon	Employment	-	Sui generis	6,765	Near Certain
169	Broxbourne	Spurling Works, Hoddesdon	Employment	-	Mixed B use (B1, B2 & B8)	2,316	Near Certain
171	Broxbourne	Maxwells West, Cheshunt	Employment	-	Mixed B use (B1 & B8)	960	Near Certain
174	Broxbourne	Vacant snooker Club, Conduit Lane, Hoddesdon	Retail	-	Mixed A use (A1 & A3)	1,515	Near Certain
175	Broxbourne	Units A, B, D, E, F & K, Fawkon Walk, Hoddesdon	Retail	-	Mixed A use (A1 & A3)	582	Near Certain
198	Broxbourne	Woodside units, Hoddesdon	Retail	-	Mixed A use (A1 & A3)	502	Near Certain
199	Broxbourne	Herts Golf and Country Club	Leisure	-	C1 & D2	4,000	Near Certain
201	Broxbourne	Hoddesdon Fire & Ambulance Station, Hoddesdon	Leisure	-	C1 - hotel	4,480	Near Certain
202	Broxbourne	Cheshunt and Waltham Cross Conservative Club, Waltham Cross	Leisure	-	A4 - drinking establishments	804	Near Certain

Log ref	Local authority	Name / description	Type	Total dwellings by 2037	Employment type	Total floor space by 2037 (sqm)	Probability (by 2037)
207	Broxbourne	1st floor Granyte House, Cheshunt	Leisure	-	D2 - assembly and leisure	599	Near Certain
208	Broxbourne	The Country Club, Theobalds Park, Waltham Cross	Leisure	-	D2 - assembly and leisure	6,014	Near Certain
210	Broxbourne	Hoppet Court, Waltham Cross	Education	-	C2 - residential Institutions	0	Near Certain
211	Broxbourne	67 Crossbrook Street, Cheshunt	Education	-	C2 - residential Institutions	0	Near Certain
213	Broxbourne	3&4 Killarney Court, Lodge Crescent, Waltham Cross	Education	-	D2 - assembly and leisure	850	Near Certain
218	Broxbourne	Fawkon Walk, Hoddesdon	Education	-	C2 - residential institutions	803	Near Certain
220	Broxbourne	St Mary's Secondary School, Cheshunt	Education	-	D1 - non-residential institutions	1,249	Near Certain
223	Broxbourne	High Leigh Garden Village	Residential	485	-	-	Near Certain
224	Broxbourne	High Leigh Garden Village	Care Home	-	C2 - residential institutions	0	Near Certain
225	Broxbourne	High Leigh Garden Village	Education	-	D1 - non-residential institutions	0	Near Certain
227	Broxbourne	High Leigh Garden Village	Mixed use	-	A1, A3, B1, C1 & D2	1,860	Near Certain
446	Brentwood	Upminster Trading Park	Employment	-	B8 - storage or distribution	15,600	Near Certain
447	Brentwood	PERI site, Warley Street, Great Warley	Employment	-	Mixed B use (B1, B2 & B8)	32,160	Near Certain

Log ref	Local authority	Name / description	Type	Total dwellings by 2037	Employment type	Total floor space by 2037 (sqm)	Probability (by 2037)
451	Brentwood	Land at East Horndon	Employment	-	Mixed B use (B1 & B8)	24,000	More than Likely
460	Havering	Harold Wood Hospital Phase 2A and 4A and 2B	Residential	282	-	-	Near Certain
462	Havering	Angel Way Retail Park	Residential	350	-	-	Near Certain
1593	Enfield	Retail Floorspace Provision up to 2015	Retail	-	-	15,700	More than Likely
1594	Enfield	Retail Floorspace Provision up to 2015	Retail	-	-	2,244	More than Likely
1595	Enfield	Retail Floorspace Provision up to 2015	Retail	-	-	1,496	More than Likely
1596	Enfield	Retail Floorspace Provision up to 2015	Retail	-	-	3,080	More than Likely
1597	Enfield	Retail Floorspace Provision up to 2015	Retail	-	-	2,200	More than Likely
1598	Enfield	Retail Floorspace Provision up to 2015	Retail	-	-	13,640	More than Likely
1858	Enfield	Meridian Water Masterplan	Mixed use	10,000	-	-	Near Certain
1872	Enfield	Ponders End	Residential	1,000	-	-	Near Certain
1874	Enfield	New Southgate	Mixed use	766	-	-	Near Certain

Log ref	Local authority	Name / description	Type	Total dwellings by 2037	Employment type	Total floor space by 2037 (sqm)	Probability (by 2037)
2000	Havering	Angel Way Retail Park	Employment	-	A1 - shops	3,800	Near Certain
2001	Havering	Angel Way Retail Park	Employment	-	C1 - hotels	2,100	Near Certain
2002	Havering	Beverley Bungalow	Employment	-	D1 - non-residential institutions	3,390	Near Certain
2006	Havering	Units 11-12, Stafford Industrial Estate	Employment	-	Mixed B use (B1, B2 & B8)	3,400	Near Certain
2009	Havering	Havering College	Employment	-	A1 & D1	4,150	Near Certain
2010	Havering	Chaucer House	Employment	-	D2 - assembly and leisure	6,700	Near Certain
2011	Havering	Liberty Shopping Centre, 44-52	Employment	-	A1 - shops	10,528	Near Certain
6005	Havering	25-29 Market Place	Mixed Use	-	C1 - hotels	0	Near Certain
6008	Havering	131-133 Gooshays Drive	Retail	-	A1 - shops	1,923	Near Certain
6009	Havering	31 High Street, St Andrew's	Retail	-	A1 - shops	2,440	Near Certain
6030	Havering	St Georges Hospital, Suttons Lane, Hacton	Residential	290	-	-	Near Certain
6118	Broxbourne	Cheshunt Lakeside	Residential	1,750	-	-	Near Certain
6120	Broxbourne	Tudor Nurseries	Residential	360	-	-	Near Certain
6121	Broxbourne	North / South of Andrews Lane and Peakes Way	Residential	444	-	-	Near Certain

