Appendix I: Screening Matrix

Please see insert.

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Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	ID	Strategic Policies	Likely Significant Effects										
	S1	Delivering sustainable development	-	B	B	B	B	B	B	B	B	B	B
	S2	Approach to new development	-	A	A	A	A	A	A	A	A	A	A
	S3	Location of new housing	Atmospheric pollution; Disturbance; Hydrology; Land outside EU site (waders/brent goose/otter); Noise and vibration; Non-native species; Water abstraction; Water pollution	E	E	E	I	J	E	J	J	J	E
	S4	Employment provision	Atmospheric pollution; Hydrology; Land outside EU site (otter); Noise and vibration	E	E	E	I	J	E	J	E	J	E
	S5	New Communities, land north of Bishopstoke and land north and east of Fair Oak	Atmospheric pollution; Bridging impacts; Disturbance; Hydrology; Land outside EU site (otter); Noise and vibration; Non-native species; Water abstraction; Water pollution	E	E	E	I	J	E	J	J	J	E
	S6	New Allbrook Hill, Bishopstoke and Fair Oak link road	Atmospheric pollution; Bridging impacts; Hydrology; Land outside EU site (otter); Noise and vibration	E	E	E	I	J	E	E	E	E	E
	S7	New development in the countryside	-	B	B	B	B	B	B	B	B	B	B
	S8	Protection of countryside gaps	-	D	D	D	D	D	D	D	D	D	D
	S9	The coast	-	A	A	A	A	A	A	A	A	A	A
	S10	Green infrastructure	-	A	A	A	A	A	A	A	A	A	A
	S11	Community facilities	-	A	A	A	A	A	A	A	A	A	A
	S12	Transport infrastructure	Atmospheric pollution; Hydrology; Land outside EU site (otter); Noise and vibration	E	E	E	J	J	E	J	E	J	E
	S13	Strategic footpath, cycleway and bridleway links	-	A	A	A	A	A	A	A	A	A	A
	ID	Development Management Policies	Likely Significant Effects										
	DM1	General criteria for new development	-	B	B	B	B	B	B	B	B	B	B
	DM2	Environmentally sustainable development	-	B	B	B	B	B	B	B	B	B	B
	DM3	Adaptation to climate change	-	B	B	B	B	B	B	B	B	B	B
	DM4	Zero or low carbon energy	-	B	B	B	B	B	B	B	B	B	B

Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	DM5	Managing flood risk	-	B	B	B	B	B	B	B	B	B	B
	DM6	Sustainable surface water management and watercourse management	-	D	D	D	D	D	D	D	D	D	D
	DM7	Flood defences, land reclamation and coast protection	-	D	D	D	D	D	D	D	D	D	D
	DM8	Pollution	-	D	D	D	D	D	D	D	D	D	D
	DM9	Public utilities and communications	-	B	B	B	B	B	B	B	B	B	B
	DM10	Water and waste water	-	D	D	D	D	D	D	D	D	D	D
	DM11	Nature conservation	-	D	D	D	D	D	D	D	D	D	D
	DM12	Heritage assets	-	D	D	D	D	D	D	D	D	D	D
	DM13	General development criteria - transport	-	B	B	B	B	B	B	B	B	B	B
	DM14	Parking	-	B	B	B	B	B	B	B	B	B	B
	DM15	Safeguarding existing employment sites	-	B	B	B	B	B	B	B	B	B	B
	DM16	Workforce training requirements and new jobs	-	B	B	B	B	B	B	B	B	B	B
	DM17	Agricultural development	-	B	B	B	B	B	B	B	B	B	B
	DM18	Extension and replacement of non- residential buildings in the countryside	-	B	B	B	B	B	B	B	B	B	B
	DM19	Change of use of buildings in the countryside	-	B	B	B	B	B	B	B	B	B	B
	DM20	Boatyard and marina sites on the River Hamble	-	B	B	B	B	B	B	B	B	B	B
	DM21	New retail development	-	B	B	B	B	B	B	B	B	B	B
	DM22	Changes of use in retail frontages in district centres	-	B	B	B	B	B	B	B	B	B	B
	DM23	Residential development in urban areas	-	B	B	B	B	B	B	B	B	B	B

Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	DM24	Housing sites with planning permission	-	C	C	C	C	C	C	C	C	C	C
	DM25	Redevelopment of urban sites in unneighbourly use	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	DM26	Creating a mix of housing	-	B	B	B	B	B	B	B	B	B	B
	DM27	Delivering older peoples housing	-	B	B	B	B	B	B	B	B	B	B
	DM28	Residential extensions and replacement dwellings in the countryside	-	B	B	B	B	B	B	B	B	B	B
	DM29	Rural workers' dwellings	-	B	B	B	B	B	B	B	B	B	B
	DM30	Delivering affordable housing	-	B	B	B	B	B	B	B	B	B	B
	DM31	Dwellings with higher access standards	-	B	B	B	B	B	B	B	B	B	B
	DM32	Internal space standards for new residential development	-	B	B	B	B	B	B	B	B	B	B
	DM33	Gypsies, travellers and travelling showpeople	-	B	B	B	B	B	B	B	B	B	B
	DM34	Protection of recreation and open space facilities	-	B	B	B	B	B	B	B	B	B	B
	DM35	Provision of recreation and open space facilities with new development	-	B	B	B	B	B	B	B	B	B	B
	DM36	New and enhanced recreation and open space facilities	-	B	B	B	B	B	B	B	B	B	B
	DM37	Recreational activity on the River Hamble	-	B	B	B	B	B	B	B	B	B	B
	DM38	Community, leisure and cultural facilities	-	B	B	B	B	B	B	B	B	B	B
	DM39	Cemetery provision	-	B	B	B	B	B	B	B	B	B	B
	DM40	Funding infrastructure	-	B	B	B	B	B	B	B	B	B	B
	ID	Bishopstoke, Fair Oak and Horton Heath	Likely Significant Effects (site-specific only)										
	Bi1	South of Stokewood Surgery, Bishopstoke	-	E	E	E	E	E	E	E	E	E	E

Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	FO1	West of Durley Road, Fair Oak	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	FO2	Land north of Mortimers Lane	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	FO3	East of Allington Lane	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	FO4	Lechlade, Burnetts Lane, Fair Oak	-	E	E	E	E	E	E	E	E	E	E
	FO5	Land East of Knowle Lane	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	FO6	Foxholes Farm, Fair Oak	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	FO7	Land at Costalot Stables, Blind Lane, Horton Heath	-	E	E	E	E	E	E	E	E	E	E
	FO8	Hammerley Farm, Anson Road, Horton Heath	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	FO9	Junction improvements, Fair Oak	-	C	C	C	C	C	C	C	C	C	C
	ID	Bursledon, Hamble-le-Rice and Hound	Likely Significant Effects (site-specific only)										
	BU1	Land north of Providence Hill	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU2	Heath House Farm	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU3	Land lying south east of Windmill Lane	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU4	Land at Tansfield Stud, Tanhouse Lane	-	E	E	E	E	E	E	E	E	E	E
	BU5	Land at Heath Green, Heath House Lane, Hedge End	-	E	E	E	E	E	E	E	E	E	E
	BU6	Land adjacent to Woodleigh, Windmill Lane, Bursledon	-	E	E	E	E	E	E	E	E	E	E
	BU7	Riverside Boatyard, Blundell Lane, Bursledon (Special Policy Area)	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU8	Open space at Long Lane, Bursledon	-	E	E	E	E	E	E	E	E	E	E
	BU9	Residential extensions and replacement dwellings, Old Bursledon Special Policy Area	-	B	B	B	B	B	B	B	B	B	B

Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	HA1	Railway station parking, Hamble	-	E	E	E	E	E	E	E	E	E	E
	HA2	Mercury Marina and Riverside Camping and Caravan Park	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	J	E	J	E
	HA3	Hamble Airfield	-	C	C	C	C	C	C	C	C	C	C
	HO1	Country Park, land south of Bursledon Road	-	E	E	E	E	E	E	E	E	E	E
	ID	Chandler's Ford and Hiltingbury	Likely Significant Effects (site-specific only)										
	CF1	Central Precinct, Chandler's Ford	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	CF2	Land at Steele Close, Chandler's Ford	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	CF3	Land south of the supermarket and east of Bournemouth Road, Chandler's Ford	-	E	E	E	E	E	E	E	E	E	E
	ID	Eastleigh	Likely Significant Effects (site-specific only)										
	E1	Land at the Civic Offices and former Magistrates' Court, Leigh Road, Eastleigh	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	E2	Land at Woodside Avenue, Eastleigh	-	E	E	E	E	E	E	E	E	E	E
	E3	Eastleigh town centre	-	B	B	B	B	B	B	B	B	B	B
	E4	Urban renaissance quarter, Eastleigh	-	B	B	B	B	B	B	B	B	B	B
	E5	Public realm improvements in and adjoining Eastleigh town centre	-	A	A	A	A	A	A	A	A	A	A
	E6	Eastleigh River Side	Hydrology; Noise and vibration; Non-native species	E	E	E	I	E	E	E	E	E	E
	E7	Development opportunities adjoining Eastleigh River Side	Hydrology; Noise and vibration; Non-native species	E	E	E	I	E	E	E	E	E	E
	E8	Junction improvements, Eastleigh	-	C	C	C	C	C	C	C	C	C	C
	E9	Southampton Airport (specifically, allocation of 21.6ha under criteria a to d for airport-related / employment uses)	Hydrology; Noise and vibration; Non-native species	E	E	E	I	E	E	E	E	E	E
	E10	Land south of M27 Junction 5	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	E11	Western extension to Lakeside Country Park, Eastleigh	Noise and vibration	E	E	E	J	E	E	E	E	E	E

Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	E12	Aviary Estate, Eastleigh	-	B	B	B	B	B	B	B	B	B	B
	AL1	Land east of Allbrook Way	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	AL2	Land west of Allbrook Way	-	E	E	E	E	E	E	E	E	E	E
	ID	Hedge End, West End and Botley	Likely Significant Effects (site-specific only)										
	HE1	Land west of Woodhouse Lane, Hedge End	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	HE2	Land at Sunday's Hill and Land north of Pewett Hill Close	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	HE3	Land at Home Farm, St John's Road	-	E	E	E	E	E	E	E	E	E	E
	HE4	Land off Peewit Hill Close and Dodwell Lane, Bursledon	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	HE5	Land at Netley Firs, Kanes Hill, Hedge End	-	E	E	E	E	E	E	E	E	E	E
	HE6	Hedge End Railway Station, Hedge End	-	A	A	A	A	A	A	A	A	A	A
	HE7	Land at Kanes Hill, Hedge End	-	E	E	E	E	E	E	E	E	E	E
	WE1	Chalcroft Business Park, Burnetts Lane, West End	-	B	B	B	B	B	B	B	B	B	B
	WE2	Land adjoining the Chalcroft Business Park	-	E	E	E	E	E	E	E	E	E	E
	WE3	Land west of Tollbar Way and south of Berrywood Business Park, Hedge End	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	WE4	Land at Ageas Bowl and Tennis Centre, Botley Road, West End	-	B	B	B	B	B	B	B	B	B	B
	BO1	Land south of Maddoxford Lane and east of Crows Nest Lane	-	E	E	E	E	E	E	E	E	E	E
	BO2	Land west of Uplands Farm, Botley	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BO3	Land east of Kings Copse Avenue and east of Tanhouse Lane	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BO4	Land north of Myrtle Cottage, Winchester Road	-	E	E	E	E	E	E	E	E	E	E

Eastleigh Borough Local Plan 2016-2036 Publication Plan Site Allocations and Policies				Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
				SAC					SPA			Ramsar	
	BO5	Botley bypass	Hydrology; Non-native species	E	E	E	E	J	E	E	E	E	E
	BO6	Junction Improvement, Botley Road/ Bubb Lane roundabout (Denham's Corner)	-	E	E	E	E	E	E	E	E	E	E
	BO7	Botley Mill	-	B	B	B	B	B	B	B	B	B	B
		Assessment Key											
	A	General statement of policy / aspiration											
	B	Policy listing general criteria for testing the acceptability / sustainability of proposals											
	C	Proposal referred to but not proposed by the plan											
	D	Environmental protection / site safeguarding policy											
	E	Policy/proposal steers change in such a way as to protect European sites from adverse effects											
	F	Policy that cannot lead to development or other change											
	G	Policy/proposal that could not have any conceivable effect on a European site											
	H	Policy/proposal the (actual/theoretical) effects of which cannot undermine the conservation objectives (either alone or in combination with other aspects of this or any other plan/project)											
	I	Policy/proposal with a likely significant effect on a European site alone											
	J	Policy/proposal with an effect on a site but not likely to be significant alone; check for likely significant effects in combination											
	K	Policy/proposal not likely to have a significant effect either alone or in combination (after the in combination test)											
	L	Policy/proposal likely to have a significant effect in combination (after the in combination test)											

Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
SAC					SPA			Ramsar	

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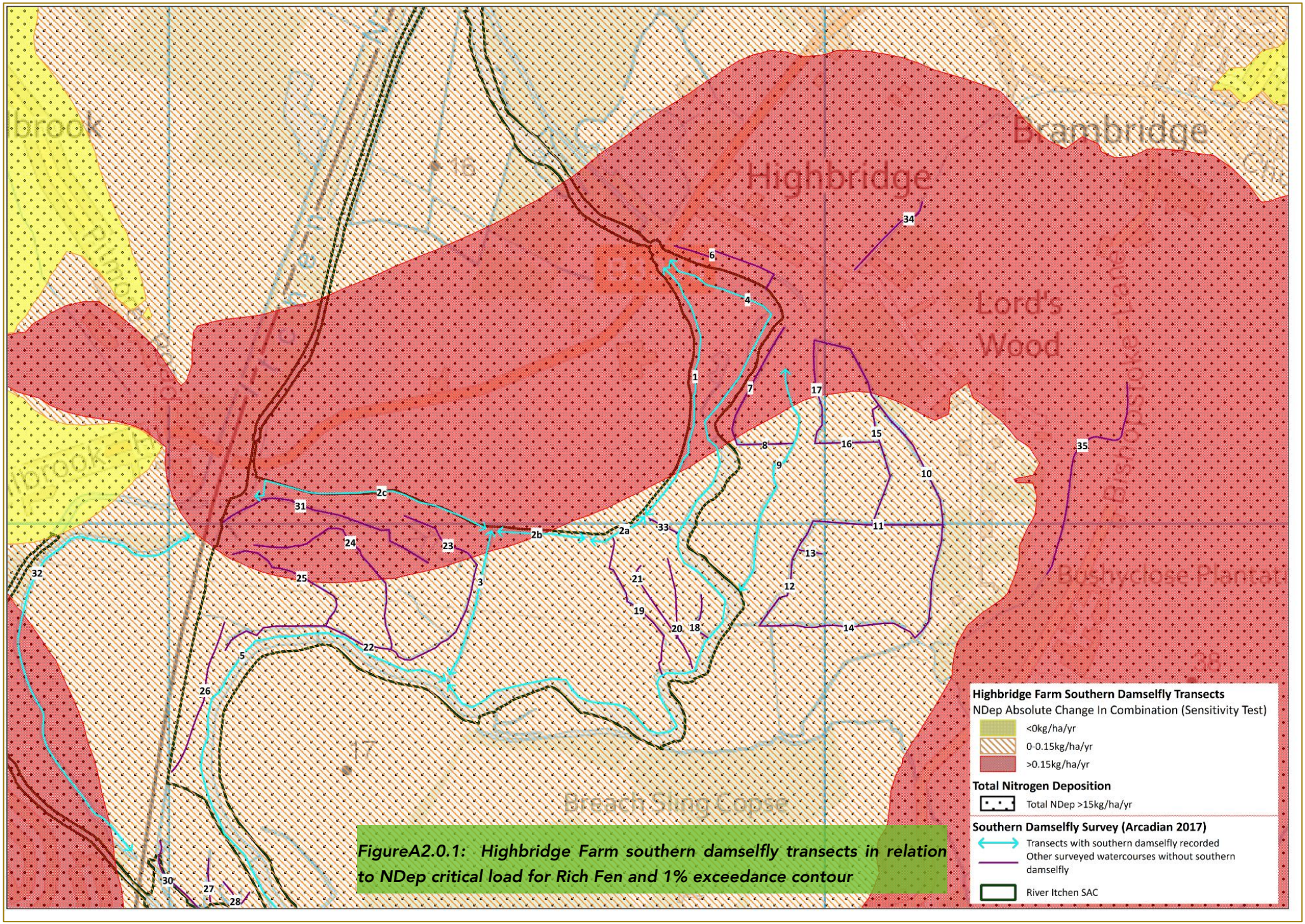
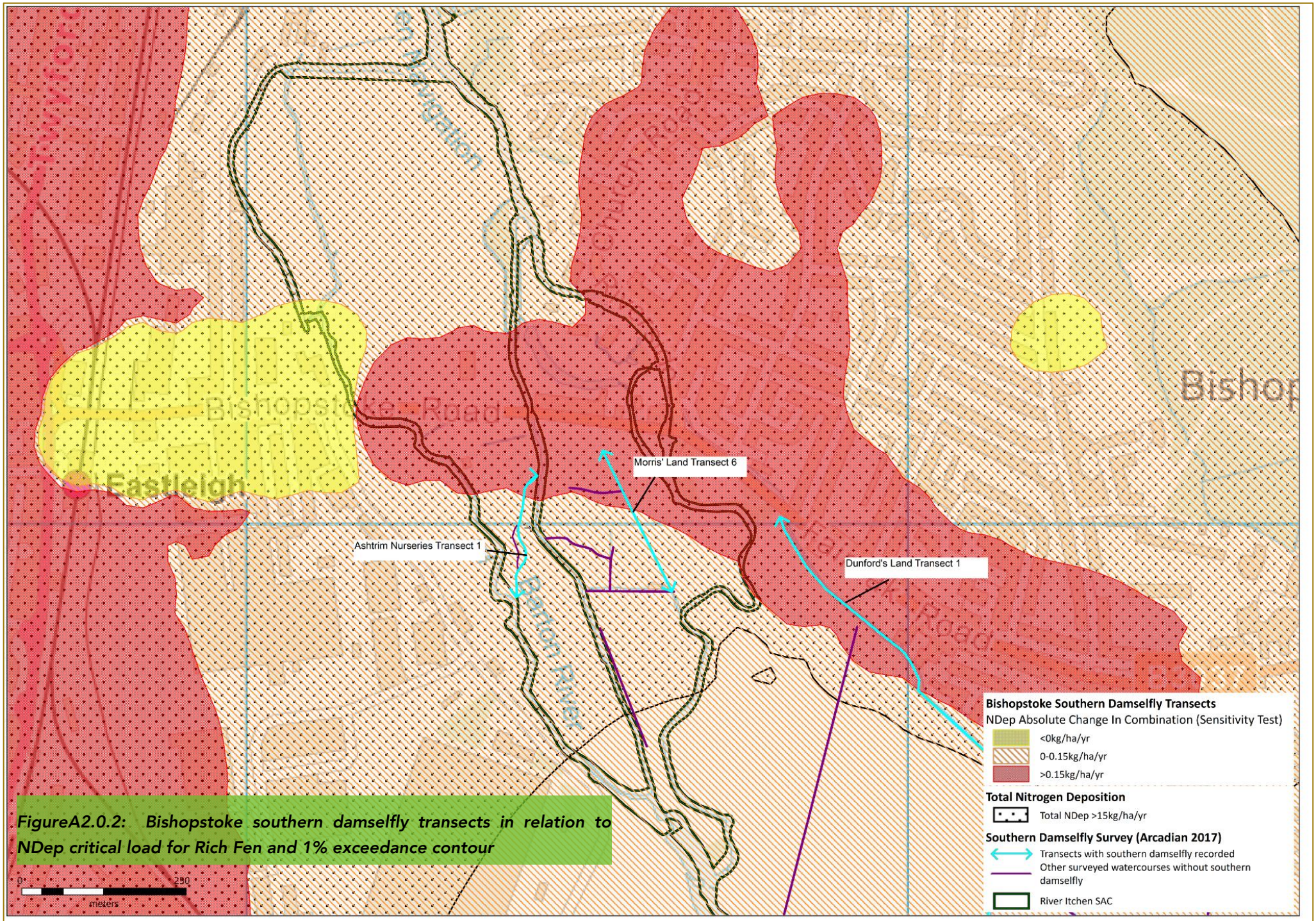
Appendix II: Southern Damselfly Transects in relation to Predicted Air Pollution Contours

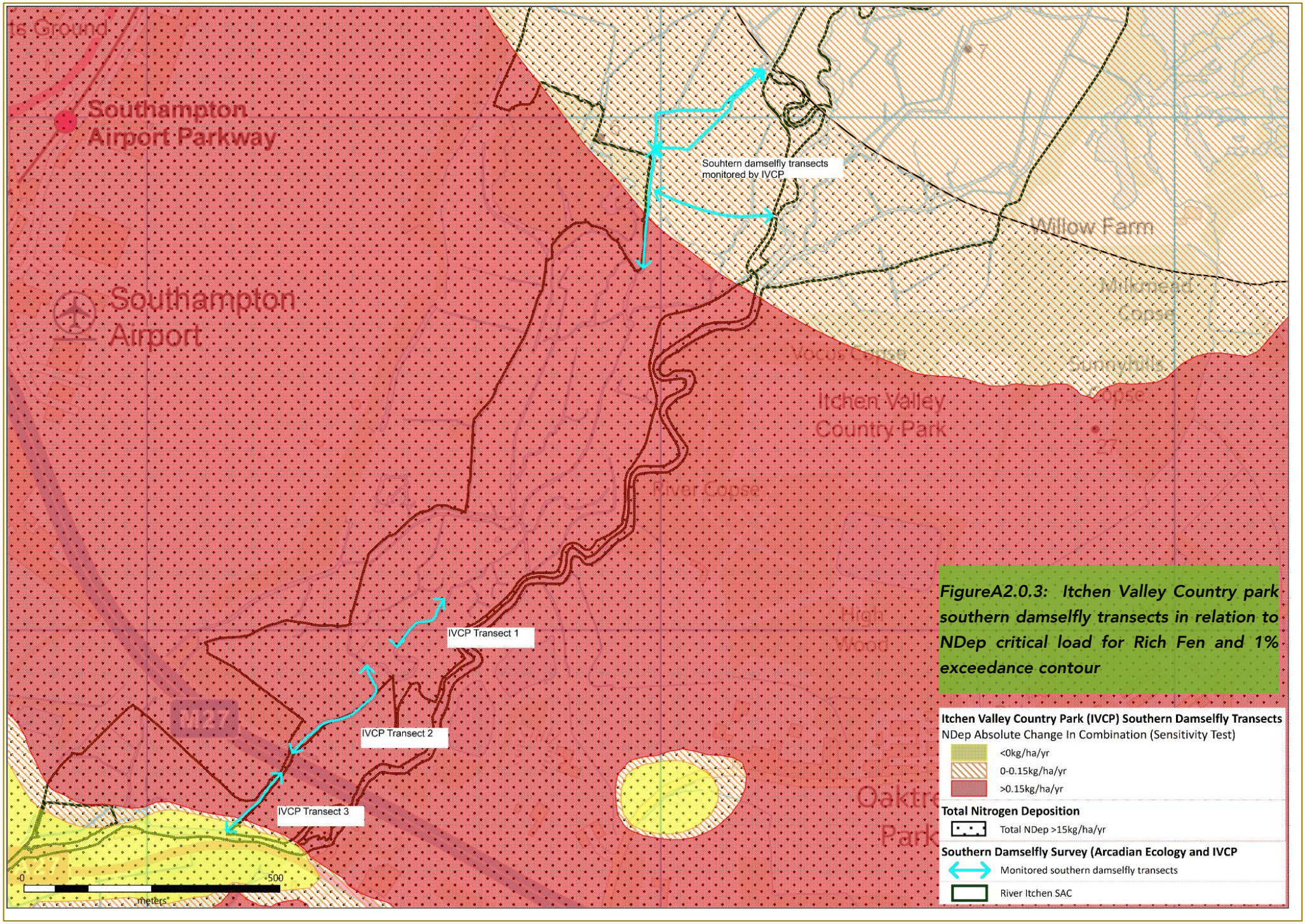
Please see following pages.