Log ref	Local authority	Name / description	Type	Total dwellings by 2037	Employment type	Total floor space by 2037 (sqm)	Probability (by 2037)
6133	Broxbourne	High Leigh Garden Village	Employment	-	B1a - offices	2,325	Near Certain
6134	Broxbourne	High Leigh Garden Village	Hotel	-	C1 - hotel	2,322	Near Certain
6137	Broxbourne	Former Wormley JMI School, St Laurence Drive, Wormley, EN10 6LH	Care home	-	C2 - care home	0	Near Certain
6138	Broxbourne	Speakerbus Ltd, Fourways House, Ware Road, Hoddesdon, EN11 9RS	Care home	-	C2 - care home	0	Near Certain
6139	Broxbourne	110-114 High Street, Hoddesdon, EN11 8HD	Retail	-	A1 - shops	502	Near Certain
6140	Broxbourne	110-114 High Street, Hoddesdon, EN11 8HD	Retail	-	A3 - restaurants and cafes	502	Near Certain
6141	Broxbourne	Formerly Delamare House, Delamare Road, Cheshunt, EN8 9HD	Employment	-	B8 - storage or distribution	1,745	Near Certain
6142	Broxbourne	Brookfield Retail Park, Halfhide Lane, Cheshunt, EN8 0QE	Retail	-	A1 - shops	2,446	Near Certain
6143	Broxbourne	Broxbourne School, High Road, Broxbourne, EN10 7DB	Educational	-	D1 - non-residential institutions	11,996	Near Certain

Log ref	Local authority	Name / description	Type	Total dwellings by 2037	Employment type	Total floor space by 2037 (sqm)	Probability (by 2037)
6147	Broxbourne	VolkerWessels, Boxwood Park, Hertford Road, Hoddesdon, EN11 9BX	Employment	-	B1a - offices	2,362	Near Certain
6148	Broxbourne	Grange House, Geddings Road, Hoddesdon, EN11 0NT	Employment	-	B8 - storage or distribution	1,222	Near Certain
6149	Broxbourne	Between South Side Of, Essex Road and Railway, H1, H2 Units, Hoddesdon	Employment	-	B8 - storage or distribution	2,454	Near Certain
6161	Welwyn Hatfield	Xerox Campus, Bessemer Road, WGC	Residential	210	-	-	Near Certain
6177	Welwyn Hatfield	Comet Hatfield, St Albans Road West, Hatfield, AL10 9RH	Residential	272	-	-	More than Likely
6178	Welwyn Hatfield	Former Shredded Wheat Factory, Bridge Road, Welwyn Garden City, AL8 6UN	Residential	850	-	-	More than Likely
6179	Enfield	Chase Farm Hospital, Enfield	Residential	500	-	-	Near Certain

Appendix B. Response to ExAWQ BHR1.3

B.1 Table 7.21 in Environmental Statement

- B.1.1 A copy of Table 7.21 taken from the biodiversity assessment, Chapter 7 of the Environmental Statement (ES) (APP-029), has been provided in response to ExAWQ BHR1.3. As requested by the ExA, reversibility, frequency and timing have been added to the categorisation of each impact and any residual effect. Frequency and timing of impacts and effects on features resulting from the Scheme have been added only where this is relevant to the type of impact. The table has been extracted from Chapter 7 and presented here, with track changes showing where the text has been edited.

Revised Table 7.21: Summary of residual effects on biodiversity resources

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
Ancient Woodland	National	Construction Potential pollution impacts.	Temporary, <u>construction only, reversible</u>	Standard pollution prevention measures included in the CEMP.	Unlikely to have a significant effect on conservation status.	Neutral
		Operation Incidental damage, pollution events, or <u>Changes in air quality.</u>	<u>Incidental damage / pollution events:</u> Small-scale and temporary, -reversible. <u>Changes in air quality: permanent, irreversible</u>	Pollution prevention measures provided in the design.	Unlikely to have a significant effect on conservation status.	Neutral
Veteran trees	County or Unitary Authority Area	Construction Loss of two veteran trees.	Permanent, <u>irreversible.</u>	A departure from Highways Standards has been proposed to allow the retention of Tree T059. Veteran trees that are lost will be replaced with suitable native species (eight trees for each tree removed, total of 16) Retained veteran trees will be protected. Measures to provide continuity of dead-wood resource for invertebrates proposed including veteranisation of existing	Significant effect on the conservation status due to loss of trees, <u>irreversible.</u>	Moderate adverse

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
				trees, retention of felled trees and planting of suitable tree species.		
		Operation Incidental damage, pollution events or changes in air quality.	<u>Temporary</u> <u>Incidental damage/ pollution events: temporary, reversible.</u> <u>Changes in air quality: permanent, irreversible</u>	Pollution prevention measures provided in the design.	Unlikely to have a significant effect on conservation status.	Neutral
The Manor LNR	County or Unitary Authority Area	No impacts identified	N/A	None required.	No effects.	Neutral
Ingrebourne Valley SMI	County or Unitary Authority Area	Construction Loss of 9.3% of terrestrial habitat during construction, of which 1.9% would be permanent. Loss primarily of woodland, scrub, semi-improved grassland and the	<u>Permanent and temporary</u> <u>Permanent loss of habitat: irreversible</u> <u>Temporary loss of habitat: construction only, reversible</u> <u>Pollution, noise and visual disturbance: temporary,</u>	Habitat loss from the SMI will be minimised. Habitat within the SMI that is outside of the works area will be retained and protected. Mitigation for pollution and disturbance in the Outline CEMP. Woodland and grassland habitat will be replaced on	Significant adverse effect on the conservation objectives of the SMI within the vicinity of the Scheme until new habitats become established. Permanent loss of 1.9 % of SMI can	Moderate adverse becoming slight adverse on establishment of mitigation and compensation habitat.