FigureA2.0.1: Highbridge Farm southern damselfly transects in relation to NDep critical load for Rich Fen and 1% exceedance contour



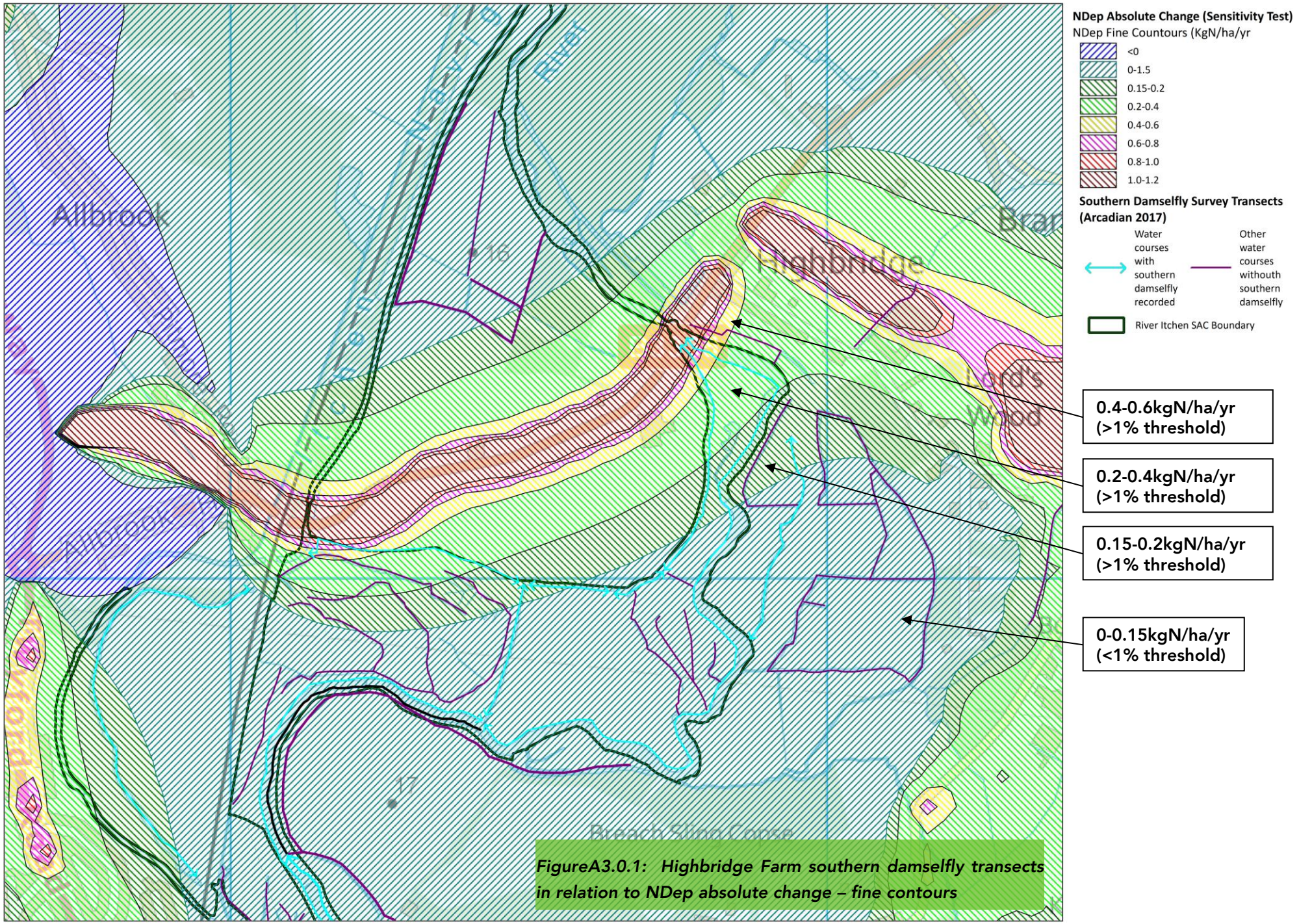
FigureA2.0.2: Bishopstoke southern damselfly transects in relation to NDep critical load for Rich Fen and 1% exceedance contour



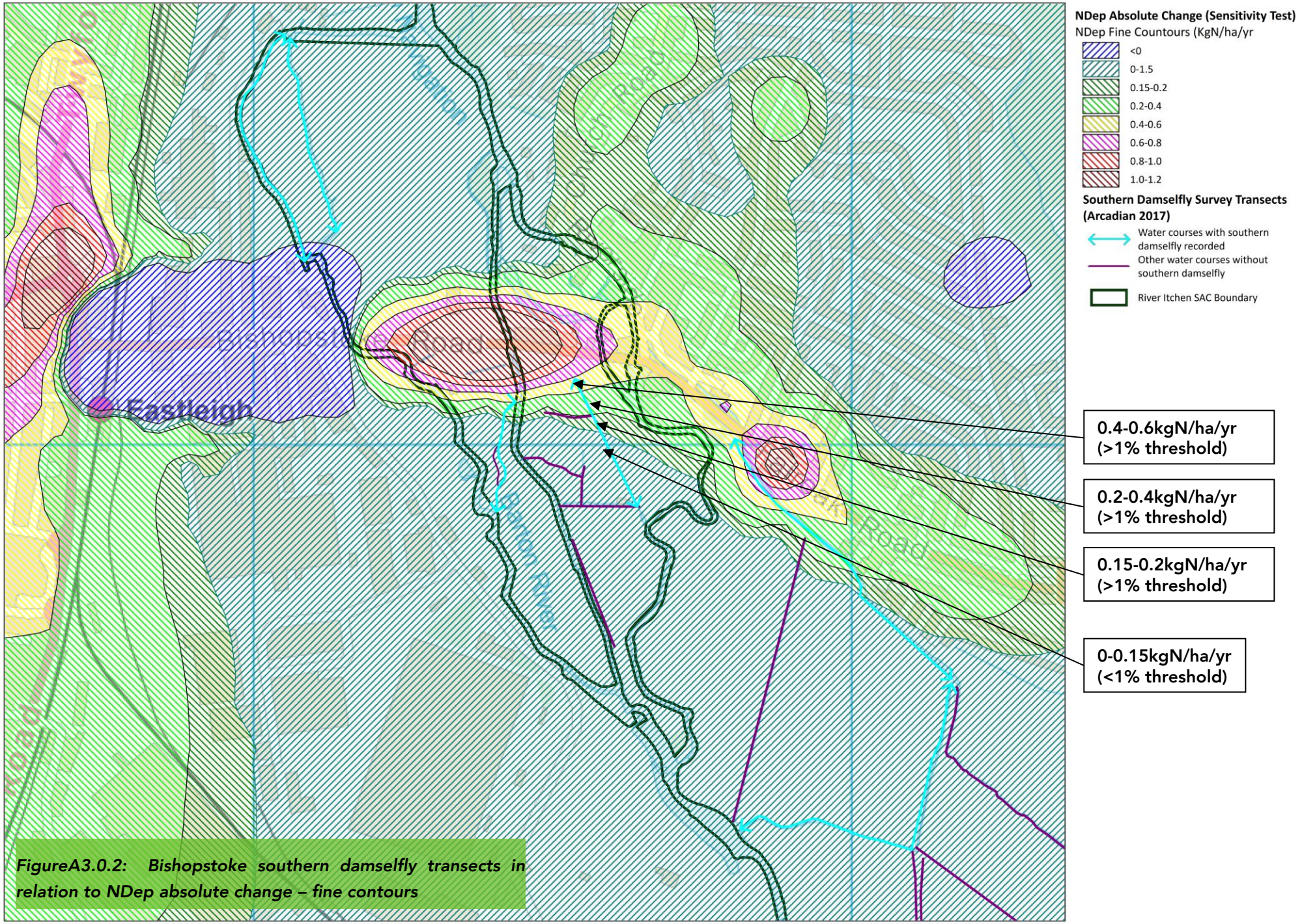
FigureA2.0.3: Itchen Valley Country park southern damselfly transects in relation to NDep critical load for Rich Fen and 1% exceedance contour

Appendix III: Southern Damselfly Transects in relation to Predicted Nitrogen Deposition Fine Contours

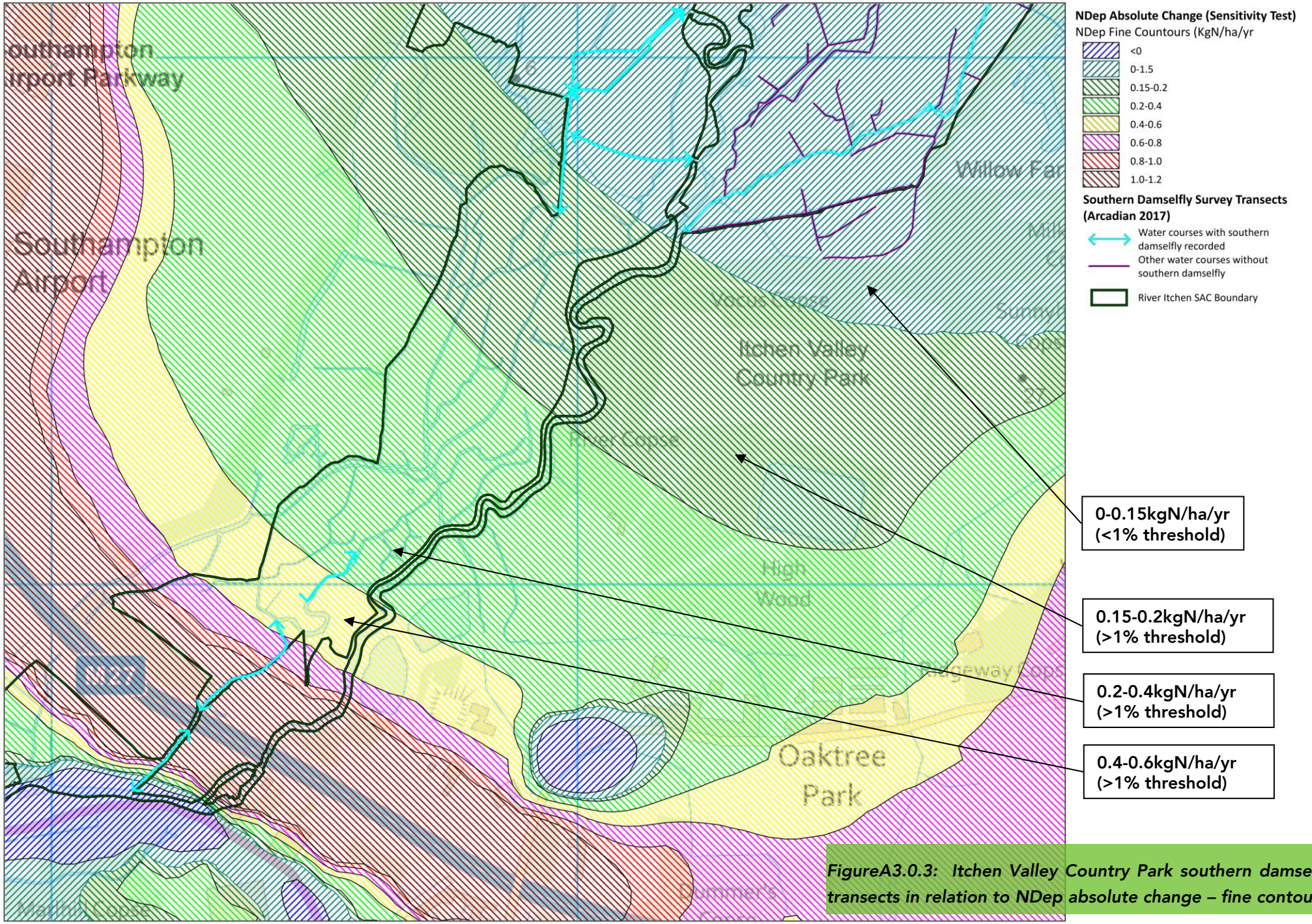
Please see following pages.



FigureA3.0.1: Highbridge Farm southern damselfly transects in relation to NDep absolute change – fine contours



FigureA3.0.2: Bishopstoke southern damselfly transects in relation to NDep absolute change – fine contours



FigureA3.0.3: Itchen Valley Country Park southern damselfly transects in relation to NDep absolute change – fine contours

Appendix IV: Field Survey Photos

Transect 1 (left) and the main river (transect 4, right) below High Bridge. Southern damselfly are present on both transects. Vegetation structure and composition is dependent upon water quality and river management practices. There is no evidence of any eutrophication of habitat caused by proximity to the road

Ditch at Ashtrim Nursery (Transect 1) looking south, with well-developed mats of marginal vegetation providing good egg laying habitat for southern damselfly

Appendix V: Response to Representations

Please see insert.

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Technical Note

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	June 2019
Note	Response to representations on the Proposed Submission Plan HRA	**Ref**	UE0247
Author	Jonathan Cox / Nick Pincombe	**Page**	1 of 21
Status	Final revised		

1. Introduction

The principal authors of the Habitats Regulations Assessment (HRA) of the Eastleigh Borough Local Plan (EBLP) 2016-2036 were instructed to undertake the following tasks, the outputs of which are presented in this note.

- Review/respond to representations on the Eastleigh Borough Local Plan (Proposed Submission version) and its HRA
- Review additional southern damselfly surveys
- Review extra traffic flow data in Winchester's area
- Review developers' proposals for a replacement bridge over the River Itchen Navigation

The note highlights where revisions have been made to the HRA to take account of representations or new information beforethe EBLP and HRA were submitted for examination. This document forms an appendix to the revised HRA so that representors can see how their comments have been responded to.

2. Representations on the Eastleigh Borough Local Plan and HRA

Representations were received from the following organisations:

- Natural England
- Environment Agency
- British Dragonfly Society
- Hampshire and Isle of Wight Wildlife Trust
- New Forest District Council
- Royal Society for the Protection of Birds

- A number of angling groups and conservation societies
- Action Against Destructive Development (AADD)

3. Natural England

Natural England's representation raised a range of comments on the HRA, as well as specific comments on EBLP proposed policies DM10 Water and Waste Water, and E6 Eastleigh River Side.

Recreational impacts on River Itchen SAC

Natural England comment: Natural England advises that potential recreational impacts from development within the Local Plan upon the River Itchen SAC should also be considered (with regards to the erosion of banks, silting of river, impact of dogs on otter etc.). Potential mitigation could be to fund the Itchen Navigation Restoration Project where impacts are identified.

HRA response: Additions have been made in the revised HRA at paragraphs 6.4.26 to 6.4.35 to respond to this concern.

Bridging of the River Itchen SAC

Natural England comment: Consideration should be given to potential impacts on southern damselfly dispersal ability or changes to water flow and habitat that may impact this species specifically.

HRA response: Additions have been made in the revised HRA at paragraphs 6.12.9 to 6.12.11 to respond to this concern. Refer also to the plan at Annex 1 to this note.

Air quality

Natural England comment: Ammonia does not appear to have been considered further in the Appropriate Assessment. It is suggested a reference is inserted to clarify that N-dep figure is best used to assess water quality impacts in this context.

HRA response: Additions have been made in the revised HRA at paragraphs 6.2.27 to 6.2.29 to respond to this concern.

Land outside European Site Boundaries: River Itchen SAC

Natural England comment: This section focuses solely on otter. It is advised potential impacts from the link road/hydrology on other qualifying features of the River Itchen SAC are considered here (e.g. impacts on land outside of the SAC supporting southern damselfly).

HRA response: The HRA currently refers in paragraph 6.8 to "Land outside European Site Boundaries: River Itchen SAC". However, it would be more appropriate to re-title this section as "Impacts on Otter outside of European Site Boundaries". This would then avoid the confusion with requirements to assess southern damselfly and other interest features of the SAC outside of the site boundary in the same section. This has been amended in the revised HRA.

The features raised in Natural England's comment are already dealt with in section 7 of the HRA at paragraphs 7.2.37-7.2.38. A later Natural England comment on this section of the HRA states "correctly outlines that the risk of adverse effects on the integrity of River Itchen SAC will need to be reconsidered at the planning application stage".

DM10 Water and Waste Water: water quality

Natural England comment: It is advised that Policy DM10 outlines the potential requirement (as per the findings of the IWMS) to develop a nutrient neutral policy (e.g. a detailed Supplementary Planning Document) to address impacts of nutrient enrichment by Local Plan development upon the Solent Maritime SAC, Solent & Southampton Water SPA and the River Itchen SAC. Such an SPD could set out measures for offsetting and CIL contributions to a Nutrient Management Plan (such as Poole Harbour Nitrogen Reduction SPD). In the interim period, Natural England advises that larger planning applications (in excess of approximately 200-300 houses) and EIA developments that eventually drain into the Solent European sites have a calculated nutrient budget and mitigation measures in order to achieve nutrient neutrality, for confidence that the development will be deliverable. Larger strategic schemes should also contribute to sewerage infrastructure improvements.

Subsequent to its representations, Natural England has updated its advice to state that development resulting in a net gain in dwellings or overnight accommodation uses should be required to demonstrate nutrient neutrality.

HRA response: Additions have been made in the revised HRA at sections 6.11, 8.8 and Chapter 7 to respond to this point.

DM10 Water and Waste Water (water supply) and DM11 Nature Conservation (southern damselfly)

Natural England comment: There is current uncertainty regarding water resources and the impacts of abstraction on protected sites including the River Itchen SAC. While Southern Water works on its draft Water Resources Management Plan (dWRMP) to resolve these issues, it is welcomed that the Policy ensures new development will accord with other Local Plan policy including DM2 which sets strict requirements for water consumption. Natural England also recommends that the policies encourage the wise use of water in conjunction with the water companies, for example by developments incorporating grey water recycling systems and efficient appliances.

Paragraph c - this section cites the need to protect Southern Damselfly on the River Itchen from nitrogen deposition. It is more likely that southern damselfly will be impacted from poor water quality (due to phosphates) having a negative impact upon their habitat. Therefore Natural England advises that the Policy outlines the requirement for a strategy to offset impacts from phosphate in the river, that includes a strategy for habitat creation and enhancement for this declining species.

The advice that phosphate levels are more likely to negatively affect southern damselfly in the River Itchen is accepted.

HRA response: Additions have been made in the revised HRA at sections 6.11, 8.8 and Chapter 7 to respond to this point.

E6 Eastleigh River Side

Natural England comment: This allocation for industrial use is sited adjacent to the River Itchen SAC and SSSI. It is also in close proximity to SINCs 'Stanford Meadow', 'Ashtrim Nurseries' and 'Marshy Grassland, Bishopstoke'.

Ashtrim Nurseries is also an important site for southern damselfly linking populations to the north and south within the River Itchen SAC. Natural England advise that; "Policy should endeavour to ensure impacts upon these SINCs are considered in line with Policy DM11 and mitigation/compensation measures are outlined as necessary. Net gain should be sought." In addition, it will also be important that development at this site fully considers potential impacts on southern damselfly and seeks to enhance the extent and long term sustainability of its habitat at this site. No specific amendment is proposed for the revised HRA.

4. Environment Agency

The Environment Agency's representation raised specific comments on EBLP proposed policies S5 New Communities, S6 New Link Road, S12 Transport Infrastructure, DM10 Water and Waste Water, DM11 Nature Conservation, and E8 Junction Improvements (Eastleigh).

Policy S5 – object

EA Comment: The Environment Agency object to this policy on grounds of biodiversity, in particular in relation to SAC qualifying species. They believe this policy fails to acknowledge the range of impacts on the Itchen SAC qualifying species and there is insufficient detail as to how contributions from the development to overall strategic mitigation measures will be secured, delivered and managed.

Amendments have been made to the HRA mitigation strategy set out at Chapter 8 and have been incorporated into the EBLP via changes to policy DM11 and supporting text.

A similar point is made by New Forest District Council in relation to the New Forest SPA and it is suggested that a Mitigation Strategy should be produced that identifies strategic mitigation measures and how these will be implemented alongside proposed development. Eastleigh Borough Council is developing an interim approach to mitigating the effects of residential development within the borough. This interim strategy is due to be completed by June 2019.

Policy S6 – object

EA Comment: The Environment Agency require amendment of this policy to prevent ecological impact. In particular they require a policy commitment that all road crossings must be clear span bridges for both flood risk hydrology and ecological reasons.

This requirement has been accommodated in the Plan.

EA Comment: The EA also require there to be sufficient flexibility in the design of the road (route/layout and especially the bridge crossings) to accommodate changes required to remove adverse effects identified from the project scale HRA.

This request has been accommodated in the Plan.

Policy S12 – object

EA Comment: The Environment Agency are concerned that there are a number of road improvements proposed within the local plan along the Bishopstoke Road that are likely to have significant effects on the River Itchen SAC and need to be assessed as part of the HRA.

It is not possible to assess these proposed road improvements without more details of what is proposed in each of the locations identified by the Environment Agency e.g. the Church Rd/Bishopstoke Rd junction at Riverside.

Given this uncertainty, the EA require;

"that explicit reference is made to the requirement for a project level HRA as part of the supporting text for this policy. This should ensure that any improvements that are proposed, especially road widening, does not have an effect on the integrity of the River Itchen SAC."

Notwithstanding the fact that the need for project-level HRA is a requirement of the Conservation of Habitats and Species Regulations 2017 regardless of what the EBLP says at policy S12 (or elsewhere), the need for project-level HRA is highlighted within the HRA mitigation strategy at sections 8.3, 8.5 and 8.6, and has been incorporated into the EBLP via changes to policy DM11 and supporting text.

Policy DM10 – object

EA Comment: The Environment Agency object to the current wording of this policy. They suggest a change in the policy to ensure that development will be phased alongside completion of improvements to water supply and/or waste water infrastructure improvements in order to satisfy HRA and WFD requirements of no deterioration. They would also wish to see the policy encouraging improvement to the water environment wherever possible. The EA also require the supporting text to be updated to reflect completion of the PUSH IWMS and also demonstrate a commitment through the Local Plan to the action plan that has been produced as part of the IWMS.