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		<p>shading of watercourses.</p> <p>Changes to local hydrology and water quality.</p> <p>Ground and surface water pollution, noise and visual disturbance.</p>	<p><u>construction only, reversible</u></p>	<p>new earthworks, around new ponds and elsewhere within the Scheme.</p> <p>Enhancement of Ingrebourne River and Weald Brook within the Scheme.</p> <p>Widespan bridges to allow movement of species along river corridors.</p> <p>Control / removal of non-native goldenrod to reinstate grassland habitat.</p> <p>To compensate for permanent loss of land within SMI, long-term management of reinstated and exiting habitats adjacent to the new loop road will be carried out in areas permanently acquired for the Scheme under a LEMP.</p>	<p>not be avoided, <u>irreversible</u></p>	
		<p>Operation</p> <p>Noise, lighting and visual stimuli.</p>	<p><u>Permanent Noise, lighting, visual stimuli: permanent, reversible</u></p>	<p>Pollution prevention measures provided in the design.</p>	<p>Unlikely to have a significant residual effect on the conservation objectives of the</p>	<p>Slight adverse</p>

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		Incidental damage, or € Changes in air quality.	<u>Incidental damage: reversible</u> <u>Changes in air quality: irreversible</u>	LEMP to manage ECAs and replacement habitat in the long-term.	SMI. However, as a precaution, significance of effect assigned as slight adverse, <u>irreversible</u> .	
Other non-statutory designated sites	County or Unitary Authority Area	Construction Potential ground and surface water pollution, noise and visual disturbance.	Small-scale, temporary, <u>reversible</u>	Mitigation for pollution and disturbance in the Outline CEMP.	Unlikely to have a significant effect on the conservation objectives of these sites.	Neutral
		Operation Due to proximity of these habitats to the existing road infrastructure, effects over and above those currently experienced by these habitats are unlikely.	N/A	None required.	Neutral	Neutral
Weald Brook	County or Unitary	Construction (general): Potential for deterioration in	<u>Permanent and temporary</u> <u>Extension of culvert and shading:</u>	Mitigation: Adoption and adherence to pollution prevention measures and best	With mitigation and enhancement measures implemented,	Slight adverse becoming Neutral on

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
	Authority Area	<p>water quality associated with the risk of run-off from construction areas, accidental spills and ingress of sediment laden water.</p> <p>Construction: Temporary disturbance to, and permanent loss of floodplain and riparian corridor habitat resulting from combination of Grove bridge loop road and A12 eastbound offslip road clear span crossings.</p> <p>Permanent effects on in-channel, riparian and floodplain habitat complexity resulting from</p>	<p><u>permanent, irreversible</u></p> <p><u>Other potential impacts: temporary, construction only, reversible</u></p>	<p>practice guidance to control the risk of pollution of surface and ground water – as listed in Outline CEMP.</p> <p>Realignment of two sections of existing straight channel on the lower Weald Brook (W02). Works will include appropriate measure to prevent harm to aquatic receptors within sections to be realignment.</p> <p>Incorporation of natural bed into the design of the Weald Brook Culvert extension (W08).</p> <p>Minimising A12 footprint by construction of a retaining wall instead of a large embankment structure (W09).</p> <p>Crossing structures have been set as high and wide as feasible to limit adverse geomorphological and ecological impacts (W10) and have been planned to</p>	<p>residual effects of the Scheme on the Weald Brook and associated aquatic species are not anticipated.</p> <p>Channel realignment works and floodplain enhancement are considered to adequately mitigate for the permanent footprint of the Scheme.</p>	<p>establishment of mitigation features</p>

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		<p>footprint and shading effects of new crossings. Reduction in riparian connectivity and increase in habitat fragmentation.</p> <p>Construction: Temporary disturbance to, and permanent loss of floodplain and riparian corridor habitat resulting from Duck Wood bridge northern loop clear span crossing.</p> <p>Permanent effects on in-channel, riparian and floodplain habitat complexity resulting from footprint and shading effects of new crossing.</p>		<p>limit the need for hard bank protection (W11). Lining of Balancing Pond No.1. if GI indicates a risk of the leaching of contaminants from the Brook Street Landfill to watercourses (W16). Measures to prevent excessive scour or “wash-out” of bed material immediately downstream of the Weald Brook culvert extension (W14) and measures to facilitate mammal passage through the extended culvert footprint (W15). Enhancement: Lowering of c 1,600 m² of floodplain, a flood compensation area and creation of a backwater to Weald Brook, just upstream of Duck Wood bridge (W04). Plus, lowering of 10,200 m² of floodplain in combination</p>		

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		Reduction in riparian connectivity and increase in habitat fragmentation.		with a flood compensation area adjacent to Grove bridge and Maylands bridge (W05).		
		Construction: Temporary disturbance to, and permanent loss of open watercourse channel and riparian corridor resulting from 8 m extension of exiting Weald Brook culvert.		Long-term maintenance works to manage riparian trees along the Weald Brook in a way that creates varied light intensity on the channel and riparian zone of the river to improve condition for macrophytes (W06).		
		Slight increase in extent of habitat fragmentation and small loss of habitat availability for aquatic and marginal species as a result of culvert placement.				
		Construction:				

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		Potential for pollution of the Weald Brook resulting from disturbance of land fill associated with Balancing Pond 1 and ingress to watercourse via groundwater connectivity.				
		Operational: Potential for pollution ingress to watercourses and negative effects on habitats and species associated with discharges from new road infrastructure. Including changes to watercourse hydromorphology.	<u>Incidental, Temporary to permanent (depending on severity of pollution event), reversible or irreversible (depending on severity of pollution event)</u>	Provision of new drainage infrastructure which provides management of road run-off quality and the adoption of balancing ponds.	Unlikely to have a significant effect on the watercourse habitat and/or associated aquatic species.	Neutral
		Construction:		Mitigation:		

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
Ingrebourne River	County or Unitary Authority Area	<p>Temporary disturbance to, and permanent loss of open watercourse channel and riparian corridor resulting from 80 m extension of Grove culvert.</p> <p>Increase in extent of habitat fragmentation and loss of habitat for aquatic and marginal species as a result of culvert placement.</p> <p>Construction: Temporary disturbance to, and permanent loss of floodplain and riparian corridor habitat resulting from Grove <u>B</u>bridge loop road crossing</p>	<p><u>Permanent and temporary</u></p> <p><u>Extension of culvert (loss of open channel and riparian corridor habitat, floodplain and riparian corridor habitat, increase in fragmentation): permanent, irreversible</u></p> <p><u>Other potential impacts: temporary, construction only, reversible</u></p>	<p>Adoption and adherence to pollution prevention measures and best practice guidance to control the risk of pollution of surface and ground water – as listed in CEMP.</p> <p>Incorporation of natural bed into the design of the Grove Culvert extension (W08).</p> <p>Minimising A12 eastbound on-slip footprint by construction of a retaining wall instead of a large embankment structure (W09).</p> <p>Crossing structures have been set as high and wide as feasible to limit adverse geomorphological and ecological impacts (W10) and have been planned to limit the need for hard bank protection (W11).</p> <p>Measures to prevent excessive scour or “wash-out” of bed material</p>	<p>Despite the mitigation and enhancement package (realignment, backwaters and floodplain measures) associated with the Ingrebourne River, the residual effect of the permeant loss of open water and riparian habitat caused by the 80 m culvert extension is significant within the DCO boundary. The concomitant increase in habitat fragmentation caused by the culvert extension and new Grove bridge loop road crossing are assessed as having a long-term</p>	<p>Moderate adverse within the DCO boundary – in relation to the permeant loss of open water habitat only.</p> <p>Neutral in relation to Ingrebourne WFD waterbody (taking into account off-site works)</p>

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		<p>clear span bridge structure. Permanent effects on in-channel and riparian habitat complexity resulting from shading effects of structure due to the low level of the deck height. Reduction in riparian connectivity and increase in habitat fragmentation.</p> <p>Construction: Temporary disturbance to, and permanent loss of floodplain and riparian habitat as a result of A12 eastbound off-slip road alignment.</p>		<p>immediately downstream of the Grove culvert extension (W14) and measures to facilitate mammal passage through the extended culvert footprint (W15). Lining of Balancing Pond No.1. if GI indicates a risk of the leaching of contaminants from the Brook Street Landfill to watercourses (W16). Enhancement: Realignment of c 170 m of existing straight channel to new sinuous course between Grove Farm and the Weald Brook confluence i.e. downstream of the culvert extension. Including the restoration of more naturally functioning channel (W01). Lowering of approximately 7,500 m² of floodplain, creation of backwaters on</p>	<p>negative effect on the watercourse habitat and habitat availability for aquatic species within the DCO boundary. irreversible. Measures to off-set this residual effect within the DCO boundary with enhancement of riverine habitats elsewhere within the Ingrebourne WFD waterbody (GB106037028130) will be delivered by the Environment Agency, funded by the Applicant.</p>	
		Construction:				

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		Potential for pollution of the Ingrebourne River resulting from disturbance of land fill associated with Balancing Pond 1 and ingress to watercourse via groundwater connectivity.		the Ingrebourne between Grove Farm and the Weald Brook confluence (W03).		
		Operational: Potential for pollution ingress to watercourses and negative effects on habitats and species associated with discharges from new road infrastructure. Including to changes to watercourse hydromorphology.	<u>Incidental, Temporary to permanent (depending on severity of pollution event), reversible or irreversible (depending on severity of pollution event)</u>	Provision of new drainage infrastructure which provides management of road run-off quality and the adoption of balancing ponds.	Unlikely to have a significant effect on the watercourse habitat and/or associated aquatic species.	Neutral

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
Ephemeral ditches	Local	<p>Construction (general): Potential for deterioration in water quality associated with the risk of run-off from construction areas, accidental spills and ingress of sediment laden water.</p> <p>Construction: Permanent loss of 1,900 m ephemeral ditch habitat and associated aquatic species under the footprint of the Scheme earthworks. Habitat is considered to provide only limited value to aquatic receptors due to intermittent</p>	<p><u>Permanent and temporary</u></p> <p><u>Loss of ephemeral ditches: permanent, irreversible</u></p> <p><u>Other impacts: -and temporary (construction only) reversible</u></p>	<p>Mitigation: Adoption and adherence to pollution prevention measures and best practice guidance to control the risk of pollution of surface and ground water – as listed in CEMP. Approximately 3,000 m of unlined ephemeral drainage ditch will be created to manage run-off from non-pavement surfaces (W07). Therefore, a net gain of 1,100 m of this habitat typology will result from the Scheme, providing an increase in the extent and distribution of habitat for opportunistic aquatic species during times of flow.</p>	Unlikely to have a significant effect on the conservation objectives of these sites.	Neutral