These requests have been accommodated in the Local Plan.

DM11 – object

EA Comment: The Environment Agency object to the current wording of this policy. In particular point C is inadequate in its reference to the southern damselfly.

The point made by the EA on point C of policy DM11 is justified and it is suggested that the policy is reworded to remove specific reference to the southern damselfly and nitrogen deposition. This could perhaps read;

C protection of the River Itchen SAC, in particular the maintenance and where appropriate restoration of habitats and species to favourable conservation status (as defined by article 1 of the EU Habitats Directive).

The amendment has now been incorporated within policy DM11.

EA Comment: The EA require that the policy should include reference to the impact of climate change and the need to facilitate habitat and species adaptation to climate change within development.

This appears to be a reasonable and sensible requirement of the policy to be in line with the Government 25 Year Environment Plan, has now been incorporated within the plan. However, it is not required in relation to the Habitats Regulations.

EA Comment: The EA suggest that the Southern Damselfly Survey and Strategic Conservation Plan should be specifically referred to in this policy.

Implementation of the Strategic Conservation Plan is important for the long term conservation of southern damselfly in Eastleigh Borough and should be a focus for the future conservation of this species. Certain proposals within the Strategic Conservation Plan may also be suitable for mitigating impacts on water quality and it is listed among the suite of mitigation measures set out at section 8.8.

EA Comment: The Environment Agency also make reference to the lack of a mechanism for the delivery of mitigation required to ensure the Local Plan can meet the requirements of the HRA.

The HRA mitigation strategy set out at Chapter 8 has been incorporated into the EBLP via changes to policy DM11 and supporting text.

Policy E8

EA Comment: Due to the uncertainty around this we require that explicit reference is made to the requirement for a project level HRA as part of the supporting text for this policy. This should ensure that any improvements that are proposed, especially road widening, does not have an effect on the integrity of the River Itchen SAC.

Notwithstanding the fact that the need for project-level HRA is a requirement of the Conservation of Habitats and Species Regulations 2017 regardless of what the EBLP says at policy E8 (or elsewhere), the need for project-level HRA is highlighted within the HRA mitigation strategy at sections 8.3, 8.5 and 8.6, and has been incorporated into the EBLP via changes to policy DM11 and supporting text..

5. British Dragonfly Society

Comment by BDS: Air pollution (nitrates): Original concerns for the Southern Damselfly were focused on the impacts of potential increases in nitrogen deposition, resulting from higher volumes of traffic crossing the River Itchen SAC. While it is predicted that there would be a significant increase in NOx input (over the 1% critical load threshold), it was concluded that this would have little effect on the Southern Damselflies habitat, as phosphates are generally considered the limiting factor to the growth of the rich fen vegetation of the River Itchen. While this statement is often true, the fact that the River Itchen is already experiencing high levels of nitrate does not mean that further enrichment should be ignored.

Whereas the HRA does not ignore NOx input to the River Itchen SAC, it cannot be concluded that the level and distribution of N deposition predicted to result from the Local Plan will have an adverse effect on the integrity of the site as required by the Habitats Regulations.

Comment by BDS: Water pollution (phosphates): Phosphates are noted as being the limiting factor for the plant growth of the River Itchen's marginal swamp vegetation. Consequently, it is concerning that the SAC is currently not meeting its revised common standards monitoring (rCSMG) target for phosphate pollution, predominantly due to the discharge from Chickenhall wastewater treatment works. Therefore, it is of high importance that the Council complies with the Integrated Water Management Study Action Plan to mitigate predicted increases in phosphate pollution, resulting from the development, and to ensure that the SAC meets its interim and long term rCSMG targets.

HRA response: Implementation of the IWMS Action Plan is listed as a mitigation measure at section 8.8 of the HRA. Additions have been made in the revised HRA at paragraph 8.8.2 to include implementing mitigation measures proposed within the *Strategic Conservation Plan for Southern Damselfly* (Rushbrook, 2018b[2]) within the mitigation strategy for water pollution at section 8.8, in addition to implementation of the IWMS Action Plan, to address the elevated phosphate levels in the Itchen. This is also recommended by Natural England.

Comment by BDS: Water abstraction: Increased water abstraction is identified as a resulting factor of the development that could potentially alter/reduce the distribution of Southern Damselfly habitat. Section 8.7.1 states a series of ecological monitoring, mitigation and compensation measures have been developed to protect the environmental integrity of the SAC from the adverse effects of water abstraction. It is of vital importance that the habitat and environmental requirements of Southern Damselfly are considered within these packages.

This is support for the proposed mitigation.

Comment by BDS: Hydrological impacts: As identified in the report, further project-level Habitat Regulation Assessments will be required to illustrate how mitigation measures will be implemented to avoid adverse hydrological impacts on the River Itchen SAC.

This is support for the proposed mitigation.

Comment by BDS: Non-native invasive species and site-specific hydrological impacts: As identified in the report, further project-level Habitat Regulation Assessments will be required to illustrate how mitigation measures will be implemented to avoid site-specific hydrological impacts on the River Itchen SAC, and the spread of non-native species.

This is support for the proposed mitigation.

[2] Rushbrook, B. (2018b): *Strategic conservation plan for southern damselfly* Coenagrion mercuriale: *habitat enhancement and creation opportunities in and adjacent to Eastleigh Borough*. Arcadian Ecology & Consulting Ltd, Curdridge.

Comment by BDS: After reviewing the Habitat Regulations Assessment we do not believe it is possible to predict that the Local Plan will have no adverse impacts on the Southern Damselfly and its habitat associated with the SAC, even with the described mitigation plans in place. This is due to both the scale of the development and the potential accumulative effect of the multiple adverse factors resulting from it. There are also a number of possible negative impacts that have not been fully explored, such as the barrier effect of increased traffic on Southern Damselfly migration between meta-populations.

The BDS have offered no evidence in support of their contention. Barrier effects would only be significant if they acted to fragment or isolate the existing population or if they were a significant deterrent to the movement of damselflies within the Itchen valley meta-population. Although there will be increased traffic on existing roads there is no evidence that the current transport network has a fragmenting effect on the movement of southern damselfly. Observations of dispersing damselflies such as the scarce blue-tailed damselfly *Ishnura pumilio* and azure damselfly *Coenagrion puella* suggest teneral (young) damselfies fly relatively high above the ground to use wind currents to help dispersal (Brooks, 1997)[3]. In addition, Purse et al (2003)[4] found that southern damselfly had similar dispersal ability (11.4% between patch movement rates in males) compared to other similarly sized odonates such as *Ischnura elegans* (11%), *Enallagma cyathigerum* (11%) and *Coenagrion puella* (16%). This same study also found that scrub patches acted as a significant barrier to movement of southern damselfly in heathland landscapes but a road did not show any significant barrier to movement as shown in Figure 2 (3 out of 5 movements recorded were across the main Lymington to Beaulieu Road).

It is unlikely that the increase in road traffic on existing roads would be sufficient to act as a significant barrier to movement of dispersing southern damselfly. It is however accepted that new roads such as the proposed Bishopstoke link road could have such effects. These will need to be fully assessed at the project level HRA to ensure no adverse effect on the SAC.

[3] Brooks, S. (1997) *Field Guide to the Dragonflies and Damselflies of Great Britain and Ireland.* British Wildlife Publishing, Hook, Hampshire. 160pp.

[4] Bethan V. Purse, Graham W. Hopkins, Kieron J. Day and David J. Thompson (2003) Dispersal characteristics and management of a rare damselfly. *Journal of Applied Ecology*, **40**, 716–728.

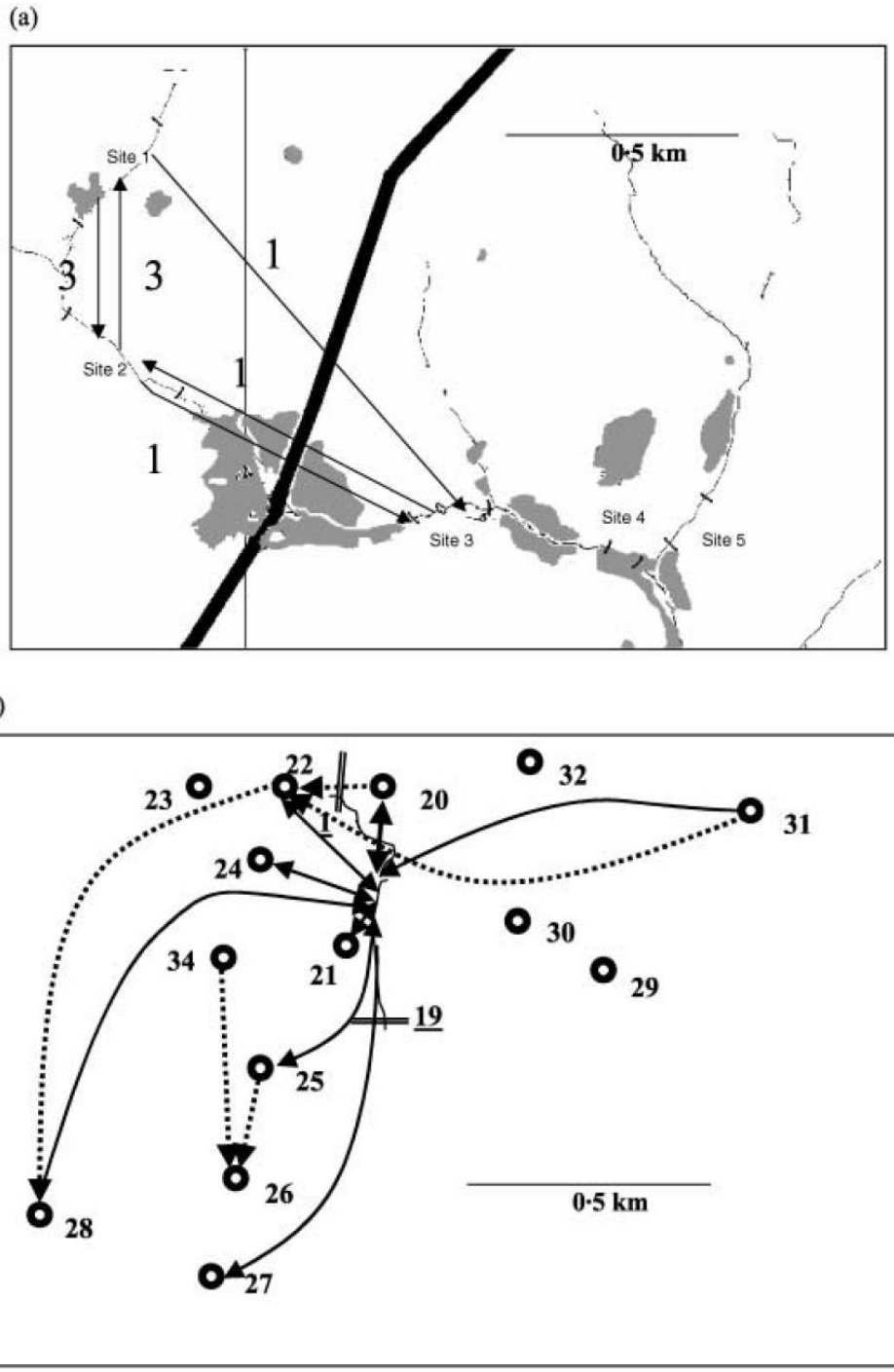


Fig. 4. Map of study stream systems showing the location and direction of the between-patch movements at (a) New Forest and (b) Preseli; solid arrows indicate movements between the MAIN patch and PERIPHERAL patches whilst broken arrows indicate movements between PERIPHERAL patches. At Preseli, there were more between-patch movements, more intermediate distance dispersal and movements occurred in more different directions than in the New Forest.

Figure 2: From Purse et al (2003) showing movement of southern damselfly in the New Forest and Preseli. Scrub shown as dark grey patches, roads as thick black line

6. Other organisations

The representations from the organisations listed below do not appear to raise substantive issues of relevance to the HRA which have not already been raised by the representations addressed in the previous sections of this note:

- Hampshire and Isle of Wight Wildlife Trust
- New Forest District Council
- Royal Society for the Protection of Birds
- A number of angling groups and conservation societies

7. Action Against Destructive Development (AADD)

The following documents were received:

- AADD response to Question 4 for policies S5 and S6
- AADD Appendix 1: Aquascience Consultancy Ltd (August 2018): *Potential aquatic ecological threats to the River Itchen from the Eastleigh Borough Submission Local Plan.*
- AADD Appendix 2: Phlorum (August 2018): *Ecological Review of the Strategic Option Sites Proposed in the Eastleigh Borough Local Plan 2016-2036.*
- AADD Appendix 8: Email from Professor Rob Wilby, Loughborough University.

AADD Part 2a: River Itchen SAC: Paragraphs 48 to 64 present AADD's views on the HRA and related studies.

Para 50: "In this case it is considered that, based on a precautionary approach, there is significant likelihood that there will be adverse impacts, and that EBC has not demonstrated that mitigation measures are available or will be effective in removing those impacts. Where a Plan gives rise to adverse impacts on the integrity of a SAC, assessment must be undertaken to determine whether there are any alternative solutions and, if not, it must be demonstrated that there are imperative reasons of overriding public interest in accordance with Reg. 107 of the Habitats Regulations 2017. EBC has not engaged with this process."

This echoes comments made by the Environment Agency (under policy DM11) and Natural England (under policy DM10). Amendments have been made to the HRA mitigation strategy set out at Chapter 8 and have been incorporated into the EBLP via changes to policy DM11 and supporting text.

However, it is also important to note that some of the site specific impacts assessed in the HRA will require more detailed assessment at the project level once further design work has been completed for the new communities and their drainage and transport infrastructure, as well as for other sites allocated in the plan. The precise form of mitigation will need to reflect the scope and detail of each development proposal when it is submitted for approval. This includes for example:

- Planning applications for sites within 100m of River Itchen SAC in relation to noise and vibration impacts, non-native species and site specific hydrological impacts
- Detailed designs for the new communities north of Bishopstoke and north and east of Fair Oak, and for the north Bishopstoke bypass, in relation to hydrological impacts on River Itchen SAC
- Planning applications for development along stream corridors including Tadburn Stream and Monks Brook and the Bow Lake Stream, in relation to impacts on otter
- Planning applications for sites within 100m of Solent Maritime SAC in relation to non-native species and site specific hydrological impacts

We consider that the EBLP HRA has correctly identified where there is a risk of adverse effects, and demonstrated that effective mitigation is available and has been incorporated into the plan so as to support a conclusion of no adverse effects on integrity. The imperative reasons of overriding public interest test is only engaged where this has not been possible.

Para 51: "To ensure that the issue is robustly assessed ADD has commissioned Dr Nick Everall of Aquascience… His assessment, which disagrees with EBC's conclusions, is attached to these representations as Appendix 1."

Para 52: "The key points that arise from the commissioned ecological report are as follows:

• EBC has relied on inadequate survey data relating to the SAC with respect to invertebrate data for species other than the Southern Damselfly."

We accept that the health of the wider aquatic invertebrate assemblage reflects the condition of the SAC and its Floating Ranunculus Habitat. However, at this strategic plan-making level, it is necessary to consider impacts of abstraction and water quality on the river using the EA/NE guidance levels for flow and nutrient loading as these have been calculated using features of the habitat such as the invertebrate assemblage.

Para 52: "The key points that arise from the commissioned ecological report are as follows:

• There has not been adequate assessment of the headwaters that cross the proposed SGO;

• The hydrological data relied upon, namely the Eastleigh Hydrological Sensitivity Study (JBA, 2018), are inadequate;

• Failure to rely upon adequate data renders unsound the conclusion that the Plan will not have an adverse impact on the SAC;"

The JBA hydrology report was reviewed by Environment Agency which provided detailed comments on its scope and conclusions. It is accepted that further detail hydrological work is required, and this is anticipated to be carried out alongside the detailed design work for the SGO.

Para 52: "The key points that arise from the commissioned ecological report are as follows:

• There are potentially significant impacts of the development on the water quality at the SAC, with consequent effects on the habitat and species that EBC has not taken into account;"

As stated above in response to para 50, we consider that the EBLP HRA has correctly identified where there is a risk of adverse effects, and demonstrated that effective mitigation is available and has been incorporated into the plan so as to support a conclusion of no adverse effects on integrity.

Para 55: "This view is reinforced by Professor Rob Wilby of Loughborough University, one of the country's leading authorities on river systems, who has reviewed the JBA report and has commented "Based on the evidence reviewed by this report, I am unconvinced that any level of SUD development in the headwaters of the Itchen would be sufficient to protect downstream habitats from urban runoff in the event of moderate to extreme rainfall events, let alone the design flood ([which is] 100-year plus upper end allowance for climate change)."

Professor Wilby does not provide any reasoning or evidence to substantiate his views.

Para 60: "The impact of the link road on the Southern Damselfly has been inappropriately considered by EBC. Its HRA (pg. 133) states that Highbridge, where road bridge works are proposed as part of the creation of the link road, is not critical to the Southern Damselfly population. This is contrary to the opinion of EBC's own expert, Dr Rushbrook, that it is 'strategically important in connecting sites across the wider Itchen Valley meta population' and is therefore key to the overall meta population in preventing it from becoming fragmented."

We accept and agree with the importance of the Highbridge population in linking the lower Itchen Valley with populations to the north around Twyford Moors. The text was originally intended to reflect the importance of the Itchen Valley Country Park population in maintaining the southernmost extent of the range of southern damselfly distribution within the SAC. This section has been re-worded, but the conclusion that "increased aerial N deposition will not have a significant effect on the quality of the habitat at this site" remains.

Para 61: "With regard to mitigation, much emphasis is placed throughout the HRA on mitigation of impacts, although there is currently limited information on the form that these will take, construction methods or timeframes."

As stated above in response to para 50, some of the site specific impacts assessed in the HRA will require more detailed assessment at the project level once further design work has been completed for the new communities and their drainage and transport infrastructure, and for other sites allocated in the plan. The precise form of mitigation will need to reflect the scope and detail of each development proposal when it is submitted for approval. This is stated in the mitigation strategy. It is normal practice that the precise form of mitigation, construction methods and timeframes would be agreed at the planning application stage.

Para 62: "A conservation action plan to enhance the population of Southern Damselfly in the Itchen Valley has been tried in the past, and it failed. The action plan focused on the damselfly population in the Itchen Valley Country Park, an area managed by EBC and therefore more manageable than areas owned or occupied by farmers, landowners and other private stakeholders. This plan intended to lead to a beneficial dispersal to habitat in areas where no Southern Damselfly population previously existed. Dr. Rushbrook

writes, in Arcadian Ecology's report, that the long-term annual count data collected from Itchen Valley Country Park between 1999 and 2017 inclusive, shows that there has been a marked declining trend in the total number of adult Southern Damselfly recorded. The action plan clearly failed, and we know of no cases where such a strategy has succeeded. This therefore calls into question the adequacy of the mitigation measures in relation to this species."

Repeat surveys at ICVP by Dr Rushbrook during 2018[5] recorded "*total, peak, mean and median counts comparable with the best years in the past decade*" (p.20). See section 8 below for further detail.

Para 63: "There is also a major flaw in the report entitled 'Air Quality Assessment: Ecological Sites,' by Air Quality Consultants (June 2018) in that it has modelled impacts in 2036, only. This is important as the pollutant emission databases that would have been used assume a lot less pollution per vehicle by 2036 due to technological changes (in particular zero tail pipe emissions from a higher percent of the fleet, due to electric vehicle penetration)."

The air quality assessment was undertaken in accordance with the latest industry guidance available in the discipline. It also includes a sensitivity test which assumes much higher NOx emissions from certain vehicles than have been published by Defra, using the consultants' bespoke Calculator Using Realistic Emissions for Diesels (CURED v3A) tool (AQC, 2017b). This is to address the potential under-performance of emissions control technology on modern diesel vehicles. Worst case scenario model results were used in the analysis relied upon in the HRA. See also further additions to the HRA at para 6.2.21 and Appendix VIII.

8. Review of Additional Southern Damselfly Surveys

The *Southern Damselfly Repeat Survey* (Rushbrook, 2018a[6]) was undertaken by Arcadian Ecology Ltd as a follow up to survey and habitat assessment work undertaken in 2017[7][8].

The results of the survey show that all sites supporting southern damselfly in 2017 continue to support them in 2018. There have been changes in the abundance of southern damselfly both within and between sites. Apart from the Itchen Valley Country Park, populations at all sites appear to be largely stable although no statistical analysis has been undertaken to assess the significance of population change.

Only three sites support strong populations of southern damselfly (Highbridge Farm, Allington Manor Farm and Itchen Valley Country Park). These three sites are located at opposite ends of Eastleigh Borough with a number of smaller sites located along the Itchen Valley between these strong populations. Despite their

[5] Rushbrook B. (2018a): *Southern Damselfly Repeat Survey: Programme Report to Eastleigh Borough Council.* Arcadian Ecology & Consulting Ltd, Curdridge.

[6] Rushbrook B. (2018a): *Southern Damselfly Repeat Survey: Programme Report to Eastleigh Borough Council.* Arcadian Ecology & Consulting Ltd, Curdridge.

[7] Rushbrook, B. (2017): *Southern damselfly survey and habitat assessment study: Eastleigh Borough*. Arcadian Ecology & Consulting Ltd, Curdridge.

[8] Rushbrook, B. (2018b): *Strategic conservation plan for southern damselfly* Coenagrion mercuriale: *habitat enhancement and creation opportunities in and adjacent to Eastleigh Borough*. Arcadian Ecology & Consulting Ltd, Curdridge.

often small size and limited extent, these intermediate sites are considered highly important in maintaining the viability of the southern damselfly meta-population within Eastleigh Borough.

Long term monitoring of the Itchen Valley Country Park population of southern damselfly has shown a significant decline since the early 2000's with a sharp decline between 2005 and 2013 and no recovery between 2013 and 2017. However, the results of the 2018 survey show a recovery in population with numbers "*returning total, peak, mean and median counts comparable with the best years in the past decade*" (p.20).

The 2018 survey of the IVCP included a new survey transect (transect 4) following the main river channel along the A27 at the southern edge of the country park. It is interesting to note that this transect supported the highest density of southern damselfly of all the four monitoring transects in 2018, despite weather conditions not being suitable on the survey date, due to a lack of sunshine.

Reasons for the improved status of southern damselfly in the IVCP during 2018 are not suggested in the survey report so it is not possible to speculate whether this is likely to be a temporary recovery or if there have been improvements in habitat management and quality that are supporting a more sustained recovery.

The report concludes that "*In combination, these findings indicate that southern damselfly have become localised and therefore remain at increased risk, or potentially already suffering, a decline in the strength of the metapopulation in and around Eastleigh Borough. It is therefore considered that urgent conservation action is required for this species across the study area*" (p.52).

The report emphasises the need for a programme of habitat enhancement and creation which is required to increase the strength and viability of the southern damselfly metapopulation in and around Eastleigh Borough.

9. Review of Extra Traffic Flow Data in Winchester's area

HRA response: The following text has been added to the HRA at para 6.2.43. It should be noted that in the August 2018 SRTM data extract, the modelled locations on the M3 at Otterbourne were not within 200m of the River Itchen SAC. A further SRTM data extract was requested to rectify this and received in March 2019; the text below has been amended accordingly.