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		nature of flow within the existing ditch network.				
		Operational: Potential for pollution ingress to ditch habitat and negative effects on species associated with discharges from new road infrastructure.	<u>Incidental, Temporary to permanent (depending on severity of pollution event), reversible or irreversible (depending on severity of pollution event)</u>	Provision of new drainage infrastructure which provides management of road run-off quality.	Unlikely to have a significant effect on the watercourse habitat and/or associated aquatic species.	Neutral
Other habitats outside of Ingrebourne Valley SMI Broadleaved plantation woodland Semi-improved grassland	Local	Construction Loss of 9.1 ha of habitat including broadleaved plantation woodland, semi-improved grassland and species poor hedgerow.	Permanent and temporary <u>Permanent loss of habitat: irreversible</u> <u>Temporary loss of habitat: construction only, reversible</u>	Habitat loss will be minimised and habitat outside the works area will be retained and protected. Mitigation for pollution and disturbance in the Outline CEMP Temporary construction areas will be reinstated to former habitats after construction. These former habitats will be recreated to provide an increase in the number of species	Adverse effect on the conservation status of habitats until new habitats become established.	Slight adverse becoming Neutral on establishment of mitigation and compensation habitat.

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
Species-poor hedgerow Ponds				compared to the exiting prior to construction (e.g. use of flower-abundant grassland mixes).		
		Operation Incident damage (<u>traffic accidents</u>), pollution events or <u>Changes in air quality.</u>	<u>Changes in air quality: positive or negative, permanent, irreversible</u> <u>Other incidental pollution events, negative, Temporary, reversible</u>	Pollution prevention measures provided in the drainage design. LEMP to manage replacement habitat in the long-term.	Neutral	Neutral
Terrestrial invertebrates (including stag beetle and alder flea-weevil)	County or Unitary Authority Area	Construction Loss of habitat and harm to adults, eggs and larvae.	<u>Permanent and temporary</u> <u>Permanent loss of habitat: irreversible</u> <u>Temporary loss of habitat during construction: reversible</u> <u>Harm to individuals/eggs/larvae: effect on populations reversible or irreversible depending on scale of loss</u>	Habitat loss will be minimised and habitat outside the works area will be retained and protected. Woodland, wood edge and flower-abundant grassland habitat will be replaced on new earthworks, around new ponds and elsewhere within the Scheme. New habitat within the ECAs will benefit invertebrates and be managed appropriately in line with the Outline LEMP	Significant adverse effect on the conservation status of invertebrate species until new habitats become established.	Moderate adverse becoming Neutral on establishment of mitigation and compensation habitat.

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
				To provide continuity of deadwood habitat, felled trees will be retained appropriately, trees will veteranised. Cherry plum will be planted to provide an important foraging resource for invertebrates in early spring.		
		Operation Incident damage (traffic accidents) or pollution events.	<u>Incidental, Temporary, reversible</u>	Pollution prevention measures provided in the design. LEMP to manage ECAs and replacement habitat in the long-term.	Unlikely to have a significant effect on conservation status of the population.	Neutral
Great crested newt	County or Unitary Authority Area	Construction Loss of a proportion of terrestrial habitat. Fragmentation of habitat. Harm to individuals. No impacts on the great crested newt population adjacent to the	<u>Permanent and temporary</u> <u>Permanent loss of habitat: irreversible</u> <u>Temporary loss of habitat during construction: reversible</u> <u>Harm to individuals: effect on population reversible or irreversible depending on scale of loss</u>	Site clearance, construction, habitat creation and habitat enhancement would take place under an EPS mitigation licence. Pond P2 to be retained, protected and enhanced/restored. Compensation habitat for great crested newts in the ECA B will result in	Unlikely to have a significant effect on conservation status of great crested newt populations.	Slight adverse becoming Neutral on establishment of habitat

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		Scheme south of the A12.		<p>additional breeding habitat (at least two ponds, restoration of existing pond P2) and improved terrestrial habitat. This will benefit the meta-population northwest of the Scheme.</p> <p>Wide-span overbridges allow dispersal of newts to land within the new loop road.</p> <p>Appropriate redesign of golf course to ensure there is no net loss of foraging and sheltering opportunities.</p> <p>Construction south of the A12 and on land over 250 m from ponds would be carried out sensitively under a PMW to protect individual newts which may be present.</p>		
		Operation Pollution of watercourses.	Temporary or permanent <u>Incidental mortality: effect on population reversible</u>	Provision of habitat enhancement close to P2 to reduce likelihood of dispersal across the new carriageway reducing	Unlikely to have a significant effect on conservation status of these populations.	Neutral

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		<u>Incidental mortality of individuals on new road</u>		mortality of individuals to incidental levels only. LEMP to manage ECA and replacement habitat in the long-term.		
Reptiles	Local	Construction Loss and fragmentation of habitat. Harm to individuals.	Temporary and permanent <u>Permanent loss of habitat: irreversible</u> <u>Temporary loss of habitat during construction: reversible</u> <u>Harm to individuals: effect on population reversible or irreversible depending on scale of loss</u>	Habitat loss will be minimised and habitat outside the works area will be retained and protected. Site clearance will be carried out under a PMW to protect individual reptiles from harm. Habitat will be replaced on new earthworks, around new ponds and elsewhere within the Scheme; and retained grassland habitats will be enhanced. This mitigation and new habitat within the ECAs will benefit reptiles.	Unlikely to have a significant effect on conservation status of reptile populations.	Neutral
		Operation Negligible impacts.	N/A	None required.	Unlikely to have a significant effect on conservation status of these populations.	Neutral