Sub-Regional Transport Model data were received in August 2018 and March 2019 for three model scenarios at locations outside Eastleigh borough in close proximity to the River Itchen SAC (M3 at Otterbourne and Twyford Down) and Solent Maritime SAC (A3051 Burridge to Curbridge) – refer to Annex 2:

- BL_DKF_2015: baseline traffic flows in 2015
- BL_DOP_2036: baseline traffic flows in 2036, including all committed development in Eastleigh Borough and the wider Solent sub-region, but not including EBLP development
- DS3_DPP_2036: traffic flows in 2036, including all committed development in Eastleigh Borough and the wider Solent sub-region, plus EBLP development

A further run of the atmospheric dispersion model using the new traffic data was not commissioned. In its absence, predicted changes resulting from EBLP development were analysed by comparing DS3_DPP_2036 against BL_DOP_2036. Three factors were considered: 24hr annual average daily traffic (AADT) flow for vehicles; 24hr AADT for HGVs; and daily average speed (km/hr). In line with advice from Natural England[9], predicted changes were compared against the Design Manual for Roads and Bridges[10] screening thresholds, namely:

- Daily traffic flows will change by 1,000 annual average daily traffic (AADT) or more; or
- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more; or
- Daily average speed will change by 10km/hr or more.

None of the modelled road links exceeded the screening thresholds. The AADT (vehicles) flow caused in 2036 by EBLP development, when compared to the 2036 baseline, was predicted to increase by 1,086 on the M3 northbound carriageway at Otterbourne, however, this was predicted to be offset by a decrease in southbound traffic of -533, and the modelled road link is not within 200m of an SAC (in this case the River Itchen). Traffic flow increases outside of Eastleigh borough are screened out from the assessment and not considered further.

10. Review of Developers' Proposals for a Replacement Bridge over the River Itchen Navigation

The following documents were received:

- Eastleigh Borough Council: *Allbrook Rail Bridge: Overview from Eastleigh Borough Council*.
- Paul Basham Associates (June 2018): *Eastleigh SGO: Allbrook Appriasal*.
- WYG Engineering (June 2018): *Highbridge Road / Itchen Navigation Bridge Replacement Options: Bridge Concept Report*.

We do not propose revisions to the conclusions already set out in the HRA, namely that: "the nature and scale of any adverse effect will need to be assessed in detail as part of a future planning application for the proposed new crossing" (para 6.12.8). However, we offer the following comments in relation to the bridge design reports.

We note that the WYG report has broadly identified an appropriate suite of ecological impacts to be addressed in the bridge design, and recommends option 1B (sloping concrete deck) as being the most ecologically advantageous design. Section 3.18 of the PBA report sets out the objectives of the bridge redesign, but only lists shadowing under the bridge in relation to ecological impacts. We would suggest that, although it is likely to be beneficial to reduce the level of shading under a replacement bridge, other ecological factors are of greater significance including:

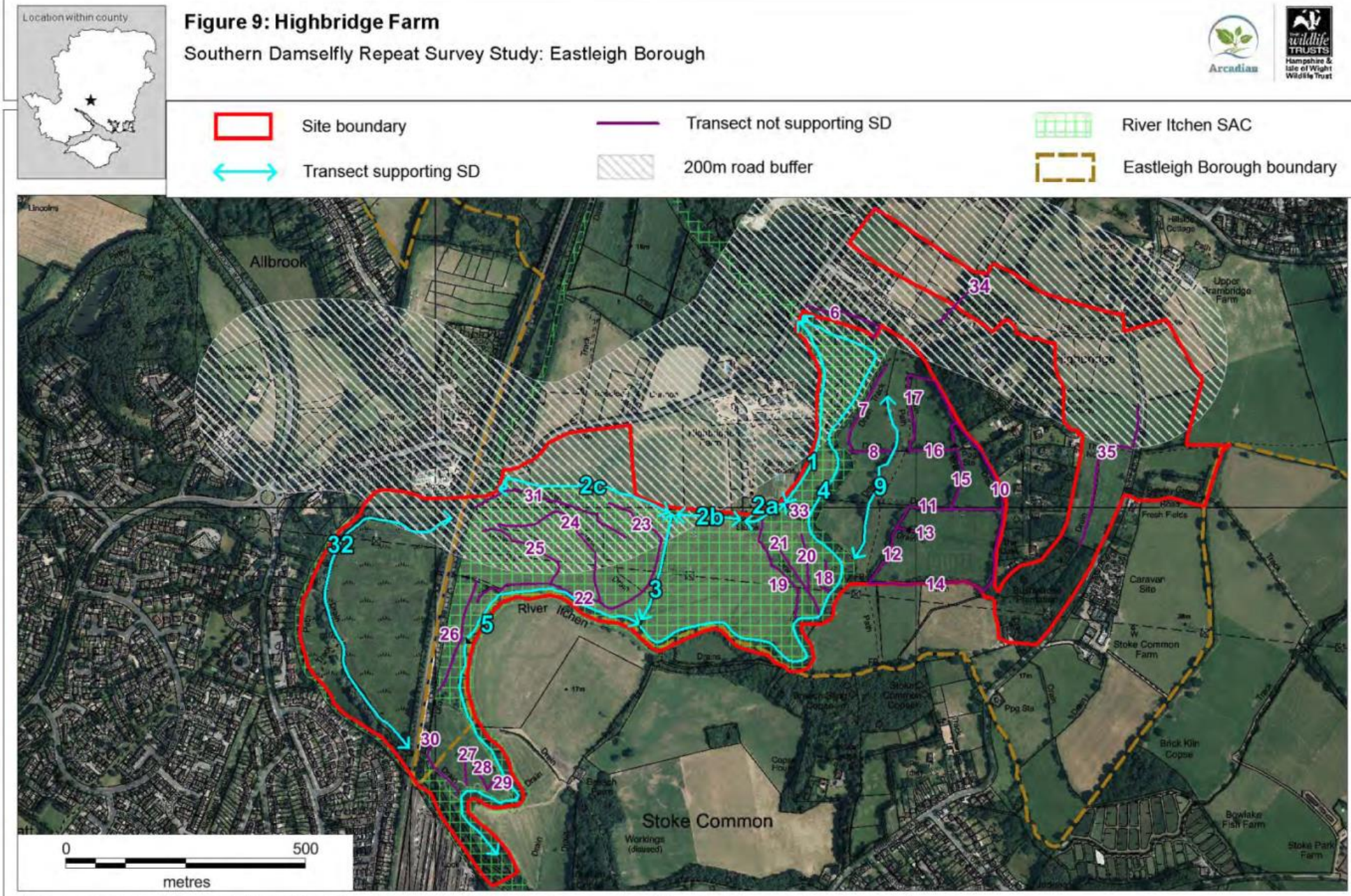
[9] Pers. comm. (2018a): Email correspondence with Becky Aziz, Sustainable Development Lead Advisor, Area 13 – Dorset, Hampshire and Isle of Wight, Natural England.

[10] Highways Agency (2007): *Design Manual for Roads and Bridges: Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 Air Quality (HA207/07).*

- Prevention of pollution (e.g. silt, sediment, chemicals) to protect aquatic vegetation and water quality;
- Prevention of disturbance to migratory fish through noise and vibration;
- Avoidance of any in-channel structures; and
- Providing sufficient space on the bankside beneath the bridge to provide otters and other wildlife a safe means of passage, including during periods of high flow.

Annex 1: Highbridge Southern Damselfly Survey Transects

See following page.


Location within county
Figure 9: Highbridge Farm
Southern Damselfly Repeat Survey Study: Eastleigh Borough
Arcadian
Site boundary
Transect not supporting SD
River Itchen SAC
Transect supporting SD
200m road buffer
Eastleigh Borough boundary
Allbrook
Stoke Common
River Itchen
Upper Trambridge Farm
Caravan Site
Stoke Common Farm
Brick Kiln Copse
Bowlake Fish Farm
Stoke Park Farm
Fresh Fields
Workings (disused)
1
2a
2b
2c
3
4
5
6
7
8
9
10
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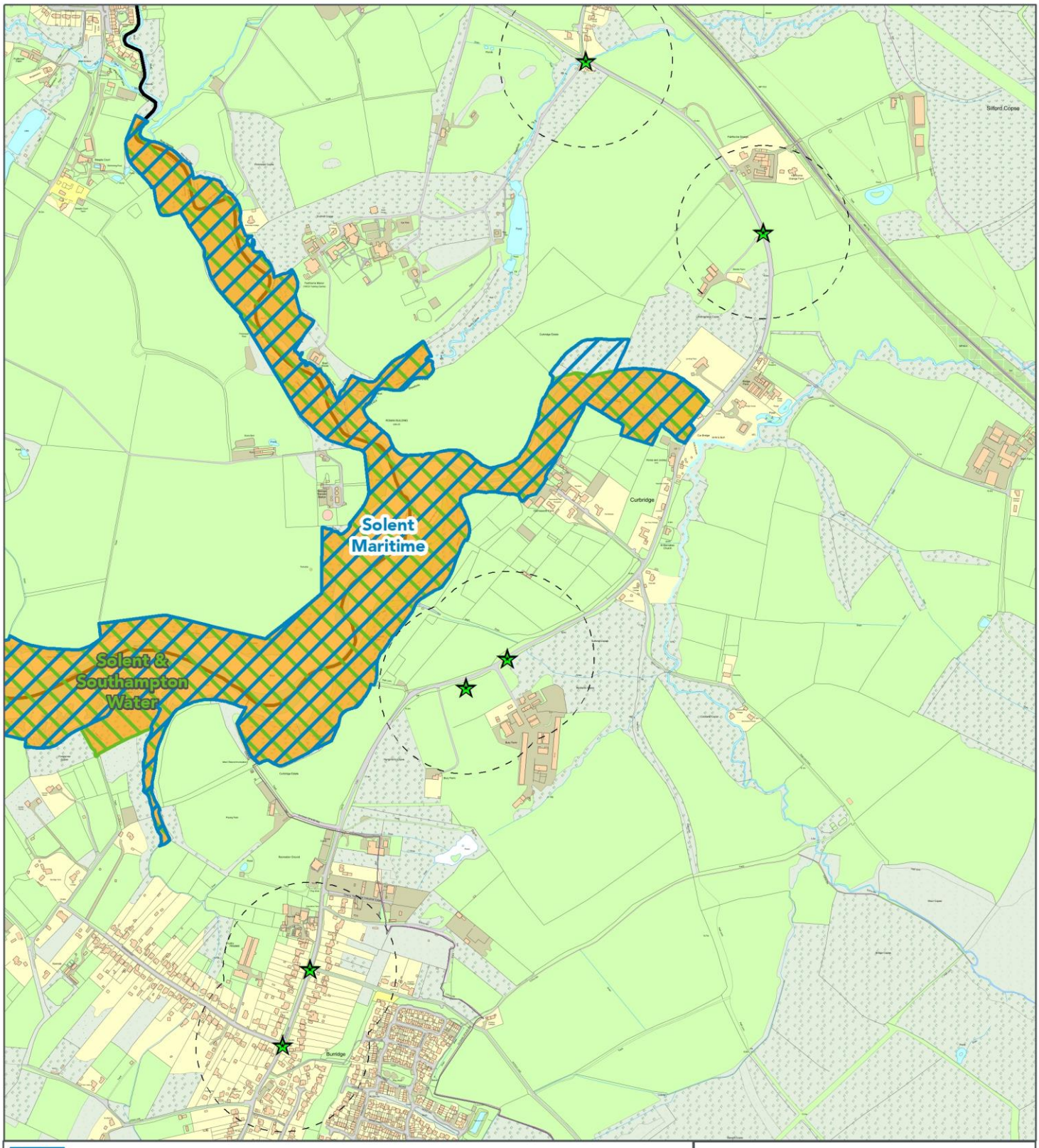
British Crown and MarineFind Ltd. All rights reserved. BAP Priority habitat, notable species and SINC data supplied by the Hampshire Biodiversity Information Centre on behalf of the HBIC Partnership. Aerial photography courtesy of GetMapping plc.
Produced on 7 September 2018 by Deborah Whitfield. For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.

Annex 2: SRTM Road Links and Traffic Flow Data

The following pages show maps of the modelled road link node coordinates provided by Systra, and an analysis of predicted changes in traffic flow conditions.



- Special Areas of Conservation
- Special Protection Areas
- Potential Special Protection Area
- Ramsar Sites
- Borough
- Winchester AADT Nodes
- Winchester AADT Nodes 200m Buffer

0 0.2 0.4 Kilometers

N

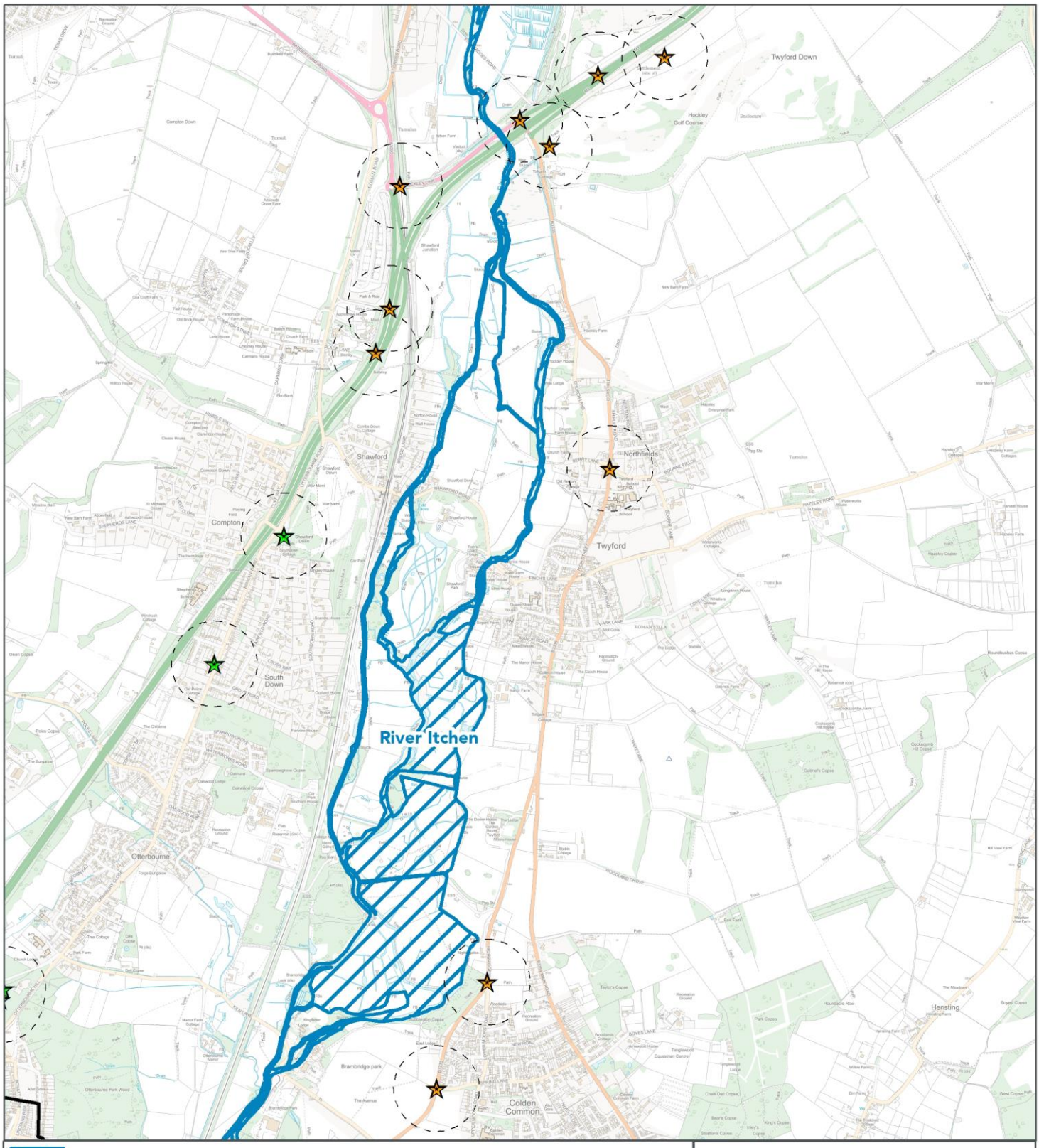
ENVIRONMENTAL CONSULTING
Unit 5 Westergate Business Centre
Brighton
BN2 4QN

Scale	Date
1:11,500	Oct2018
Created by	**Reviewed by**
NP	NP

Drawing number

UE0247HRA-WinchAADT-A3051-1810

Eastleigh Local Plan HRA



Special Areas of Conservation

Borough

Winchester AADT Nodes Aug18

Winchester AADT Nodes Feb19

Winchester AADT Nodes 200m Buffer

0 0.45 0.9 Kilometers

N

ENVIRONMENTAL CONSULTING
Unit 5 Westergate Business Centre
Brighton
BN2 4QN

Scale	Date
1:23,255	Mar2019
Created by	**Reviewed by**
NP	NP

Drawing number

UE0247HRA-WinchAADT-M3-190320

Eastleigh Local Plan HRA

AUGUST 2018 ANALYSIS: Includes M3 nodes which are not within 200m of River Itchen SAC

Vehicles

DMRB Screening Threshold: daily traffic flows will change by 1000 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3							
Nodes			Vehicles	Nodes			Vehicles	Increase over DKF		Nodes			Vehicles	Increase over DKF		Increase over DOP	
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38857	38858	M3 NB Mai	65196	38857	38858	M3 NB Mai	81081	15885	24.37	38857	38858	M3 NB Mai	82167	16971	26.03	1086	1.34	Not within 200m of SAC
43448	43449	M3 SB Mair	64828	43448	43449	M3 SB Mair	79396	14567	22.47	43448	43449	M3 SB Mair	78863	14035	21.65	-533	-0.67	Not within 200m of SAC
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
36331	36332	NB Botley F	4356	-	-	-	-	-		-	-	-	-	-		-		-
36332	89931	NB Botley F	4356	-	-	-	-	-		-	-	-	-	-		-		-
89931	38135	NB Botley F	4521	-	-	-	-	-		-	-	-	-	-		-		-
38135	89931	SB Botley R	6473	-	-	-	-	-		-	-	-	-	-		-		-
89931	36332	SB Botley R	6476	-	-	-	-	-		-	-	-	-	-		-		-
36332	36331	SB Botley R	6476	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	36331	36332	NB Botley F	1545	-2811	-64.53	36331	36332	NB Botley F	2441	-1914	-43.95	896	58.01	Not within 200m of SAC
-	-	-	-	36332	36315	NB Botley F	1545	-		36332	36315	NB Botley F	2441	-		896	58.01	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36315	89931	NB Botley F	2259	-		36315	89931	NB Botley F	3128	-		869	38.49	Not within 200m of SAC
-	-	-	-	89931	38014	NB Botley F	1251	-		89931	38014	NB Botley F	2190	-		940	75.14	Passes within c.0m of Solent Maritime SAC
-	-	-	-	38014	89931	SB Botley R	2904	-		38014	89931	SB Botley R	2894	-		-9	-0.32	Passes within c.0m of Solent Maritime SAC
-	-	-	-	89931	36315	SB Botley R	4171	-		89931	36315	SB Botley R	4138	-		-33	-0.79	Not within 200m of SAC
-	-	-	-	36315	36332	SB Botley R	3269	-		36315	36332	SB Botley R	3191	-		-78	-2.38	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36332	36331	SB Botley R	3269	-3207	-49.5163	36332	36331	SB Botley R	3191	-3284	-51	-78	-2.38	Not within 200m of SAC

N.B. 36331 to 36332 is the only stretch of A3051 modelled in DKF, DOP and DPP

HGVs

DMRB Screening Threshold: HGV vehicle flows will change by 200 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3							
Nodes			HGVs	Nodes			HGVs	Increase over DKF		Nodes			HGVs	Increase over DKF		Increase over DOP	
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38857	38858	M3 NB Mai	7906	38857	38858	M3 NB Mai	8593	687	8.69	38857	38858	M3 NB Mai	8496	590	7.46	-97	-1.13	Not within 200m of SAC
43448	43449	M3 SB Mair	7756	43448	43449	M3 SB Mair	7861	105	1.35	43448	43449	M3 SB Mair	7817	61	0.78	-44	-0.56	Not within 200m of SAC
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
36331	36332	NB Botley F	217	-	-	-	-	-		-	-	-	-	-		-		-
36332	89931	NB Botley F	217	-	-	-	-	-		-	-	-	-	-		-		-
89931	38135	NB Botley F	209	-	-	-	-	-		-	-	-	-	-		-		-
38135	89931	SB Botley R	565	-	-	-	-	-		-	-	-	-	-		-		-
89931	36332	SB Botley R	640	-	-	-	-	-		-	-	-	-	-		-		-
36332	36331	SB Botley R	640	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	36331	36332	NB Botley F	114	-103	-47.61	36331	36332	NB Botley F	141	-76	-34.88	28	24.28	Not within 200m of SAC
-	-	-	-	36332	36315	NB Botley F	114	-		36332	36315	NB Botley F	141	-		28	24.30	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36315	89931	NB Botley F	122	-		36315	89931	NB Botley F	151	-		29	23.85	Not within 200m of SAC
-	-	-	-	89931	38014	NB Botley F	104	-		89931	38014	NB Botley F	133	-		29	27.54	Passes within c.0m of Solent Maritime SAC
-	-	-	-	38014	89931	SB Botley R	338	-		38014	89931	SB Botley R	361	-		23	6.86	Passes within c.0m of Solent Maritime SAC
-	-	-	-	89931	36315	SB Botley R	435	-		89931	36315	SB Botley R	459	-		24	5.42	Not within 200m of SAC
-	-	-	-	36315	36332	SB Botley R	374	-		36315	36332	SB Botley R	398	-		24	6.41	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36332	36331	SB Botley R	374	-266	-41.58571	36332	36331	SB Botley R	398	-242	-38	24	6.41	Not within 200m of SAC