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
Birds (including kingfisher)	Local	Construction Habitat loss. Displacement due to noise and visual disturbance. Harm to nesting birds, eggs or young.	Temporary and permanent <u>Permanent habitat loss, harm to nests, eggs and individuals: effect on population reversible or irreversible depending on scale of loss</u> <u>Temporary loss of habitat during construction: reversible</u> <u>Disturbance: nesting season only, temporary, reversible</u>	Habitat loss will be minimised and habitat outside the works area will be retained and protected. Habitat replacement, compensation and enhancements will benefit bird species. Nest boxes will be provided to compensate for the loss of nesting opportunities during construction.	Unlikely to have a significant effect on conservation status of bird populations.	Slight adverse becoming Neutral on establishment of habitat
		Operation Displacement due to noise and visual disturbance.	Permanent; <u>irreversible</u>	LEMP to manage ECA and replacement habitat in the long-term.	Unlikely to have a significant effect on conservation status of bird populations.	Neutral
Bats	Local	Construction Reduction in foraging resource with temporary loss and disruption of foraging and commuting areas.	Temporary and permanent <u>Permanent loss of habitat/change to foraging and commuting areas: irreversible</u>	Where practicable, removal of trees with potential to support roosting bats will be avoided. Trees with potential to support roosting bats will be checked for the	Unlikely to have a significant effect on conservation status of bat populations.	Slight adverse becoming neutral on establishment of habitats

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		<p>Loss of trees with roosting potential. Potential temporary disturbance (noise/light/visual) of roosts.</p>	<p><u>Temporary loss of habitat/change in foraging and commuting areas: reversible</u> <u>Loss of trees with roosting potential: permanent, irreversible</u> <u>Disturbance: construction only: temporary, reversible</u></p>	<p>presence of roosting bats prior to removal. A variety of bat boxes will be placed at suitable locations in The Grove, Alder Wood and along Weald Brook to mitigation for the loss of potential roosting features. Where temporary lighting is required for construction, it would be designed sensitively to avoid illuminating adjacent habitats. Creation and reinstatement of woodland, scrub, grassland, hedgerow and ponds would provide replacement and alternative foraging areas in the long-term. Embedded design including widespan bridge would allow bats to commute along Weald Brook into the retained</p>		

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		Operation Displacement due to lighting <u>and new road</u> .	Permanent, <u>reversible</u>	habitat within the loop road. LEMP to manage reinstated and created habitat in the long-term. Operational lighting will be designed in accordance with best practice guidelines taking into consideration the presence of commuting and foraging bats and other wildlife, including measures to avoid and minimise light spill onto adjacent habitat, particularly woodland and the Weald Brook.	Unlikely to have a significant effect on conservation status of bat populations.	Neutral
Otter	County or Unitary Authority Area	Construction Loss of habitat and fragmentation of <u>territories/home ranges</u> . Disturbance of individuals.	Temporary and permanent <u>Permanent loss of habitat/fragmentation due to culvert extension: irreversible</u> <u>Temporary loss of habitat/fragmentation of home ranges:</u>	New meanders and reprofiling of the rivers and flood-plain will be created. Safe mammal passage through culverts will be included through length of extended and existing culverts. Mitigation for pollution and disturbance in the CEMP.	Significant adverse effect on the conservation status of this species until new river habitats become established.	Moderate adverse becoming neutral on establishment of river habitat.

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
			<u>construction only, reversible</u> <u>Disturbance of individuals: temporary, construction only, reversible</u>			
		Operation Killing or injury of individuals on roads.	Permanent, <u>incidental, effect on population reversible</u>	Safe mammal passage and fencing will reduce casualties on roads.	Unlikely to have a significant effect on conservation status of the otter population.	Neutral
Badger	Local	Construction Loss of foraging habitat. Disturbance to individuals or setts	<u>Permanent and temporary</u> <u>Permanent loss of habitat: irreversible</u> <u>Temporary loss of habitat/ disturbance to individuals or setts: construction only, reversible</u>	Habitat replacement, compensation and enhancement will replace foraging habitats. Wide-span overbridges allow movement of badgers. Mitigation in the CEMP will ensure that badgers are not harmed and setts not disturbed or damaged.	Unlikely to have a significant effect on conservation status of badger populations.	Neutral
		Operation Incidental killing or injury of	Permanent, <u>incidental, effect on population reversible</u>	Widespan bridges and safe mammal passage through culvert to allow movement of badgers.	Unlikely to have a significant effect on conservation status of badger populations.	Neutral

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		individuals on roads.				
Other priority mammals – hedgehog and harvest mouse	Local	Construction Loss of habitat. Harm to individuals Disturbance and displacement	<u>Permanent and temporary</u> <u>Permanent loss of habitat:</u> <u>irreversible</u> <u>Harm to individuals:</u> <u>construction only,</u> <u>irreversible</u> <u>Temporary loss of habitat/ disturbance/ displacement:</u> <u>construction only,</u> <u>reversible</u>	Habitat replacement and creation will benefit other mammal species and wide-span overbridges allow movement of mammals.	Unlikely to have a significant effect on conservation status of other priority mammal populations.	Neutral
		Operation Incidental killing or injury <u>of individuals</u> on roads.	Permanent, <u>incidental,</u> <u>effect on population</u> <u>reversible</u>	Incidental only.	Unlikely to have a significantly effect on conservation status of other mammal populations.	Neutral
Non-native invasive species	N/A	Construction Spreading of invasive species within Ingrebourne Valley SMI and other areas	<u>Temporary to</u> <u>Permanent</u> <u>depending on scale of spread</u>	Measures to prevent the spread of non-native species including Himalayan balsam and non-native goldenrod will	Not significant.	Neutral

Biodiversity resource	Value	Summary of potential impacts	Impact characterisation	Summary of proposed mitigation/ compensation	Residual effect	Significance
		outside the Scheme. Spread of non-native species in habitat reinstatement and creation areas if untreated topsoil used.	<u>Reversible or irreversible depending on scale of spread</u>	be implemented under a management plan.		
		Operation Negligible impacts	N/A	Management measures to be included in LEMP.	Not significant.	Neutral

Appendix C. Response to ExAWQ CA1.5

C.1 Extract from Highways England Delivery Plan

Extracts (front cover, page 36 and page 75 in Annex B: Performance Network) from the Highways Delivery Plan (2020-2025) to support Highways England's response to ExAWQ CA 1.5 relating to the availability of funding for the Scheme.



To enable free-flowing journeys, we will also upgrade the remaining single carriageway section between Cambridge and the M1 to dual carriageway. This will include three grade-separated junctions: A1/A421 (Black Cat), Cambridge Road/B1428 (east of St Neots) and A428/A1198 (Caxton Gibbet).

Improving connectivity and access

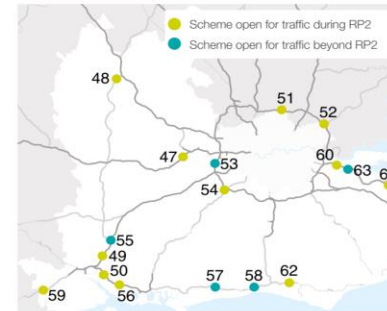
We will deliver, and support, several schemes that improve connectivity and access in the area. This includes the completion of a major upgrade to the A14 between the A1 and north Cambridge. As part of this, we have widened the road to three lanes and provided a new bypass around Huntingdon. We will create distributor roads for local traffic and remodel key junctions along the route. The scheme will help decrease congestion to the Port of Felixstowe.

Delivering smart motorways

We will deliver one smart motorway scheme in the east. This will upgrade existing smart motorway on the M1 between junctions 10 (Luton) and 13 (A421/Milton Keynes south), providing continuous all lane running.



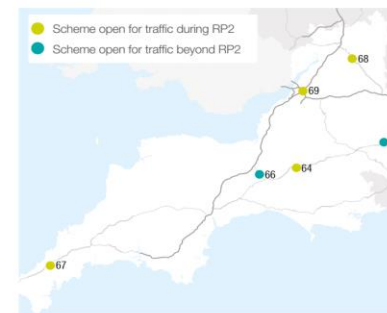
The south and west



In the first road period in the south and west, we opened nine schemes and started work on a further ten schemes. Over the second road period, we will begin an additional 16 schemes and open 16 for traffic. We will open the remaining seven schemes for traffic during future road periods.

No.	Name
47	M4 junctions 3 to 12
48	A34 Newbury to Oxford enhancements
49	M3 junctions 9 to 14
50	M27 junctions 4 to 11
51	M25 junction 25
52	M25 junction 28
53	M25 junctions 10 to 16
54	M25 junction 10
55	M3 junction 9
56	M27 Southampton junction 8
57	A27 Arundel Bypass
58	A27 Worthing and Lancing Improvements
59	A31 Ringwood
60	A2 Bean and Ebbsfleet
61	M2 junction 5
62	A27 East of Lewes package
63	Lower Thames Crossing

Excludes RP1 scheme - M271/A35 Redbridge roundabout upgrade which was rescheduled to open for traffic mid 2020-21.



No.	Name
64	A303 Sparkford to Ilchester
65	A303 Amesbury to Berwick Down
66	A358 Taunton to Southfields
67	A30 Chilverton to Carland Cross
68	A417 Air Balloon
69	M4 junctions 19 to 20 upgrade and M5 junctions 16 to 17 upgrade

South-east schemes			
Scheme number	Scheme	Start of works	Open for traffic
47	M4 junctions 3 to 12	Started	2021-22 Q4
48	A34 Newbury to Oxford enhancements	Started	2021-22 Q4
49	M3 junctions 9 to 14	Started	2023-24
50	M27 junctions 4 to 11	Started	2021-22 Q2
51	M25 junction 25	2020-21 Q4	2022-23
52	M25 junction 28	2021-22 Q4	2024-25
53	M25 junctions 10 to 16	2022-23 Q2	RP3
54	M25 junction 10	2021-22 Q4	2023-24
55	M3 junction 9	2023-24	RP3
56	M27 Southampton junction 8	2021-22 Q2	2022-23
57	A27 Arundel bypass	2023-24	RP3
58	A27 Worthing and Lancing improvements	2024-25	RP3
59	A31 Ringwood	2021-22 Q2	2022-23
60	A2 Bean and Ebbsfleet	Started	2022-23
61	M2 junction 5	2020-21 Q4*	2024-25
62	A27 East of Lewes package	Started	2022-23
63	Lower Thames Crossing	2022-23 Q4	RP3

*Start of works date subject to change following recent delays to statutory planning processes.
 Excludes RP1 scheme M2711/A35 Redbridge roundabout upgrade which was rescheduled to open for traffic mid 2020-21.

South-west schemes			
Scheme number	Scheme	Start of works	Open for traffic
64	A303 Sparkford to Ilchester	2020-21 Q4*	2023-24
65	A303 Amesbury to Berwick Down	2022-23 Q2*	RP3
66	A358 Taunton to Southfields	2024-25	RP3
67	A30 Chiverton to Carland Cross	Started	2023-24
68	A417 Air Balloon	2022-23 Q4	2024-25
69	M4 junctions 19 to 20 and M5 junctions 16 to 17 upgrade dynamic hard shoulder running to all lane running	2022-23 Q2	2023-24

*Start of works dates subject to change following recent delays to statutory planning processes.