N.B. 36331 to 36332 is the only stretch of A3051 modelled in DKF, DOP and DPP

Speed

DMRB Screening Threshold: daily average speed will change by 10 kph or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			Speed	Nodes			Speed	Increase over DKF		Nodes			Speed	Increase over DKF		Increase over DOP		
A node	B node	Description	kph	A node	B node	Description	kph	kph	%	A node	B node	Description	kph	kph	%	kph	%	Notes
38857	38858	M3 NB Mai	94	38857	38858	M3 NB Mai	98	4	4.38	38857	38858	M3 NB Mai	97	4	3.82	-1	-0.54	Not within 200m of SAC
43448	43449	M3 SB Mair	94	43448	43449	M3 SB Mair	99	5	4.84	43448	43449	M3 SB Mair	99	5	5.09	0	0.23	Not within 200m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36331	36332	NB Botley F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36332	89931	NB Botley F	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89931	38135	NB Botley F	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38135	89931	SB Botley R	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89931	36332	SB Botley R	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36332	36331	SB Botley R	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	36331	36332	NB Botley F	40	0	1.25	36331	36332	NB Botley F	40	0	1.25	0	0.00	Not within 200m of SAC
-	-	-	-	36332	36315	NB Botley F	38	-		36332	36315	NB Botley F	38	-		0	-0.36	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36315	89931	NB Botley F	33	-		36315	89931	NB Botley F	34	-		1	4.02	Not within 200m of SAC
-	-	-	-	89931	38014	NB Botley F	31	-		89931	38014	NB Botley F	30	-		-2	-5.09	Passes within c.0m of Solent Maritime SAC
-	-	-	-	38014	89931	SB Botley R	40	-		38014	89931	SB Botley R	40	-		0	-0.01	Passes within c.0m of Solent Maritime SAC
-	-	-	-	89931	36315	SB Botley R	17	-		89931	36315	SB Botley R	17	-		0	0.92	Not within 200m of SAC
-	-	-	-	36315	36332	SB Botley R	40	-		36315	36332	SB Botley R	40	-		0	0.00	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36332	36331	SB Botley R	39	0	-0.040699	36332	36331	SB Botley R	39	0	0	0	-0.06	Not within 200m of SAC

N.B. 36331 to 36332 is the only stretch of A3051 modelled in DKF, DOP and DPP

MARCH 2019 ANALYSIS: Includes M3 nodes which are within 200m of River Itchen SAC

Vehicles

DMRB Screening Threshold: daily traffic flows will change by 1000 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			Vehicles	Nodes			Vehicles	Increase over DKF		Nodes			Vehicles	Increase over DKF		Increase over DOP		
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38833	43336	M3 at Junct	55158	38833	43336	M3 at Junct	68758	13600	24.66	38833	43336	M3 at Junct	69614	14456	26.21	856	1.24	Flow between nodes crosses SAC
43341	38802	M3 at Junct	56663	43341	38802	M3 at Junct	69208	12546	22.14	43341	38802	M3 at Junct	68634	11972	21.13	-574	-0.83	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38830	38838	A3090 adja	6896	38830	38838	A3090 adja	7517	620	9.00	38830	38838	A3090 adja	7372	475	6.89	-145	-1.93	Flow between nodes crosses SAC
38838	38830	A3090 adja	2224	38838	38830	A3090 adja	1538	-686	-30.84	38838	38830	A3090 adja	1672	-552	-24.82	134	8.70	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43318	43334	B3335 Nort	7885	43318	43334	B3335 Nort	7742	-143	-1.81	43318	43334	B3335 Nort	7704	-180	-2.29	-37	-0.48	Flow between nodes passes within 55m of SAC
43334	43318	B3335 Nort	11020	43334	43318	B3335 Nort	12619	1599	14.51	43334	43318	B3335 Nort	12213	1194	10.83	-406	-3.21	Flow between nodes passes within 55m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36836	36841	B3335 NW	2149	36836	36841	B3335 NW	2088	-61	-2.84	36836	36841	B3335 NW	1664	-485	-22.57	-424	-20.31	Flow between nodes passes within 100m of SAC
36841	36836	B3335 NW	2525	36841	36836	B3335 NW	2059	-467	-18.48	36841	36836	B3335 NW	1890	-635	-25.15	-168	-8.18	Flow between nodes passes within 100m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HGVs

DMRB Screening Threshold: HGV vehicle flows will change by 200 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			HGVs	Nodes			HGVs	Increase over DKF		Nodes			HGVs	Increase over DKF		Increase over DOP		
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38833	43336	M3 at Junct	6652	38833	43336	M3 at Junct	6629	-23	-0.35	38833	43336	M3 at Junct	6618	-33	-0.50	-10	-0.15	Flow between nodes crosses SAC
43341	38802	M3 at Junct	7480	43341	38802	M3 at Junct	7541	61	0.81	43341	38802	M3 at Junct	7502	22	0.30	-38	-0.51	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38830	38838	A3090 adja	276	38830	38838	A3090 adja	349	73	26.35	38830	38838	A3090 adja	356	79	28.71	7	1.87	Flow between nodes crosses SAC
38838	38830	A3090 adja	45	38838	38830	A3090 adja	61	16	34.53	38838	38830	A3090 adja	136	91	200.66	75	123.49	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43318	43334	B3335 Nort	456	43318	43334	B3335 Nort	432	-24	-5.31	43318	43334	B3335 Nort	500	44	9.59	68	15.73	Flow between nodes passes within 55m of SAC
43334	43318	B3335 Nort	900	43334	43318	B3335 Nort	1069	169	18.82	43334	43318	B3335 Nort	1036	136	15.12	-33	-3.11	Flow between nodes passes within 55m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36836	36841	B3335 NW	189	36836	36841	B3335 NW	131	-57	-30.45	36836	36841	B3335 NW	132	-57	-30.22	0	0.34	Flow between nodes passes within 100m of SAC
36841	36836	B3335 NW	213	36841	36836	B3335 NW	242	29	13.77	36841	36836	B3335 NW	227	14	6.58	-15	-6.32	Flow between nodes passes within 100m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Speed

DMRB Screening Threshold: daily average speed will change by 10 kph or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3							
Nodes			Speed	Nodes			Speed	Increase over DKF		Nodes			Speed	Increase over DKF		Increase over DOP		
A node	B node	Description	kph	A node	B node	Description	kph	kph	%	A node	B node	Description	kph	kph	%	kph	%	Notes
38833	43336	M3 at Junct	97	38833	43336	M3 at Junct	101	4	4.09	38833	43336	M3 at Junct	101	4	3.74	0	-0.33	Flow between nodes crosses SAC
43341	38802	M3 at Junct	97	43341	38802	M3 at Junct	101	4	4.61	43341	38802	M3 at Junct	102	5	4.82	0	0.20	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38830	38838	A3090 adja	47	38830	38838	A3090 adja	44	-3	-6.62	38830	38838	A3090 adja	45	-3	-5.53	1	1.17	Flow between nodes crosses SAC
38838	38830	A3090 adja	81	38838	38830	A3090 adja	81	0	0.00	38838	38830	A3090 adja	81	0	0.00	0	0.00	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43318	43334	B3335 Nort	81	43318	43334	B3335 Nort	81	0	0.00	43318	43334	B3335 Nort	81	0	0.00	0	0.00	Flow between nodes passes within 55m of SAC
43334	43318	B3335 Nort	80	43334	43318	B3335 Nort	80	0	-0.04	43334	43318	B3335 Nort	80	0	0.02	0	0.06	Flow between nodes passes within 55m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36836	36841	B3335 NW	78	36836	36841	B3335 NW	78	0	-0.18	36836	36841	B3335 NW	78	0	0.06	0	0.24	Flow between nodes passes within 100m of SAC
36841	36836	B3335 NW	78	36841	36836	B3335 NW	78	0	0.10	36841	36836	B3335 NW	78	0	0.14	0	0.05	Flow between nodes passes within 100m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix VI: Holohan Addendum

Please see insert.

Technical Note

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	June 2019
Note	Addendum in reference to the CJEU Holohan judgement	**Ref**	UE0247
Author	Jonathan Cox / Nick Pincombe	**Page**	1 of 11
Status	For issue		

1. Introduction

On 7 November 2018, the Court of Justice of the European Union (CJEU) passed judgement on Case C-461/17 Holohan v An Bord Pleanala. The ruling is in relation to the interpretation of Article 6(3) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive'). The court concluded in paragraph 40 of the judgement that:

> *"Article 6(3) of the Habitats Directive must be interpreted as meaning that an 'appropriate assessment' must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site."*

To gain a better understanding of the implications of the ruling, reference has been made to the Opinion of the Advocate General in relation to this case. Point 28 of the Opinion states (emphasis added):

> *"28. As the Czech Republic rightly submits, the effects on certain habitat types and species referred to in Annexes I and II to the Habitats Directive, and on migratory birds and birds referred to in Annex I to the Birds Directive, which are present on the protected site but are not covered by its conservation objectives do not, on the other hand, in principle, have to be assessed. However, this only applies if these occurrences are so insignificant that they do not for the sake of completeness have to be included in the conservation objectives of the area."*

Point 29 reinforces the need for an appropriate assessment to be free of lacunae (i.e. gaps) and must contain complete, precise and definitive findings. It also states that and appropriate assessment "*is not 'appropriate'… where updated data concerning the protected habitats and species is lacking.*"

Given that there remains some debate as to application of the CJEU ruling and the Opinion of the Advocate General, a precautionary approach has been taken to the identification of habitats and species to be included in the conservation objectives of the assessment. As a consequence, this technical note revises the

appropriate assessment to consider the implications of the Local Plan on three distinct groups of habitats and species as follows:

1. Habitat types and species for which the site is designated or classified. These are listed on the Standard Data Form submitted to the EU at the time of designation and list habitats and species for which the site has been selected. They are listed on the JNCC website as qualifying habitats and species.
2. Species present on the site that are not listed (as qualifying species). It is assumed this includes species listed on Annex II of the Habitats Directive as well as birds listed on Annex I of Council Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive'). This might include all habitats and species listed on the Standard Data Form as being hosted by the site and Annex I Birds Directive species not reaching qualifying population levels. It has been assumed that this could also include species that have colonised or been discovered in the site following designation.
3. Habitat types and species listed on Annex I and II of the EU Habitats Directive and Annex I of the EU Birds Directive that occur outside the boundaries of the designated site – provided there are implications that affect the conservation objectives for the site.

Earlier versions of the Habitats Regulations Assessment (HRA, including appropriate assessment) for the Eastleigh Borough Local Plan (EBLP) were completed before the Holohan judgement was made. This HRA Addendum provides information for appropriate assessment of relevance to habitats and species not already considered by the EBLP HRA, and which are associated with European sites addressed by the EBLP HRA. For each of the three categories of habitats and species listed above, this addendum considers firstly whether the EBLP will have a likely significant effect on them. For any habitats and species that are likely to be significantly affected, an appropriate assessment of the implications of the proposed Local Plan is undertaken in the light of the site's conservation objectives.

2. River Itchen Special Area of Conservation

The River Itchen SAC is designated for its representation of one Annex I habitat type and a total of six species listed on Annex II of the EU Habitats Directive, namely; Southern damselfly *Coenagrion mercuriale*, Freshwater crayfish *Austropotamobius pallipes*, Brook lamprey *Lampetra planeri*, Atlantic salmon *Salmo salar*, Bullhead *Cottus gobio* and Otter *Lutra lutra*.

Annex I Habitats

No additional non-qualifying Annex I habitat types are listed on the SAC Standard Data Form.

Annex II Species

An additional two Annex II fish species are listed on the River Itchen SAC Standard Data Form that could potentially be affected by the Eastleigh Borough Local Plan and should be assessed through the HRA following the Holohan Case. These are the River lamprey *Lampetra fluviatilis* and Sea lamprey *Petromyzon marinus*. Both species of lamprey are thought to breed in the River Itchen. As with the Brook lamprey, the River and Sea lamprey require a combination of clean well oxygenated river gravels for spawning and areas of deep silt in which the young lamprey develop. It is considered that measures taken to prevent impacts to

habitats of the Brook lamprey and Atlantic salmon would also avoid adverse effects on River lamprey and Sea lamprey.

The River Itchen SAC Standard Data Form also lists Desmoulin's whorl snail *Vertigo moulinsiana* as an Annex II species present within the site and will need to be assessed as part of the HRA following the Holohan Case judgement. This species is also a qualifying species of the Solent Maritime SAC. Survey information for it in the River Itchen has improved since the SAC was designated and it is thought to be quite widespread in suitable habitat within the Itchen Valley. Figure 1 shows the distribution of Desmoulin's whorl snail in the vicinity of Eastleigh Borough from the National Biodiversity Network on-line Atlas.

Desmoulin's whorl snail lives in permanently wet, usually calcareous swamps, fens and marshes, bordering rivers, lakes and ponds, or in river floodplains. It is most often found in open situations. Desmoulin's whorl snail has been recorded living on a wide range of plants, but is most usually found on tall monocotyledons, principally: Reed sweet grass (*Glyceria maxima*), sedges (*Carex riparia, C. acutiformis, C. paniculata, C. elata), Saw sedge (Cladium mariscus*), Reed (*Phragmites australis*), Reedmace (*Typha latifolia* and *T. angustifolia*), Branched bur reed (*Sparganium erectum*), Iris (*Iris pseudacorus*) and Reed canary grass (*Phalaris arundinacea*).

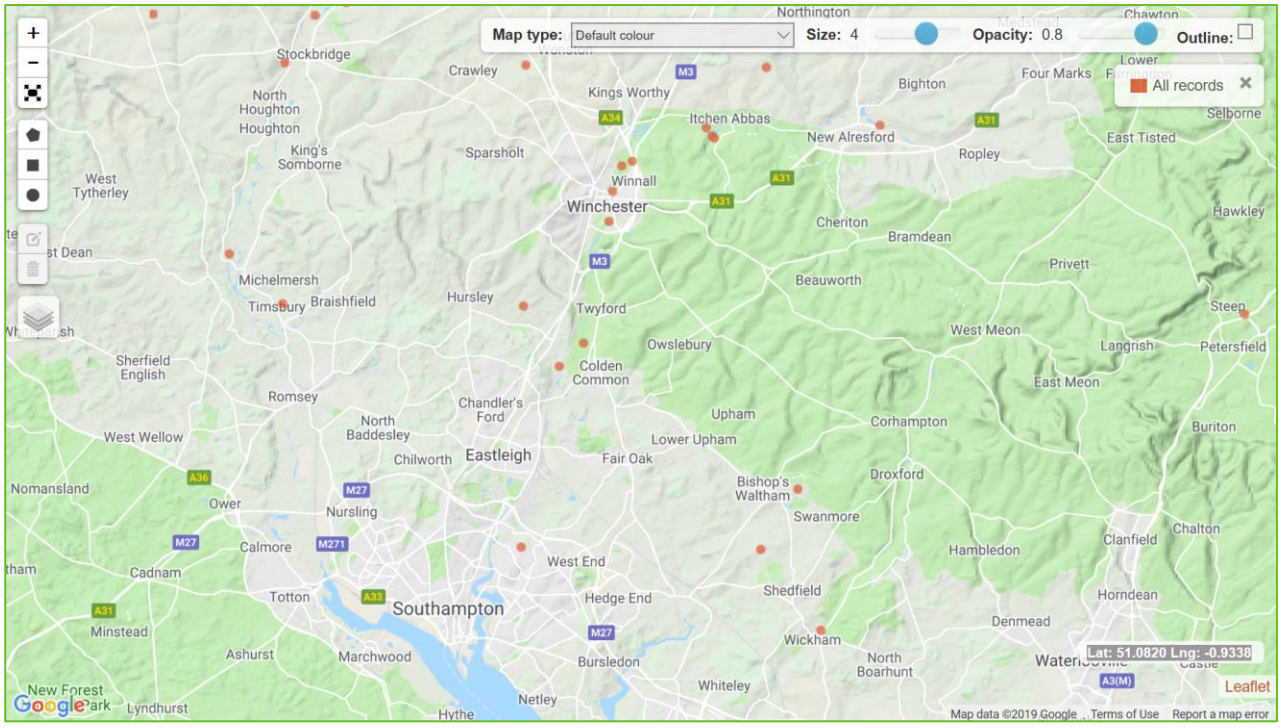


Figure 1: Distribution of Desmoulin's whorl snail in the vicinity of Eastleigh Borough (Source: NBN Gateway)

Reed sweet-grass and sedge swamps form the most typical Desmoulin's whorl snail habitat in most lowland river floodplains. The habitat occurs within natural swamps and marshes and around networks of small ditches, streams and depressions associated with open, relatively uncultivated land adjacent to rivers. Similar habitat also occurs frequently within areas of disused water meadows, grazing marshes and mill streams. The area of habitat may vary from a few tens of square metres to several hectares. This habitat is broadly similar to that used by the Southern damselfly and falls within the broad habitat type of Rich Fens.

Implications for Appropriate Assessment

The additional lamprey species have similar habitat requirements to the Brook lamprey which is a feature of the River Itchen SAC. It is concluded that the EBLP HRA assessment of impacts on Brook lamprey within the River Itchen SAC will also take account of the additional lamprey species. No additional assessment is therefore required.

The River lamprey and Sea lamprey are both migratory species passing through the estuary of Southampton Water to reach the River Itchen. Estuaries are a feature of the Solent Maritime SAC and the movement of migratory fish through the estuary is an important component of this habitat's ecological function. Impacts on the River Itchen affecting the successful completion of the lifecycle of these and the migratory Atlantic salmon could therefore have an adverse effect on the Estuary habitat within the Solent Maritime SAC. Avoidance of impact to these fish within the River Itchen will also ensure no impact on the Solent Maritime SAC.

The Desmoulin's whorl snail is associated with tall fen habitats similar in structure and composition to those used by the Southern damselfly. These are potentially vulnerable to changes in water and air quality. It is concluded that the EBLP HRA assessment of impacts on Southern damselfly will equally apply to Desmoulin's whorl snail. Measures taken to avoid or mitigate adverse impacts on Southern damselfly will also avoid adverse effects on Desmoulin's whorl snail. No additional assessment is therefore required.

Annex I Birds

Kingfisher *Alcedo atthis* are listed on Annex I of the EU Birds Directive. They are present in both the Solent and Southampton Water SPA and New Forest SPA, but are not listed as features of either SPA. Kingfisher also occur within the River Itchen SAC breeding in suitable nest sites along the valley. The last comprehensive survey of kingfisher in the Itchen Valley was undertaken by Cox and Combridge (2003)[1].

The 2003 survey of the Itchen identified 18 possible breeding pairs. The distribution of kingfisher along the valley is illustrated in Figure 2. It appears to show a relatively even spread of kingfisher but this masks the fact that the monitoring units in the lower valley are considerably larger than in the upper valley and hence the density of kingfisher down stream of Winchester is significantly lower than that in the upper Itchen above Winchester. There appears to be something of a concentration of kingfisher in the reach between the A33 and Ovington with two nests located within 200m of each other at Chilland. It may be that availability of suitable nest sites is a significant limiting factor for the kingfisher population in the valley. This is supported by evidence of kingfisher nesting in a sandpit at Casbrook Common (east of the Test Valley) and a chalk pit near Alresford (Clark and Eyre, 1994) both some distance from the nearest open water.

[1] Cox and Combridge (2003): River Itchen breeding bird surveys, River Itchen Sustainability Study

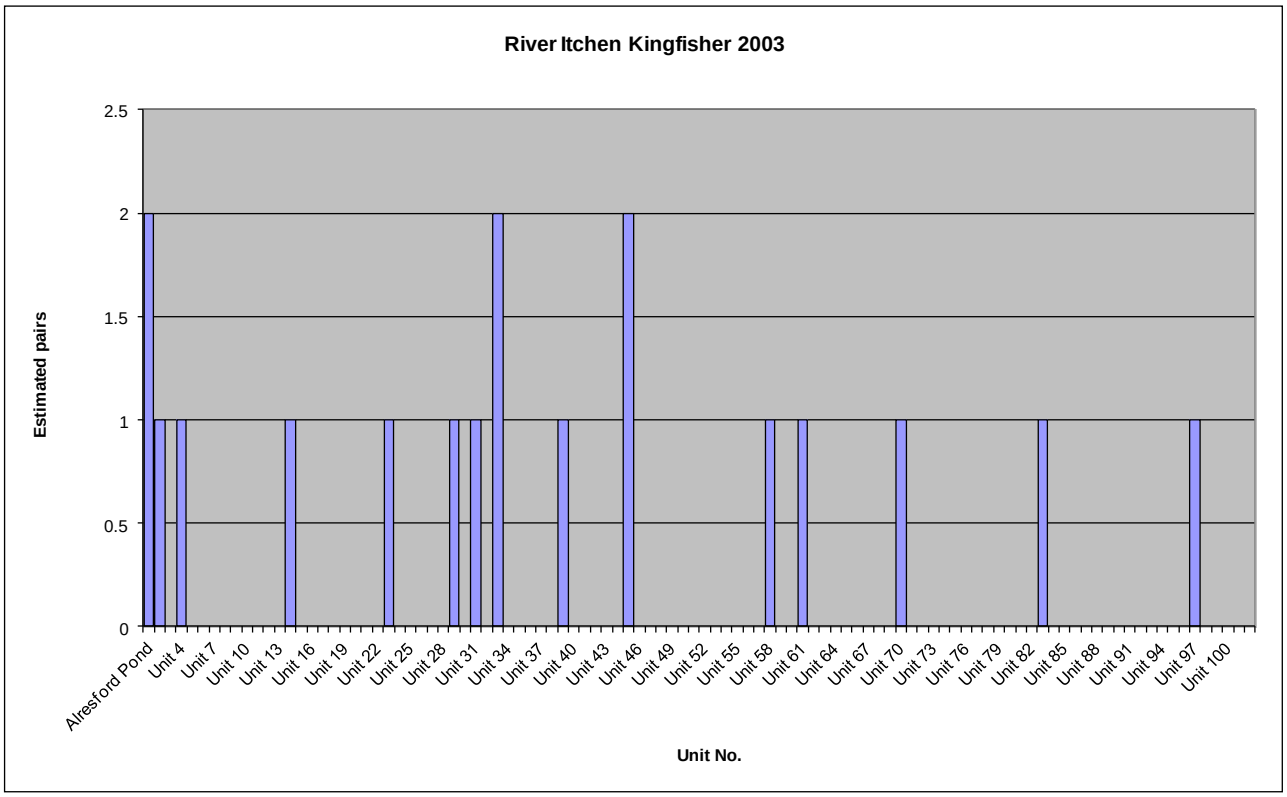


Figure 2: Estimated number of kingfisher pairs in the River Itchen SSSI listed by SSSI unit

Kingfisher is a non-qualifying Annex I bird species within both the Solent and Southampton Water SPA and New Forest SPA that breeds within the River Itchen SAC. Kingfisher breeding in the Itchen Valley are thought to move to the Solent and Southampton Water SPA in winter. Following the Holohan Case judgement, it is considered prudent to assess the impacts of the Eastleigh Borough Local Plan on kingfisher in the Itchen Valley as an off-site impact on the Solent and Southampton Water SPA. There is less obviously a relationship between kingfisher in Eastleigh Borough and the New Forest SPA. However, there are potential disturbance issues from increased recreation use of the New Forest on these birds. These impacts will be assessed as part of the New Forest SPA assessment within this HRA.

Kingfisher in the Itchen Valley are potentially vulnerable to the following impact pathways;

- Hydrological impacts
- Water pollution and water quality
- Loss of nest sites through river engineering and bank stabilisation

Measures taken to avoid hydrological and water quality impacts on the Floating Ranunculus habitat within the River Itchen SAC will also ensure no adverse effect from these impact pathways on kingfisher.

Bridge construction and other infrastructure projects could have impacts on kingfisher nest sites, but it is anticipated that none of the policies within the Local Plan will affect known kingfisher nest sites. Project level HRA of specific developments will need to consider implications for nesting kingfisher.

3. New Forest Special Protection Area

Annex I Birds

Following the outcome of the recent Holohan case, it has been necessary to review the list of Annex I birds that occur in the New Forest and identify any additional species that might need to be considered as part of the assessment. Table 1 lists the Annex I birds that regularly occur within the New Forest and identifies two species that are not currently features of the SPA, namely kingfisher and merlin *Falco columbarius*. Kingfisher are resident on many of the New Forest rivers and move to the coast during the winter to feed on the coastal saltmarshes and creeks. Merlin are present in the New Forest as an uncommon wintering bird. They tend to move into the Forest to roost at night after spending the day hunting on farmland and coastal marshes. Mostly single birds are recorded from the centre and north of the Forest.

Both merlin and kingfisher have been identified as additional bird species present within the New Forest that are not identified as features of the New Forest SPA. Both species are vulnerable to increased recreation pressure and will be considered in the wider assessment of impacts of recreation on SPA birds.

Table 1: Annex I birds regularly occurring in the New Forest. Species not currently identified as SPA features are highlighted in green.

Common name	Taxon name	Status within the New Forest SPA	Included under Art 4.1 qualification	Species not included within SPA features requiring separate assessment
Kingfisher	*Alcedo atthis*	Winter visitor & breeding bird	No	Yes
Nightjar	*Caprimulgus europaeus*	Breeding bird	Yes	No
Hen Harrier	*Circus cyaneus*	Winter visitor	Yes	No
Merlin	*Falco columbarius*	Winter visitor	No	Yes
Woodlark	*Lullula arborea*	Breeding bird	Yes	No
Honey Buzzard	*Pernis apivorus*	Breeding bird	Yes	No
Dartford warbler	*Sylvia undata*	Winter visitor & breeding bird	Yes	No

Implications for Appropriate Assessment

Impacts of increased recreation disturbance on birds within the New Forest SPA will apply equally to merlin and kingfisher as it does to the other Annex I birds that are a feature of the SPA. It can be assumed that measures taken to mitigate impacts of recreation on SPA birds will also ensure no adverse effects on merlin and kingfisher in the New Forest.

4. New Forest Special Area of Conservation

In addition to habitat types listed on Annex I of the EU Habitats Directive, the New Forest SAC also qualifies for its populations of three species listed on Annex II of the Directive, namely; Southern damselfly, Stag beetle *Lucanus cervus* and Great crested newt *Triturus cristatus*.

Annex II Species

As a consequence of the implications of the Holohan case, the list of Annex II species present within the New Forest has been reviewed to identify any additional species not previously listed as features of the New Forest SAC that occur within the site. Table 2 lists species identified from this review and considers if any of these require additional assessment due either to impacts generated by the Eastleigh Borough Local Plan within the SAC, or to populations of these species that extend beyond the boundary of the site that could have implications for their conservation within the SAC.

From the review of Annex II species in Table 2 it can be concluded that two additional species not listed as features of the SAC may require further consideration through this HRA, namely Bechstein's bat and Barbastelle bat.

Table 2: Annex II Species present within the New Forest

Common name	Taxon name	Status within the New Forest SAC	SAC designation feature	Requires further assessment?
Barbastelle Bat	*Barbastella barbastellus*	Information incomplete but maybe widespread in the SAC. Breeds in veteran trees.	No	Yes
Bechstein's bat	*Myotis bechsteinii*	Information incomplete but likely to be uncommon in the New Forest. Breeds in veteran trees.	No	Yes
Brook Lamprey	*Lampetra planeri*	Probably well distributed in New Forest streams	No	No
Bullhead	*Cottus gobio*	Frequent in New Forest streams and rivers	No	No
Early Gentian	*Gentianella anglica*	Confined to areas of imported chalk on former bombing range to the north of the New Forest	No	No
Floating water-plantain	*Luronium natans*	Very rare, confined to one site near	No	No

Common name	Taxon name	Status within the New Forest SAC	SAC designation feature	Requires further assessment?
		Brockenhurst. Maybe an introduction.		
Great crested newt	*Triturus cristatus*	Populations tend to be associated with more base enriched ponds around the periphery of the New Forest SAC	Yes	No
Otter	*Lutra lutra*	Breeds in the lower reaches of New Forest rivers such as Lymington and Beaulieu. Ranges widely along the Solent coast in winter.	No	No
Southern Damselfly	*Coenagrion mercuriale*	Confined to a few well known sites with specific hydrological characteristics	Yes	No
Stag Beetle	*Lucanus cervus*	Mostly recorded from sub-urban locations outside of the SAC but presumably widespread in the SAC	Yes	No

Implications for Appropriate Assessment

Both the Bechstein's bat and Barbastelle bat are woodland species that have maternity roosts within tree holes and crevices. Both species forage within woodlands and a range of wetland and grassland habitats beyond the woodland edge. Radio tracking studies of Barbastelle bats in the Test Valley have shown bats forage for up to 7.5 km from their maternity roosts. Although parts of Eastleigh Borough are within 7.5 km of the New Forest, it is not considered likely that policies within the Local Plan will have adverse effects on foraging habitats used by Annex I bats within the New Forest SAC.

5. Solent & Southampton Water Special Protection Area

Annex I Birds

Following the outcome of the recent Holohan case, it has been necessary to review the list of Annex I birds that occur in the Solent and Southampton Water SPA and consider whether additional species need to be included as part of this assessment. Table 3 lists the Annex I birds that regularly occur within this SPA and identifies 21 species that are not currently listed under article 4.1 of the Birds Directive as qualifying features

of the SPA. The analysis in Table 3 identifies a total of eight Annex I species that regularly occur within the SPA that do not form part of the existing features of the site, either under article 4.1 or article 4.2. These eight species need to be considered within the HRA. There is some uncertainty over the whether Kingfisher are included within the SPA assemblage of waterbirds. They are recorded within the Wetland Bird Survey (WeBS) counts upon which the assemblage population is based. However, the definition of waterbirds in the SPA follows that provided by the Ramsar Convention . This does not include kingfisher, but does state that waterbirds are birds that are "ecologically dependent upon wetlands". Using this broader definition, kingfisher will be assessed within the article 4.2 assemblage of waterbirds within the Solent and Southampton Water SPA.

Table 3: Annex I bird species regularly occurring within the Solent and Southampton Water SPA. Species not currently included as qualifying features of the SPA are highlighted in green

Common name	**Taxon name**	**Status within the SPA**	**SPA qualifying feature**	**Requires further assessment?**
Kingfisher	*Alcedo atthis*	Winter visitor	Art 4.2	No
Short-Eared Owl	*Asio flammeus*	Winter visitor	No	Yes
Great Bittern	*Botaurus stellaris*	Winter visitor	Art 4.2	No
Nightjar	*Caprimulgus europaeus*	Rare breeding bird	No	Yes
Marsh Harrier	*Circus aeruginosus*	Winter visitor and rare breeding bird	No	Yes
Hen Harrier	*Circus cyaneus*	Winter visitor	No	Yes
Little Egret	*Egretta garzetta*	Winter visitor and rare breeding bird	Art 4.2	No
Merlin	*Falco columbarius*	Winter visitor	No	Yes
Peregrine Falcon	*Falco peregrinus*	Wintering and breeding	No	Yes
Black-throated Diver	*Gavia arctica*	Winter visitor	Art 4.2	No
Great northern diver	*Gavia immer*	Winter visitor	Art 4.2	No
Red-Throated Diver	*Gavia stellata*	Winter visitor	Art 4.2	No
Mediterranean Gull	*Larus melanocephalus*	Wintering and breeding	Art 4.1	No
Bar-Tailed Godwit	*Limosa lapponica*	Winter visitor	Art 4.2	No
Osprey	*Pandion haliaetus*	Passage migrant	No	Yes
Spoonbill	*Platalea leucorodia*	Winter visitor	Art 4.2	No
Golden Plover	*Pluvialis apricaria*	Winter visitor	Art 4.2	No
Slavonian Grebe	*Podiceps auritus*	Winter visitor	Art 4.2	No
Pied Avocet	*Recurvirostra avosetta*	Wintering and breeding	Art 4.2	No
Roseate Tern	*Sterna dougallii*	Rare breeding migrant	Art 4.1	No

Common name	Taxon name	Status within the SPA	SPA qualifying feature	Requires further assessment?
Common Tern	*Sterna hirundo*	Breeding migrant	Art 4.1	No
Sandwich Tern	*Sterna sandvicensis*	Breeding migrant	Art 4.1	No
Little Tern	*Sternula albifrons*	Breeding migrant	Art 4.1	No
Dartford warbler	*Sylvia undata*	Wintering and breeding	No	Yes
Wood Sandpiper	*Tringa glareola*	Passage migrant	Art 4.2	No

Implications for Appropriate Assessment

Annex I birds that occur within the Solent and Southampton Water SPA are mostly assessed within the qualifying assemblage of waterbirds under article 4.2 of the EU Birds Directive. However, there are eight Annex I species that are not currently included within this SPA qualifying features. These are mostly birds of prey that visit the Solent during the winter, several of which are regularly recorded within Eastleigh Borough. However, it is concluded the EBLP HRA assessment of impacts on SPA habitats and associated supporting habitats will equally apply to these additional bird species. Measures taken to avoid or mitigate adverse impacts on SPA habitats and associated supporting habitats will also avoid adverse effects on the additional bird species. No additional assessment is therefore required.

6. Solent Maritime Special Area of Conservation

Annex I Habitats

Sanderson (1995) reviewed the presence of Annex I habitat types within the Solent and identified a number that were not subsequently included as features within the SAC designation. These are mostly sand dune habitat types that are not found in the vicinity of Eastleigh Borough. Consequently there is no requirement to assess any additional Annex I habitat types within the Solent Maritime SAC as a consequence of the Holohan case.

Annex II Species

Only one Annex II species, the Desmoulin's whorl snail, is listed as meeting the qualifying criteria for designation on the Standard Data Form for the Solent Maritime SAC.

Subsequent to the Holohan judgement of the ECJ it is necessary to consider impacts of the Eastleigh Borough Local Plan on two additional Annex II species listed on the Standard Data Form that do not meet qualifying criteria. These have not previously been identified as features of the SAC but now require consideration following the Holohan case, these are listed in Table 4.

Table 4: Annex II species present within the Solent Maritime SAC that do not meet qualifying criteria

Common name	Taxon name	Status within the SPA
European otter	*Lutra lutra*	The European otter is a feature of the River Itchen SAC. Impacts of the Local Plan on European otter will therefore be assessed as both a feature of the River Itchen SAC and as a species occurring within the Solent Maritime SAC and New Forest SAC.
Common seal	*Phoca vitulina*	A colony of about 50 common seals breed in Chichester Harbour. These move widely throughout the Solent in winter but are concentrated in the eastern Solent. Common seals are rarely seen on the coast of Eastleigh Borough although tracking studies have shown they regularly visit Southampton Water and the Hamble Estuary. They do not breed in the vicinity of the Borough.

Implications for Appropriate Assessment

Impacts of Local Plan policies on otters within the Solent Maritime SAC will be assessed alongside impacts on otters within the River Itchen SAC and require no additional assessment.

Common seals are almost entirely marine mammals that do not occur on land within Eastleigh Borough. It can be concluded that EBLP HRA measures taken to avoid or mitigate adverse effects on Estuaries and other coastal SAC habitat types will also ensure no adverse effect on Common seals within the Solent Maritime SAC. No additional assessment is therefore required.

Appendix VII: Eastleigh Nitrogen Budget

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Technical Note

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	June 2019
Note	Nitrogen Budget	**Ref**	UE0247
Author	Giulia Civello / Nick Pincombe	**Page**	1 of 9
Status	For issue		

1. Introduction

There are high levels of nitrogen (N) and phosphorous (P) entering the water environment in the Solent with evidence of eutrophication at internationally designated sites. As part of the Habitats Regulations Assessment (HRA) accompanying the Eastleigh Borough Local Plan (EBLP), a nutrient budget has been calculated for the Borough over the emerging plan period 2016 to 2036. These calculations inform the assessment of adverse effects on the integrity of internationally designated sites and requirements for mitigation.

Nitrogen is the principal nutrient driving eutrophication in the marine environment and therefore the budget is focused on the nitrogen budget. Phosphate is the principal driver in freshwater habitats; during a meeting with Natural England in February 2019 the HRA authors queried whether a nutrient budgeting exercise should also be undertaken in relation to phosphates, principally in relation to potential impacts on freshwater habitats and qualifying features in the River Itchen.

Natural England[1] advised that Farmscoper modelling commissioned from ADAS for the Poole Harbour catchment found that agricultural source control measures focused on reducing N had a much bigger percentage reduction effect on agricultural diffuse P (-13% and -27% respectively). This aligns with other academic modelling work and also scientific observation that country actions to reduce agricultural diffuse eutrophication are having much more success at reducing P than in reducing N. This suggests a focus of action on reducing N source losses from farming to address nitrogen enrichment in the Solent sites will coincidentally deliver a high degree of agricultural diffuse P reduction on the River Itchen SAC. In the upper Itchen other sources of P including cress farming, fish farming, and non-mains drainage were the dominant sources of P however at the bottom of the River Itchen agricultural diffuse and the Waste water treatment works are the dominant sources. Therefore development offsetting of N from agriculture will also deliver offsetting of the relatively (compared to other catchments) limited amounts of agricultural P – although this

[1] Pers. Comm. (2019): Email correspondence within the Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England; 25/2/19.

will vary depending on geology type and distance and there are some additional agricultural measures that can be deployed to reduce P that have little effect on reducing N. In addition, actions to address flooding and action on misconnections and other urban sources are successful at reducing urban diffuse P contributions.

2. Methodology

A nitrogen budget has been calculated using the Natural England working draft methodology published in August 2018[2] ; Natural England has recently advised that it is considering changes to the methodology and these will be addressed in the HRA when they are available. Development can impact the nitrogen budget in two key ways:

- Change in population impacting the amount of nitrogen discharged from waste water treatment works (WWTW) into the environment; and
- Change in land use affecting the amount of nitrogen leaching from individual sites into the environment and not received by a WWTW.

The nitrogen budget calculation presented in Annex 1 to this note includes all types of development site which would result in a net increase in population served by a wastewater system, including new homes and tourist accommodation. The calculation also includes large employment sites and open space and recreation sites where a potential change in land use could have a bearing on the nitrogen budget.

The list of new housing sites coming forward in the emerging plan period has been taken from the 'Housing Trajectory 2018 by WWTW Catchment January 2019' spreadsheet issued by the Council – specifically Tab6: Allocations; and Tab7: New allocations. Sites which already have full planning permission in place are excluded from the assessment; this includes windfall sites for the 2011 – 2018 period. Sites with outline consent are however included in the budget as explained further under the Stage 1 heading below. A number of additional sites allocated in the emerging Local Plan and with the potential to affect the nutrient budget have also been included following discussion with EBC.

Stage 1

Stage 1 of the methodology calculates the net additional population for each development site in the Local Plan, the waste water volume associated with this additional population and the subsequent amount of nitrogen discharged from the WWTWs per year.

Population numbers

Proposed net dwelling numbers for each residential development site were provided by EBC. The net additional population has been calculated by multiplying the dwelling numbers by 2.3 (average dwelling occupancy). For tourist accommodation sites, EBC advised on the likely quantum of accommodation to be

[2] Natural England (2018): *Methodology to calculate the nitrogen budget for development in the Solent and achieve nitrogen neutrality*. Working Draft August 2018.

provided: for site BU7, a 200 bed hotel has been assumed; for site HA2, 24 lodges and 30 caravans have been assumed, each accommodating an average of 4 people. Average bed occupancy has been assumed at 55%, based on data from figures from Visit Britain for 2016 – 2018 for England and the South-East[3]. In order to calculate the annual nitrogen discharge, for tourist accommodation sites the daily Total Nitrogen (TN) discharged after WWTW treatment is multiplied by 200.75 days to calculate Annual WW TN load (kg/TN/yr) (as opposed to 365 days for residential sites).

Sites which have been granted outline planning consent have also been included in the nitrogen budget as any reserved matters applications coming forward during the emerging plan period will need to be taken into account. Only those dwellings which have not already been the subject of a decided reserved matters application have been included in the budget.

Windfall development has also been accounted for in the nitrogen budget. Windfall sites are defined in the NPPF as "Sites which have not been specifically identified as available in the Local Plan process. They normally comprise previously-developed sites that have unexpectedly become available." Table 1 sets out the windfall dwelling numbers split by WWTW catchment, as provided by EBC.

Table 1: Windfall Site Numbers Split by WWTW Catchment

Facility	**Dwellings**
Chickenhall WWTW	767
Peel Common WWTW	537
Portswood WWTW	230
Total	***1,534***

Wastewater production

Natural England has advised that wastewater production should be assumed at 110 litres per person per day for the purpose of the nitrogen budget on a precautionary basis to allow for alteration of internal fittings by future occupants which may alter future water consumption levels of the development[4]. The waste water volume generated by any population displaced by proposed development has not been included as a standalone column in the calculation spreadsheet as the dwelling numbers provided by EBC are net gain figures and therefore already take account of any dwelling losses.

Nitrogen discharge

In order to calculate the WWTW nitrogen discharge, it is necessary to understand which WWTW each site will connect into and the nitrogen permit levels for each facility. WWTW catchment areas were provided by EBC. The three WWTW serving Eastleigh borough are listed in Table 2. The Environment Agency and

[3] Visit Britain (2019): *Accommodation Occupancy: Latest results.* Accessed online [16/4/19]: https://www.visitbritain.org/accommodation-occupancy-latest-results

[4] Email correspondence with Rebecca Aziz, Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England, 03/06/19

Southern Water were contacted to obtain nitrogen permit levels for each facility. Only Peel Common has a nitrogen permit in place. Southern Water[5] advised that, because no permit is in place, the effluent discharge at Chickenhall and Portswood is not sampled for nitrogen concentrations. However Southern Water has provided sampled ammonia levels in the influent at both Chickenhall and Portswood[6]. Given that ammonia is a nitrogen containing compound, it was agreed with Natural England[7] that the influent ammonia levels could be used as an estimate of the amount of nitrogen leaving these facilities. An annual average for the influent amount of ammonia has been calculated and used in the nitrogen budget as set out in Table 2.

Table 2: Nitrogen Permit Levels

Facility	N permit level (mg/l)	Proxy N load in the absence of permit
Peel Common WWTW	9	N/A
Chickenhall WWTW	No N permit limit	27
Portswood WWTW	No N permit limit	27

Stage 2

Stage 2 of the calculations focuses on the existing nitrogen load from the current land use of each development site. There are three main land use categories in the Natural England methodology: agricultural, urban and SANG / open space. The Natural England methodology provides different nitrogen loads for different farm types, where arable agriculture has a much higher nitrogen load than animal grazing for example.

The total area of each development site was taken from a GIS shapefile of all sites provided by EBC and cross-checked against the site areas noted in the Local Plan. In the few instances where the site areas provided in the Local Plan differed from the areas calculated from the shapefile, the larger area has been used to inform nitrogen calculations, thereby adopting a worst case scenario.

The total site area was then divided between the land use categories based on measurements in ArcGIS and aerial photography. Where it was not possible to identify the specific farm type from aerial photography, the average agricultural nitrogen load for the catchment area was applied, as per the Natural England methodology. The SANG / open space category included all green areas private and public, including woodland, unmanaged woodland, SINC and LNR. The SANG / open space category does not include playing pitches and gardens. Due to the fertiliser use on these surfaces, these areas were included within the urban land use category (as advised by Natural England[8]).

[5] Email correspondence with Sophie Hall, Area Permitting Co-ordinator for Southern Water, Hampshire and Isle of Wight, 29/04/19

[6] Email correspondence with Sophie Hall, Area Permitting Co-ordinator, Hampshire and Isle of Wight, Southern Water, 24/05/19

[7] Email correspondence with Rebecca Aziz, Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England, 31/05/19

[8] Email correspondence with Rebecca Aziz, Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England, 25/03/19

Each area was multiplied by the average nitrate load for that particular land use and then summed to provide the total annual nitrogen load from current land uses (kg/ha/yr).

EBC has advised that the SGO developers have reached agreement to acquire the 5ha Bow Lake fish farm specifically to help with ecological mitigation / nutrient neutrality. Fish farms generally have a high nitrogen load associated with the nitrogen content of fish excrement. To allow for this in Stage 2 of the calculations, the 5ha fish farm has been included as part of the current agricultural land area as its existing nitrogen load is likely to be more similar to agricultural land (26.9 kg/ha) as opposed to urban land (14.3kg/ha) or open space (13kg/ha). For the proposed development Stage 3 calculations, the 5ha fish farm has been assumed to have been converted to green open space. The overall impact of allocating the Bow Lake fish farm an existing nitrogen level akin to agricultural land in the Stage 2 calculations as opposed to urban land or open space, is to decrease the total N budget by 63 kg/TN/yr and 69.5 kg/TN/yr respectively.

Windfall sites

In order to factor the windfall dwelling numbers into the calculations it was necessary to establish:

A. Whether these dwellings will come forward on greenfield or brownfield land; and
B. The area of land these developments will cover.

With regard to point A, the percentage split between greenfield (agricultural land), greenfield (rural, non-agricultural land) and brownfield land in the 2011 to 2016 windfall developments on large sites set out in the EBC Draft Housing Trajectory Report[9] (specifically Table 13) was calculated. This percentage split has then been applied to the 2016-2036 figures in Table 1.

With regard to point B, we have obtained the average population density of Eastleigh (16.13 people per hectare) from the EBC demography background paper[10] and divided the windfall dwelling numbers by this figure to obtain an overall area of land these windfall developments will cover. Given that the majority of windfall sites will come forward on brownfield land, there is minimal change in land use and therefore altering the density figure has little impact on the nitrogen budget overall.

Stage 3

Having calculated the nitrogen load from current land use, Stage 3 goes on to calculate the nitrogen load from proposed land use that will not be received by a WWTW. A number of assumptions have been made to inform this stage of the calculations as set out in the paragraphs below.

Open space provision

Open space provision has been calculated using the emerging Local Plan standard of 1.4ha per 1,000 people which equates to 0.0014 ha of open space per person. Because not all open provision is necessarily green space, 90% of 0.0014 ha per person has been applied. The remaining 10% is assumed to be

[9] Eastleigh Borough Council (no date). Eastleigh Borough Local Plan 2011-36 – Draft Housing Trajectory. Accessed online [08/05/19]

[10] Eastleigh Borough Council (2018). Eastleigh Borough Local Plan 2016-2036, Demography Background Paper June 2018. Accessed online [08/05/19]

hardstanding and therefore falls into the urban land category. Given the nitrogen load for urban land is higher than open space this approach ensures a precautionary scenario in terms of the nitrogen budget.

For the SGO, policy S5 in the calculation spreadsheet (Annex 1), it has been assumed that there will be 178.65 ha of open space. This figure has been taken from the schedule of open spaces created by EBC's master plan consultants and issued to UEEC by EBC on 10/4/19. The 178.65 ha excludes village squares, village playing fields and school grounds which have been assumed as 'urban land' for the purposes of the calculations (as advised by Natural England[7]).

Given that there is no policy requirement for open space for tourist accommodation sites, the proposed land use for sites BU7 and HA2 has been assumed as 100% urban to ensure the worst case scenario is calculated.