Table 5 Enhancements scheme list

Housing infrastructure fund schemes			
Scheme	Region	Start of works	Open for traffic
A120: Tendring/Colchester Border Garden Community	East	2022	2024
M5 junction 10 and link road	South-west	2022	2024
A249: Swale transport infrastructure	South-east	2021	2024
M6: South Lancaster Growth Catalyst – junction 33a	North-west	2024	RP3

These schemes will be delivered by local authorities with our support and are subject to future planning decisions.

Schemes delivered by third parties with a funding contribution from Highways England			
Scheme	Region	Start of works	Open for traffic
A5 Towcester relief road	Midlands	2021-22	RP3
M11 junction 7a	East	2020-21 Q2	2022-23
M55 junction 2	North-west	Started	2023-24
M62 junction 19	North-west	2020-21 Q3	2022-23

These schemes will be delivered by third parties with our support and are subject to future planning decisions.

Appendix D. Response to ExAWQ CA1.8

D.1 Maylands Golf Course Plots

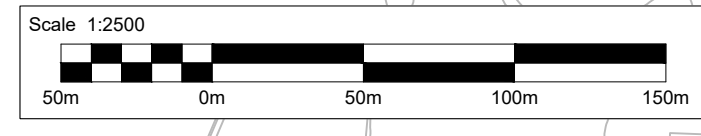
- D.1.1 Appendix D provides a plan in response to ExAWQ CA 1.8 requesting that a visual plan combining the Works Plan and Land Plan plots affecting Maylands Golf Course is submitted.

DO NOT SCALE

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Millimetres



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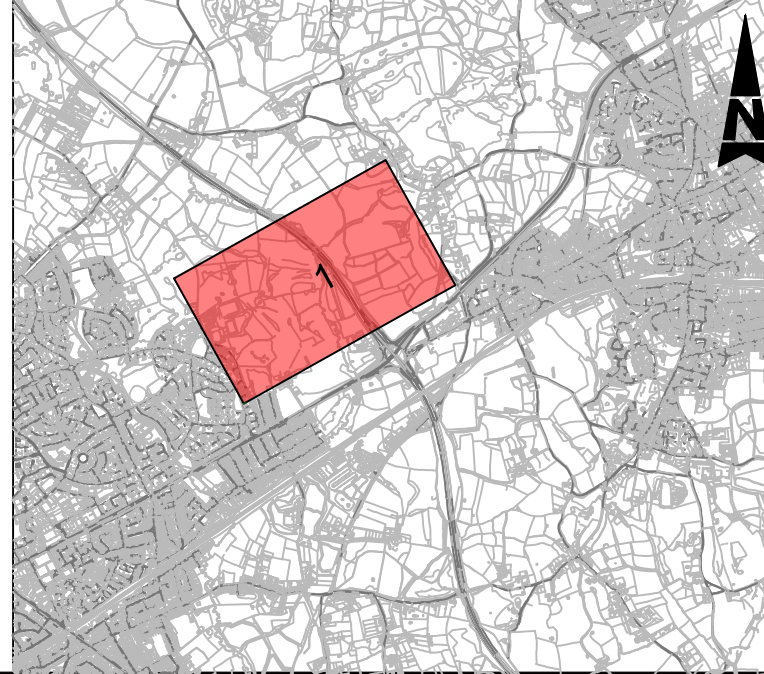


Notes

- These plans should be read in conjunction with Schedule 1 (Authorised Development) to the Development Consent Order (application document reference TR010029/APP/3.1), the Land plans (application document reference TR010029/APP/2.2) and the Engineering drawings and sections (application document reference TR010029/APP/2.8).
- The proposed works will be subject to detailed design development. Any changes will be limited to being within the DCO boundary or the relevant limits of deviation where not coincident with the DCO boundary and subject to the requirements of Schedule 2 to the Development Consent Order (application document reference TR010029/APP/3.1).
- Utilities, Diversions and Drainage pipe works are only shown if proposed outside of the highway work limit of deviation. Other utilities are present. Diversions and other drainage pipe works are required and covered within the Development Consent Order (application document reference TR010029/APP/3.1).

Legend:

	Maylands Golf Club Land Plan Parcels		Earthworks		Deposit of surplus construction materials
	Scheme layout (shown for illustrative purposes)		Flood compensation area		Flood compensation area
	Proposed New Bridge/Proposed Culvert Extension		Environmental mitigation area		Ecological mitigation area
	Existing highway		Golf Course accommodation works		Realigned watercourse
	Highway work centre line		Realigned watercourse		Limit of deviation for realigned water course / Proposed pipe network (only pipes outside highway work limit of deviation are shown)
	Highway work limit of deviation		Limit of deviation for realigned water course / Proposed pipe network (only pipes outside highway work limit of deviation are shown)		Gas diversion (centre line)
	Termination of linear works		Utility diversion limit of deviation (only utilities outside highway work limit of deviation are shown)		Utility diversion (centre line)
	Commencement of linear works		Electric Line diversion (centre line)		Proposed Pipe Network
	Local Authority boundary		Proposed Gantry / Cantilever		
	Non-linear work boundary/limit				
	Proposed Gantry / Cantilever				



Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

Drawing Suitability		Status		Project Title	
DCO EXAMINATION		A4		M25 junction 28 improvement scheme	
		Amlin House Atkins 4th Floor 90-96 Victoria Road Chelmsford Essex CM1 1QU Tel: +44 (0)1245 245245 Fax: +44 (0)1245 345010 www.atkinsglobal.com		Drawing Title RESPONSE TO ExA WQ CA 1.8 WORK PLAN WITH LAND PLAN PLOTS FOR MAYLANDS GOLF COURSE SHEET 1 OF 1	
Client		Working on behalf of		Drawing Number	
		TR010029/EXAM/9.27		Rev: 0	
HE PIN: HE551519		Scale: 1:1250		Original Size: A1	

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