As for Stage 2, proposed playing pitches have been categorised as 'urban' land due the associated fertiliser use. This is in line with Natural England's advice[8].

New urban area

New urban area is then calculated by subtracting the open space provision from the total site area. It is assumed that new urban area and new open space are mutually exclusive. There is a possibility that some developments may embed open space areas within the urban elements of the site for example a green amenity roof space on top of a residential tower. However for the purpose of these calculations, we assumed that in most cases open spaces and urban areas do not overlap in plan terms.

As for Stage 2, the area within each land use category is then multiplied by the average nitrate load for that particular land use and then summed to provide the total annual nitrogen load from proposed land uses (kg/ha/yr).

Stage 4

The final stage in the process is to calculate the net change in total nitrogen load to the Solent catchment resulting from the proposed development allocated in the emerging Local Plan. This has been derived by calculating the difference between total nitrogen load generated by the proposed development (Stages 1 and 3), and that for the existing land uses (Stage 2).

3. Results

The total nitrogen budget for Eastleigh Borough has been calculated as 15,434.74 kg/TN/yr; see Table 3. A positive figure indicates a surplus of nitrogen in the Borough and therefore mitigation will be required to achieve nutrient neutrality and avoid any impact to internationally designated sites in the Solent.

A breakdown between the different categories of proposed development sites is set out in Table 3. More than half of the nitrogen surplus is attributable to the SGO development.

Table 3: Eastleigh Nitrogen Budget

Site Category	Nitrogen Budget (kg/TN/yr)	Area of ag land required to mitigate (ha)*
Residential (excl. SGO & windfall)	2,167.12	80.56
SGO	8,917.86	331.52
West of Horton Heath	1,782.06	66.25
Overnight tourism	31.10	1.16
Open space, recreation	32.92	1.22
Large employment sites	50.31	1.87
Windfall sites	2,453.38	91.20
Overall N budget	***15,434.74***	***573.78***
Positive figure indicates surplus N and hence mitigation is required. Negative figure indicates a deficit and so no mitigation required		

** Assumes an average nitrogen load for the catchment area of 26.9 kg/ha. This figure is purely indicative and is provided to give EBC a tangible measure of the nitrogen surplus calculated.*

Varying the amount of nitrogen in the effluent of the Chickenhall and Portswood WWTWs has a significant impact on the overall nitrogen budget. The ammonia average which has been applied is considered to be a very high nitrogen concentration for a WWTW and therefore the calculations represent a highly precautionary scenario in terms of the nitrogen surplus calculation.

Natural England advised at a meeting with EBC on 1/5/19 that they are further refining the nitrogen load figures provided in their methodology for the different land uses. For the SANG / open space category this figure may reduce from 13 kg/TN/yr to as low as 3 kg/TN/yr. This would reduce the Eastleigh Borough nitrogen budget surplus by approximately 557.43 kg/TN/yr.

4. Mitigation

Mitigation will be required for the additional 15,434.74 kg/TN/yr entering the environment as a result of development proposed in the emerging Eastleigh Borough Local Plan. There are a number of options which could be used to mitigate a nitrogen surplus, including:

- Measures to remove nitrogen leaching from the development site, for example by provision of engineered wetlands or reedbeds;
- Developer offsetting through the acquisition, or contributions to the acquisition, of land elsewhere within the river catchment area containing the development site and changing to land use with a lower nitrogen load in perpetuity (for example acquisition of agricultural land and the creation of woodland or conservation grassland). This could have the additional benefit of contributing to other biodiversity objectives in the Borough;
- Upgrading WWTWs to increase nitrogen removal capacity at the facility;

- Measures to further decrease water consumption in the Borough as this has the additional benefit of decreasing nitrates entering WWTWs proportionally;
- Additional measures to remove nitrogen in effluent discharged by the WWTW (such as wetlands or reedbeds);
- Reducing the amount of nitrogen leaching from agricultural land in the wider Borough landholding through change in agricultural practices supported by catchment management officers working with local farmers; and
- Taking agricultural land out of nitrogen intensive uses, e.g. where fertiliser is applied to crops, and converting to alternatives agricultural uses or other land uses.

For all options, the mitigation outcome needs to be 'in perpetuity': secured for the duration over which the development causing the impact will be operational, generally 80-120 years for housing. This could include monitoring by condition. However, the mitigation strategy itself may change over time and EBC may decide to implement a staged mitigation strategy, for example starting with the purchase of nitrogen intensive agricultural land, before subsequently developing wetlands or alternative habitats on that land.

Table 3 provides an indication of the quantum of agricultural land (assuming an average nitrogen load for the catchment area of 26.9 kg/ha) which would need to be removed from use to achieve nutrient neutrality. This figure is purely indicative and is provided to give EBC a tangible measure of the nitrogen surplus calculated and the scale of mitigation required.

Annex 1: Eastleigh Nitrogen Budget

Please see insert.

Site description								Stage 1 calculation: Total N Load from Development Wastewater							Stage 2 calculation: Total N Load from Current Land Use								Stage 3 calculation: Total N load from future land use (not received by WWTW)					Stage 4: Total Net Change in N Load from the development		
Policy / Site Ref	SLAA Site Ref	Parish	Site Address	Existing use	Source of info re: existing land use	Site area (ha)	Greenfield / brownfield	Development proposal (No. residential dwellings)	Equivalent population (Dwellings*2.3) (No. persons)	Wastewater volume generated by development (No. persons * 110litres OR 90litres for developments above 500sq.m) (litres/day)	Receiving WWTW	Receiving WWTW environmental permit limit or proxy for TN (mg/litre)	TN discharged after WWTW treatment ((90% of permit limit * WW volume generated by development)/1,000,000) (kg/TN/day)	Annual WW TN load (kg/TN/yr)	Total area of existing agricultural land (ha)	Farm type / nitrate loss (kg/ha/yr)	N load - current agricultural land use (Area * nitrate loss) (kg/ha/yr)	Total area of existing urban development (gardens, caravan park, brownfield and non-residential urban) (ha)	N load - existing urban development (kg/ha/yr)	Total area of existing SANG / open space (ha)	N load - existing SANG / open space (kg/ha/yr)	Total N load from current land uses (kg/ha/yr)	New urban land (ha)	Total N load from future urban land (kg/TN/yr)	New SANG / open space (ha)	Total N load from SANG / open space (kg/TN/yr)	Combine Total N load from future land uses (kg/TN/yr)	Stage 1: Total N Load from WW (kg/TN/yr)	Total N Load from land use (stage 2 current - stage 3 future) (kg/TN/yr)	N budget (Total N load from WW - Total N load from land use) (kg/TN/yr)
Greenfield allocations (Taken from Tab 8 of Housing Trajectory Spreadsheet)																													
AL1	1-4	Allbrook	Land east of Allbrook Way	Currently used for grazing - lowland grazing. There is a belt of mature trees along the eastern boundary which are protected by a TPO, and watercourse runs N/S along eastern boundary.	Local Plan	7.76	Greenfield	95	218.50	24035.00	Chickenhall	27.00	0.58	213.18	6.63	13.00	86.19	0.10	1.36	1.04	13.46	101.00	7.48	107.03	0.28	3.58	110.61	213.18	-9.61	222.79
FO1	7-21	Fair Oak & Horton Heath	West of Durley Road	Currently in agricultural use - indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type.	Local Plan and aerial photography	4.15	Greenfield	73	167.90	18469.00	Chickenhall	27.00	0.45	163.81	3.82	26.90	102.76	0.00	0.00	0.33	4.29	107.05	3.94	56.32	0.21	2.75	59.07	163.81	47.98	115.83
FO3	7-27	Fair Oak & Horton Heath	Land east of Allington Lane	The King's School, Rockford House (up to 10 flats), Fair Oak Lodge, Quobleigh Woods Site of Importance for Nature Conservation (SINC) and other undeveloped land	Local Plan and aerial photography	14.5	Greenfield	38	87.40	9614.00	Chickenhall	27.00	0.23	85.27	0.00	0.00	0.00	1.04	14.87	13.46	174.98	189.85	14.39	205.78	0.11	1.43	207.21	85.27	-17.35	102.63
FO4	7-51	Fair Oak & Horton Heath	Land at Lechlade, Burnetts Lane	Single residential dwelling with associated curtilage	Local Plan and aerial photography	0.73	Greenfield	13	29.90	3289.00	Chickenhall	27.00	0.08	29.17	0.00	0.00	0.00	0.07	0.95	0.66	8.63	9.58	0.69	9.90	0.04	0.49	10.39	29.17	-0.81	29.99
HE2	9-26 & 9-27	Hedge End	Land at Sundays Hill & north of Peewitt Hill	Currently covered in grassland with extensive wooded areas (predominantly within the west of the site). Trees to the north of the site are protected by a TPO. The headwaters of the Badnum Creek are present within the north of the site whilst Badnum Creek dissects the centre of the site, flowing north to south	Local Plan and aerial photography	4.21	Greenfield	106	243.80	26818.00	Peel Common	9.00	0.22	79.29	0.00	0.00	0.00	0.00	0.00	4.21	54.73	54.73	3.90	55.81	0.31	3.99	59.80	79.29	-5.07	84.36
BO1	3-36	Botley	Land south of Maddoxford Lane & east of Crows Nest Lane	Currently in agricultural use - indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type. The site is split into three field parcels defined by mature tree and hedge planting.	Local Plan and aerial photography	2.56	Greenfield	30	69.00	7590.00	Peel Common	9.00	0.06	22.44	2.56	26.90	68.86	0.00	0.00	0.00	0.00	68.86	2.47	35.36	0.09	1.13	36.49	22.44	32.37	-9.93
BO3	3-12	Botley	Land east of Kings Copse Avenue & Tanhouse Lane	The site is split into two parcels: the larger open parcel to the south, is currently used for agriculture (indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type). The smaller northern parcel consisting of mature woodland which is part of the Tanhouse Meadow Site of Importance for Nature Conservation (SINC) and Nature Farm Local Nature Reserve (LNR)	Local Plan and aerial photography	6.79	Greenfield	70	161.00	17710.00	Peel Common	9.00	0.14	52.36	5.16	26.90	138.80	0.00	0.00	1.63	21.19	159.99	6.59	94.20	0.20	2.64	96.83	52.36	63.16	-10.80
BU2	4-27	Bursledon	Heath House Farm	Children's residential care home (Heath House Farm) and lowland grazing farm land.	Local Plan and aerial photography	3.47	Greenfield	38	87.40	9614.00	Peel Common	9.00	0.08	28.42	3.12	13.00	40.56	0.35	5.01	0.00	0.00	45.57	3.36	48.05	0.11	1.43	49.48	28.42	-3.91	32.34
Stage 2																													
AL2	1-5	Allbrook	West of Allbrook Way	Currently used for grazing - lowland grazing. The area includes a large residential property south of its centre but this property and its curtilage are excluded from the site though the access to the property is included. A woodland protected by a Tree Preservation Order abuts the northwestern boundary and mature vegetation extends down the western boundary. PRoW running across site.	Local Plan and aerial photography	4.08	Greenfield	45	103.50	11385.00	Chickenhall	27.00	0.28	100.98	2.77	13.00	36.04	0.46	6.58	0.85	11.05	53.67	3.95	56.51	0.13	1.70	58.21	100.98	-4.54	105.52
FO6	7-25	Fair Oak & Horton Heath	Foxholes Farm	Foxholes Farmhouse and associated buildings and curtilage and a paddock fronting Fir Tree Lane	Local Plan and aerial photography	1.04	Greenfield	45	103.50	11385.00	Chickenhall	27.00	0.28	100.98	0.00	0.00	0.00	0.49	7.01	0.55	7.15	14.16	0.91	13.01	0.13	1.70	14.70	100.98	-0.55	101.52
BO4	3-33	Botley	Land at Myrtle Cottage	Currently in mixed use comprising two residential properties and agricultural storage uses	Local Plan and aerial photography	1.05	Brownfield	22	50.60	5566.00	Peel Common	9.00	0.05	16.46	0.00	0.00	0.00	0.33	4.72	0.61	7.93	12.65	0.99	14.10	0.06	0.83	14.93	16.46	-2.28	18.74
HE3	9-12	Hedge End	Home Farm	Currently in agricultural use, Indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type. Bounded on its northern, western and south-western boundaries by a block of woodland and tree planting which creates a strong boundary.	Local Plan and aerial photography	0.94	Greenfield	16	36.80	4048.00	Peel Common	9.00	0.03	11.97	0.94	26.90	0.00	0.00	0.00	0.00	0.00	0.00	0.89	12.78	0.05	0.60	13.38	11.97	-13.38	25.35
New Urban allocations identified in the emerging draft local plan not counted elsewhere in the Trajectory (Taken from Tab 8 of Housing Trajectory Spreadsheet)																													
DM25 (b)	5-1	Chandlers Ford	Rear of Shopping Parade & 75-79 Hiltingbury Road	Appears to be scrub land behind shopping parade and residential properties. May be former gardens.	Aerial photography	0.44	Brownfield	16	36.80	4048.00	Chickenhall	27.00	0.10	35.90	0.00	0.00	0.00	0.44	6.29	0.00	0.00	6.29	0.39	5.63	0.05	0.60	6.23	35.90	0.06	35.84
DM25 (e)	6-3	Eastleigh	Eastleigh Police Station, 16-20 Leigh Road	Police station buildings and car parking	Local Plan	0.68	Brownfield	49	112.70	12397.00	Chickenhall	27.00	0.30	109.96	0.00	0.00	0.00	0.68	9.72	0.00	0.00	9.72	0.54	7.69	0.14	1.85	9.54	109.96	0.18	109.77
DM25 (g)	10-4	Hound	Royal British Legion Club, Station Road	Former social club buildings and associated parking areas	Aerial photography	0.35	Brownfield	10	23.00	2530.00	Peel Common	9.00	0.02	7.48	0.00	0.00	0.00	0.35	5.01	0.00	0.00	5.01	0.32	4.59	0.03	0.38	4.97	7.48	0.04	7.44
Allocations (Taken from Tab 7 of Housing Trajectory Spreadsheet)																													
BO2		BOTLEY	UPLANDS FARM, WINCHESTER STREET	Site is primarily in agricultural use - indeterminate land, some appears to be in use as grazing and some as arable - categorised as 'mixed' agricultural land use. The site includes the listed farmhouse and buildings of Uplands Farm, the existing dwelling at Uplands Nurseries and allotments in the south western corner.	Local Plan and aerial photography	25.65	Greenfield	375	862.50	94875.00	Peel Common	9.00	0.77	280.50	24.44	28.30	691.65	1.21	17.30	0.00	0.00	708.96	24.56	351.25	1.09	14.13	365.38	280.50	343.57	-63.07

Site description								Stage 1 calculation: Total N Load from Development Wastewater							Stage 2 calculation: Total N Load from Current Land Use								Stage 3 calculation: Total N load from future land use (not received by WWTW)					Stage 4: Total Net Change in N Load from the development		
Policy / Site Ref	SLAA Site Ref	Parish	Site Address	Existing use	Source of info re: existing land use	Site area (ha)	Greenfield / brownfield	Development proposal (No. residential dwellings)	Equivalent population (Dwellings*2.3) (No. persons)	Wastewater volume generated by development (No. persons * 110litres OR 90litres for developments above 500sq.m) (litres/day)	Receiving WWTW	Receiving WWTW environmental permit limit or proxy for TN (mg/litre)	TN discharged after WWTW treatment ((90% of permit limit * WW volume generated by development)/1,000,000) (kg/TN/day)	Annual WW TN load (kg/TN/yr)	Total area of existing agricultural land (ha)	Farm type / nitrate loss (kg/ha/yr)	N load - current agricultural land use (Area * nitrate loss) (kg/ha/yr)	Total area of existing urban development (gardens, caravan park, brownfield and non-residential urban) (ha)	N load - existing urban development (kg/ha/yr)	Total area of existing SANG / open space (ha)	N load - existing SANG / open space (kg/ha/yr)	Total N load from current land uses (kg/ha/yr)	New urban land (ha)	Total N load from future urban land (kg/TN/yr)	New SANG / open space (ha)	Total N load from SANG / open space (kg/TN/yr)	Combine Total N load from future land uses (kg/TN/yr)	Stage 1: Total N Load from WW (kg/TN/yr)	Total N Load from land use (stage 2 current - stage 3 future) (kg/TN/yr)	N budget (Total N load from WW - Total N load from land use) (kg/TN/yr)
CF1		Chandler's Ford	THE PRECINCT	Mixture of retail, residential and community uses. The buildings are of poor quality and some age and considered to be suitable for replacement.	Local Plan and aerial photography	1.21	Brownfield	85	195.50	21505.00	Chickenhall	27.00	0.52	190.74	0.00	0.00	0.00	1.21	17.30	0.00	0.00	17.30	0.96	13.78	0.25	3.20	16.98	190.74	0.32	190.42
DM25 (c)		Chandler's Ford	COMMON ROAD INDUSTRIAL ESTATE	Existing industrial estate	Aerial photography	0.85	Brownfield	30	69.00	7590.00	Chickenhall	27.00	0.18	67.32	0.00	0.00	0.00	0.85	12.16	0.00	0.00	12.16	0.76	10.91	0.09	1.13	12.04	67.32	0.11	67.21
DM25 (d)		EASTLEIGH	LAND AT TOYNBEE ROAD	Existing industrial estate	Aerial photography	1.90	Brownfield	64	147.20	16192.00	Chickenhall	27.00	0.39	143.61	0.00	0.00	0.00	1.90	27.17	0.00	0.00	27.17	1.71	24.52	0.19	2.41	26.93	143.61	0.24	143.37
DM25 (f)		FAIR OAK	LAND AT SCOTLAND CLOSE	Scrub land with some wooded areas and footpath running EW across site	Aerial photography	5.04	Greenfield	90	207.00	22770.00	Chickenhall	27.00	0.55	201.96	0.00	0.00	0.00	0.00	0.00	5.04	65.52	65.52	4.78	68.34	0.26	3.39	71.73	201.96	-6.21	208.17
HE3 (2011-29 plan)		HEDGE END	SHAMBLEHURST HWRC	Household waste recycling centre and surrounding scrub land	Aerial photography	0.47	Brownfield	10	23.00	2530.00	Peel Common	9.00	0.02	7.48	0.00	0.00	0.00	0.20	2.86	0.27	3.51	6.37	0.44	6.31	0.03	0.38	6.68	7.48	-0.31	7.79
HE1		HEDGE END	WEST OF WOODHOUSE LANE	Currently in agricultural use with exception of band of woodland running across site. Indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type	Local Plan and aerial photography	50.92	Greenfield	605	1391.50	153065.00	Peel Common	9.00	1.24	452.54	48.12	26.90	1294.43	0.00	0.00	2.80	36.40	1330.83	49.17	703.08	1.75	22.79	725.88	452.54	604.95	-152.41
WE4 (2011-29 plan)		WEST END	COACH DEPOT, MOORGREEN ROAD	Existing coach depot (Princess Coaches)	Aerial photography	1.86	Brownfield	80	184.00	20240.00	Portswood	27.00	0.49	179.52	0.00	0.00	0.00	1.86	26.60	0.00	0.00	26.60	1.63	23.28	0.23	3.01	26.30	179.52	0.30	179.22
WE12 (2011-29 plan)		WEST END	PINEWOOD PARK, KANES HILL	Wooded area, Dumbleton's Copse, adjacent to what appears to be electrical substation	Aerial photography	0.49	Brownfield	6	13.80	1518.00	Portswood	27.00	0.04	13.46	0.00	0.00	0.00	0.00	0.00	0.49	6.37	6.37	0.47	6.76	0.02	0.23	6.98	13.46	-0.61	14.08
Additional policies with potential to affect nutrient budget (Taken from Local Plan Chapter 6)- Overnight tourism																													
BU7 (Special Policy Area)		Bursledon	Riverside Boatyard, Blundell Lane, Bursledon	Part agricultural use - Indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type	Aerial photography	0.68	Greenfield	200 bed hotel	200.00	22000.00	Peel Common	9.00	0.18	35.77	0.45	26.90	12.11	0.11	1.57	0.12	1.56	15.24	0.68	9.72	0.00	0.00	9.72	35.77	5.51	30.26
HA2		Hamble-le-Rice	Mercury Marina and Riverside Camping and Caravan Park	Part of site already in use as caravan park and marina parking. Yachting school also on site. Northern end of site in use as board yard with associated structures and hardstanding.	Aerial photography	3	Brownfield	24 lodges and 30 caravans	216.00	23760.00	Peel Common	9.00	0.19	38.64	3.00	26.90	80.70	0.00	0.00	0.00	0.00	80.70	3.00	42.90	0.00	0.00	42.90	38.64	37.80	0.84
Strategic Growth Option																													
S5		Bishopstoke / Fair Oak	Land north of Bishopstoke and land north and east of Fair Oak	Predominantly agricultural land with some areas of woodland which will be retained as part of open space provision within SGO. The majority of agricultural land appears to be in arable use (indeterminate land type as it is not possible to distinguish crop type) with the possibility of some lowland grazing, due to presence of livery yards etc.	Aerial photography	382.59	Greenfield	5525	12707.50	1397825.00	Chickenhall	27.00	33.97	12398.01	266.66	26.90	7173.15	42.87	613.04	71.75	932.75	8718.95	203.94	2916.34	178.65	2322.45	5238.79	12398.01	3480.15	8917.86
Windfall sites																													
Served by Chickenhall WWTW	N/A	N/A	N/A	Greenfield (ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	7.70	Greenfield	54	124.20	13662.00	Chickenhall	27.00	0.33	121.18	7.70	26.90	207.13	0.00	0.00	0.00	0.00	207.13	7.54	107.87	0.16	2.03	109.91	121.18	97.22	23.95
Served by Chickenhall WWTW	N/A	N/A	N/A	Greenfield (non ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	5.42	Greenfield	38	87.40	9614.00	Chickenhall	27.00	0.23	85.27	0.00	0.00	0.00	0.00	0.00	5.42	70.44	70.44	5.31	75.91	0.11	1.43	77.34	85.27	-6.90	92.17
Served by Chickenhall WWTW	N/A	N/A	N/A	Brownfield	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	96.25	Brownfield	675	1552.50	170775.00	Chickenhall	27.00	4.15	1514.69	0.00	0.00	0.00	96.25	1376.36	0.00	0.00	1376.36	94.29	1348.39	1.96	25.43	1373.82	1514.69	2.54	1512.15
Served by Peel Common WWTW	N/A	N/A	N/A	Greenfield (ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	5.42	Greenfield	38	87.40	9614.00	Peel Common	9.00	0.08	28.42	5.42	26.90	145.76	0.00	0.00	0.00	0.00	145.76	5.31	75.91	0.11	1.43	77.34	28.42	68.42	-39.99
Served by Peel Common WWTW	N/A	N/A	N/A	Greenfield (non ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	3.85	Greenfield	27	62.10	6831.00	Peel Common	9.00	0.06	20.20	0.00	0.00	0.00	0.00	0.00	3.85	50.05	50.05	3.77	53.94	0.08	1.02	54.95	20.20	-4.90	25.10
Served by Peel Common WWTW	N/A	N/A	N/A	Brownfield	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	67.30	Brownfield	472	1085.60	119416.00	Peel Common	9.00	0.97	353.05	0.00	0.00	0.00	67.30	962.44	0.00	0.00	962.44	65.94	942.87	1.37	17.78	960.66	353.05	1.78	351.28
Served by Portswood WWTW	N/A	N/A	N/A	Greenfield (ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	2.28	Greenfield	16	36.80	4048.00	Portswood	27.00	0.10	35.90	2.28	26.90	61.37	0.00	0.00	0.00	0.00	61.37	2.24	31.96	0.05	0.60	32.56	35.90	28.81	7.10
Served by Portswood WWTW	N/A	N/A	N/A	Greenfield (non ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	1.71	Greenfield	12	27.60	3036.00	Portswood	27.00	0.07	26.93	0.00	0.00	0.00	0.00	0.00	1.71	22.24	22.24	1.68	23.97	0.03	0.45	24.42	26.93	-2.18	29.11
Served by Portswood WWTW	N/A	N/A	N/A	Brownfield	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	28.80	Brownfield	202	464.60	51106.00	Portswood	27.00	1.24	453.28	0.00	0.00	0.00	28.80	411.89	0.00	0.00	411.89	28.22	403.52	0.59	7.61	411.13	453.28	0.76	452.52
Open space and recreation sites																													
BU8		Bursledon	Open space at Long Lane	Scrub land / woodland	Aerial photography	2.03	Not possible to ascertain	N/A Public open space including allotments	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	26.39	26.39	0.00	0.00	2.03	26.39	26.39	0.00	0.00	0.00
E10		Eastleigh	Land south of M27 junction 5	Former playing fields	Local Plan	18.24	Greenfield	N/A Open space and recreation (3 AGPs (artificial grass pitches) which will be open in Sept this year; and a number of junior and senior grass pitches which will be open in Sept 2020)	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.24	237.12	237.12	18.24	260.83	0.00	0.00	260.83	0.00	23.71	23.71
E11		Eastleigh	Western extension to Lakeside Country Park	Located between the Country Park and Stoneham Lane, comprising of woodland and wet meadows	Local Plan	3.61	Greenfield	N/A Open space and recreation	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.61	46.93	46.93	0.00	0.00	3.61	46.93	46.93	0.00	0.00	0.00
HO1		Bursledon	Country Park, land south of Bursledon Road	Scrub land with some hardstanding, appears from aerial photgraphy, to be occassionally used for car boot sales	Aerial photography	9.66	Greenfield /brownfield	N/A Country Park	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.66	125.58	125.58	0.00	0.00	10.50	136.50	136.50	0.00	10.92	10.92
WE4		West End	Land at Ageas Bowl and Tennis Centre, Botley Road	Currently in use as what appears from aerial photography to be overspill parking for the Ageas Bowl, and surrounding scrub	N/A	5.50	Brownfield	N/A Sport and recreation (further facilities)	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	1.32	18.88	4.18	54.34	73.22	0.00	0.00	5.50	71.50	71.50	0.00	-1.72	-1.72

Site description								Stage 1 calculation: Total N Load from Development Wastewater							Stage 2 calculation: Total N Load from Current Land Use								Stage 3 calculation: Total N load from future land use (not received by WWTW)					Stage 4: Total Net Change in N Load from the development		
Policy / Site Ref	SLAA Site Ref	Parish	Site Address	Existing use	Source of info re: existing land use	Site area (ha)	Greenfield / brownfield	Development proposal (No. residential dwellings)	Equivalent population (Dwellings*2.3) (No. persons)	Wastewater volume generated by development (No. persons * 110litres OR 90litres for developments above 500sq.m) (litres/day)	Receiving WWTW	Receiving WWTW environmental permit limit or proxy for TN (mg/litre)	TN discharged after WWTW treatment ((90% of permit limit * WW volume generated by development)/1,000,000) (kg/TN/day)	Annual WW TN load (kg/TN/yr)	Total area of existing agricultural land (ha)	Farm type / nitrate loss (kg/ha/yr)	N load - current agricultural land use (Area * nitrate loss) (kg/ha/yr)	Total area of existing urban development (gardens, caravan park, brownfield and non-residential urban) (ha)	N load - existing urban development (kg/ha/yr)	Total area of existing SANG / open space (ha)	N load - existing SANG / open space (kg/ha/yr)	Total N load from current land uses (kg/ha/yr)	New urban land (ha)	Total N load from future urban land (kg/TN/yr)	New SANG / open space (ha)	Total N load from SANG / open space (kg/TN/yr)	Combine Total N load from future land uses (kg/TN/yr)	Stage 1: Total N Load from WW (kg/TN/yr)	Total N Load from land use (stage 2 current - stage 3 future) (kg/TN/yr)	N budget (Total N load from WW - Total N load from land use) (kg/TN/yr)
Employment sites																													
E9 (i)		East of airport	North east of airport	This is within the airport perimeter fence so is not farmed and is simply grassland	EBC email	21.55	Greenfield	N/A Employment site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	21.55	280.15	280.15	21.50	307.45	0.00	0.00	307.45	0.00	27.30	27.30
E9 (ii)		East of airport	Rail owned land	Grassland	EBC email	9.57	Greenfield	N/A Employment site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	9.57	124.41	124.41	9.60	137.28	0.00	0.00	137.28	0.00	12.87	12.87
E9 (iii)		East of airport	Site to the north of the railway next to the sewage works	Grassland	EBC email	7.58	Greenfield	N/A Employment site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	7.58	98.54	98.54	7.60	108.68	0.00	0.00	108.68	0.00	10.14	10.14
Additional site advised by EBC																													
West of Horton Heath (Phase 1)		Fair Oak & Horton Heath	Firtree Farm & West of Horton Heath		Taken from DAS documents for permissions O/14/75735 and O/16/79354	126.43	Greenfield	1500	3450	379500	Chickenhall	27.00	9.22	3365.98	121.13	26.90	3258.40	2.30	32.89	3.00	39.00	3330.29	79.06	1130.56	47.37	615.81	1746.37	3365.98	-1583.92	1782.06
Land at Hedge End Railway		Botley	North of Hedge End Railway Station	Currently in agricultural use - indeterminate farm type	GIS shapefile provided by EBC 190514, then aerial photography	45.81	Greenfield	379	871.7	95887	Peel Common	9.00	0.78	283.49	Intentionally blank, as land use change is covered by RMA already approved (680 dwellings permitted by outline application)													283.49	0.00	283.49
Maddoxford Lane O/16/79600 outline permission granted		Botley	LAND SOUTH OF MADDOXFORD LANE, BOTLEY, SOUTHAMPTON, SO32 2DB	Currently in agricultural use - indeterminate farm type	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	3.82	Greenfield	50	115	12650	Peel Common	9.00	0.10	37.40	3.82	26.90	102.76	0.00	0.00	0.00	0.00	102.76	3.68	52.55	0.14	1.88	54.44	37.40	-48.32	-10.92
Satchell Lane O/17/80319 outline permission granted		Hamble-le-Rice	LAND AT SATCHELL LANE, HAMBLE-LE-RICE, SOUTHAMPTON, SO31 4HP	Scrub land, open space	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	3.55	Greenfield	70	161	17710	Peel Common	9.00	0.14	52.36	0.00	0.00	0.00	0.00	0.00	3.55	46.15	46.15	3.35	47.86	0.20	2.64	50.50	52.36	4.35	56.71
The Hermitage Grange Road O/16/78014 outline permission granted			THE HERMITAGE, GRANGE ROAD, NETLEY ABBEY, SOUTHAMPTON, SO31 5FF	Scrub land, open space	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	3.50	Greenfield	89	204.7	22517	Peel Common	9.00	0.18	66.57	0.00	0.00	0.00	0.00	0.00	3.50	45.50	45.50	3.24	46.36	0.26	3.35	49.71	66.57	4.21	70.79
Abbey Fruit Farm O/16/79466 outline permission granted			ABBEY FRUIT FARM, GRANGE ROAD, NETLEY ABBEY, SOUTHAMPTON, SO31 5FF	Part use for Abbey Park industrial estate, part scrub land / open space	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	2.88	Greenfield / brownfield	92	211.6	23276	Peel Common	9.00	0.19	68.82	0.00	0.00	0.00	0.93	13.30	1.95	25.35	38.65	2.61	37.37	0.27	3.47	40.84	68.82	-2.19	71.00
Crows Nest Lane O/16/78389 outline permission granted		Botley	CROWS NEST LANE, BOTLEY, SOUTHAMPTON, SO32 2DD	Predominantly in indeterminate farm use, with a small green / hard standing area used as a caravan park	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	3.10	Greenfield / brownfield	50	115	12650	Peel Common	9.00	0.10	37.40	2.82	0.00	0.00	0.28	4.00	0.00	0.00	4.00	2.96	42.26	0.14	1.88	44.14	37.40	-40.14	77.54
North & East of Boorley Green O/12/71514 outline permission & some RM already granted		Botley	Land to North and East of Boorley Green, Winchester Road, Botley, Southampton SO32 2UA	Golf course	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	88.09	Greenfield	70	161	17710	Peel Common	9.00	0.14	52.36	Intentionally blank, as land use change is covered by RMA already approved (1400 dwellings permitted by outline application)													52.36	0.00	52.36

Residential (excluding SGO & windfall)	**2167.12**
SGO	**8917.86**
West of Horton Heath	**1782.06**
Overnight tourism	**31.10**
Open space, recreation	**32.92**
Large employment sites	**50.31**
Windfall sites	**2453.38**
Overall N budget	**15434.74**

Appendix VIII: Air Quality Technical Note

Please see insert.

Technical Note

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	June 2019
Note	Ecological Assessment of Eastleigh Air Quality Modelling Assuming No Autonomous Reductions	**Ref**	UE0247
Author	Jonathan Cox / Nick Pincombe	**Page**	1 of 9
Status	For issue		

1. Introduction

The Habitats Regulations Assessment of the Eastleigh Borough Local Plan includes an assessment of air quality impacts on European sites in and around the borough. The air quality modelling (Air Quality Consultants, 2018a[1] and 2018b[2]) was undertaken in accordance with the latest industry guidance available in the discipline. Levels of air pollution produced by vehicles were predicted using both the government (Defra) model and a sensitivity test (ST). The sensitivity test assumes higher NOx emissions from certain vehicles than have been published by Defra and therefore predicts higher levels of impact than the Defra model, using the consultants' bespoke Calculator Using Realistic Emissions for Diesels (CURED v3A) tool. This was developed to address the potential under-performance of emissions control technology on modern diesel vehicles, leading to a more precautionary assessment.

The Council considers the sensitivity test to be sufficiently precautionary for the purposes of appropriate assessment; in particular it considers the autonomous measures included in the sensitivity test to be certain beyond a reasonable scientific doubt, such that they can be relied upon in the context of the CJEU Joined Cases C-293/17 and C-294/17[3]. Notwithstanding this, a further modelling run (Air Quality Consultants, 2019[4]) was commissioned to assess air quality impacts based on an assumption that there would be no autonomous reductions in background pollution levels. This results in an even more precautionary assessment than the CURED sensitivity test. The Council considers that such an assumption is overly precautionary and unlikely to represent real world conditions, but has undertaken the work for the sake of completeness.

[1] Air Quality Consultants (2018a): *Air Quality Note: Initial Results of Impacts of Eastleigh Local Plan on Ecological Sites.* February 2018.

[2] Air Quality Consultants (2018b): *Air Quality Assessment: Ecological Sites, Eastleigh Borough Council.* June 2018.

[3] Joined Cases C-293/17 and C-294/17, CJEU (2018): *Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Others.*

[4] Air Quality Consultants (February 2019): *Addendum to Air Quality Assessment: Ecological Sites, Eastleigh Borough Council.*

As might be expected, this model significantly increases the area of the Borough predicted to exceed the 1% increase threshold from previous assessments that have taken into account predicted reductions in vehicle emissions. Using the Sensitivity Test vehicle model was previously considered the worse-case scenario but assuming no autonomous reductions further increases the impact of vehicle emissions. Taking this as the 'worse case' scenario, the in combination assessment increases the area of the Borough within the 1% increase (Nitrogen Deposition of >0.15kg/ha/year) from 5,237 hectares (using the Sensitivity Test in combination with assumed reductions) to 7,048 hectares, an increase of 35%.

2. River Itchen SAC Southern damselfly transects within no autonomous reduction > 1% contour

This increase in area is reflected in the number and extent of water courses within the >1% change contour from which Southern damselfly have been recorded, as summarised in Table 1 and shown in Figures 1 and 2.

The total length of water courses with records of Southern damselfly within a prediction of >1% change in Nitrogen deposition has risen from 2,341.20 metres to a total of 10,491 metres – an increase of 348%.

However, although there is a considerable increase in the length of water course affected by significant increases in Nitrogen deposition, not all of this is within the parts of the Borough with a background level that currently exceeds the Critical Load for N deposition (15kg/ha/yr). Taking this into account reduces the total area of water course within the Critical Load and experiencing a significant increase in Nitrogen deposition by 1,962m to 8,529m, an increase of 264%.

Further analysis of the length of Southern damselfly water courses within the 1% change contour has been undertaken. This shows that the majority of water courses fall within the 1-5% change contour with comparatively small sections of water course within either the 5-10% change (326m) and >10% change (236m) contours. The short sections of water course with >5% change are localised to the M27 crossing within the Itchen Valley Country Park and the B3335 crossing as Highbridge; see Figure 3.

3. Vegetation types within no autonomous reduction > 1% contour

Using the revised no autonomous reduction >1% contour, the area of vegetation type affected within the SAC has been calculated using the floodplain vegetation survey (Collingridge, 2002). The results of this analysis are reproduced in Table 2. None of the vegetation types impacted within the flood plain accord with Habitats Directive Annex 1 habitat types. Impacts from increased nitrate deposition would therefore affect habitats for which the River Itchen SSSI has been notified and potentially habitats used by Southern damselfly as part of their life cycle.

Table 1: Extent of transects in which southern damselfly have been recorded within no autonomous reduction >1% change N deposition

Site	Drains	Transect length (m)
Allington Manor	1	639.30
Allington Manor	13	131.58
Allington Manor	3	560.92
Allington Manor	18	143.70
Allington Manor	17	447.11
Ashtrim Drains	1	150.28
Breach Farm	1c	661.02
Dunford Land Drains	1	552.67
Dunford Land Drains	2	182.07
Highbridge	5	1074.66
Highbridge	2b	132.91
Highbridge	1	416.21
Highbridge	2a	93.46
Highbridge	2c	387.35
Highbridge	3	228.66
Highbridge	9	372.04
Highbridge	4	1371.29
Highbridge	32	524.33
IVCP Drains	1 mon	230.70
IVCP Drains	3 mon	280.27
IVCP Drains	1	140.90
IVCP Drains	2 mon	237.59
IVCP Drains	2	264.28
IVCP Drains	3	130.74
IVCP Drains	4 mon	308.90
Martins Drains	2	109.02
Martins Drains	1	202.21
Morris Land South	6	237.35
West Horton Farm	4	165.34
West Horton Farm	7	114.37

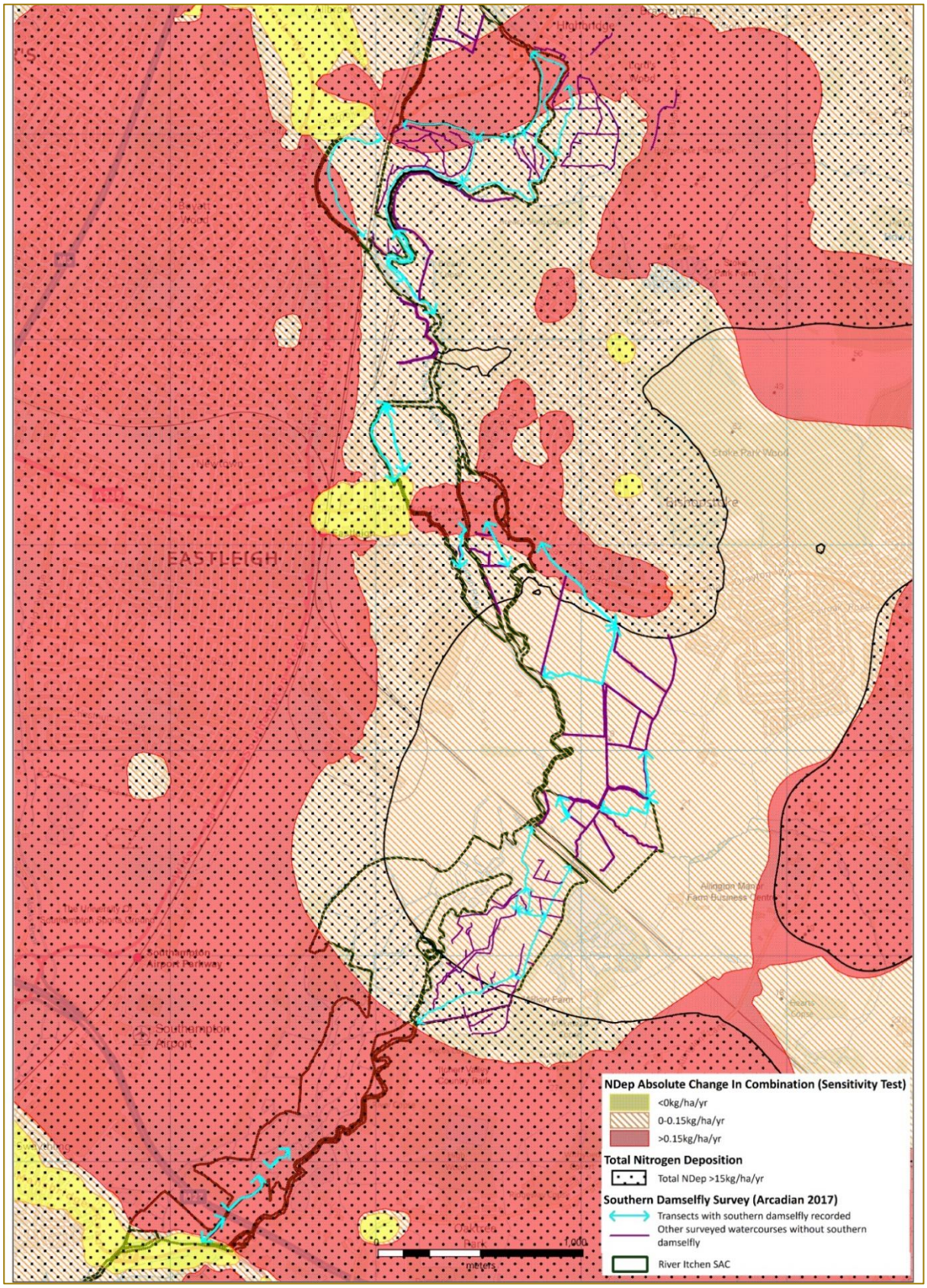

Figure 1: Nitrogen deposition model showing total nitrogen deposition >15kg/ha/yr (CL for Fen and Swamp habitats) showing >1% predicted (>0.15kg/ha/yr) change in combination and Sensitivity Test (ST)

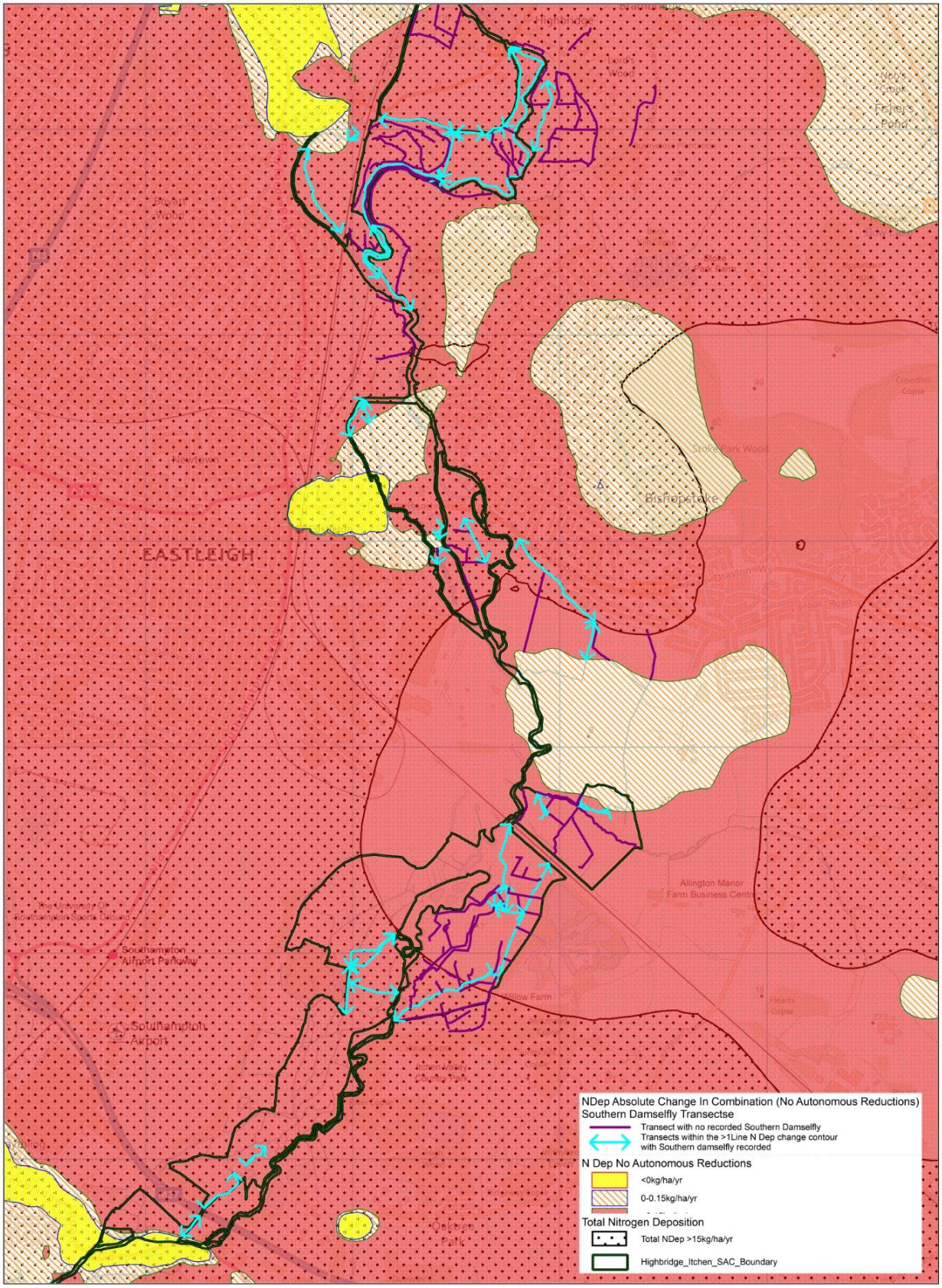

Figure 2: Nitrogen deposition model showing total nitrogen deposition >15kg/ha/yr (CL for Fen and Swamp habitats) showing >1% predicted (>0.15kg/ha/yr) change in combination, no autonomous reductions

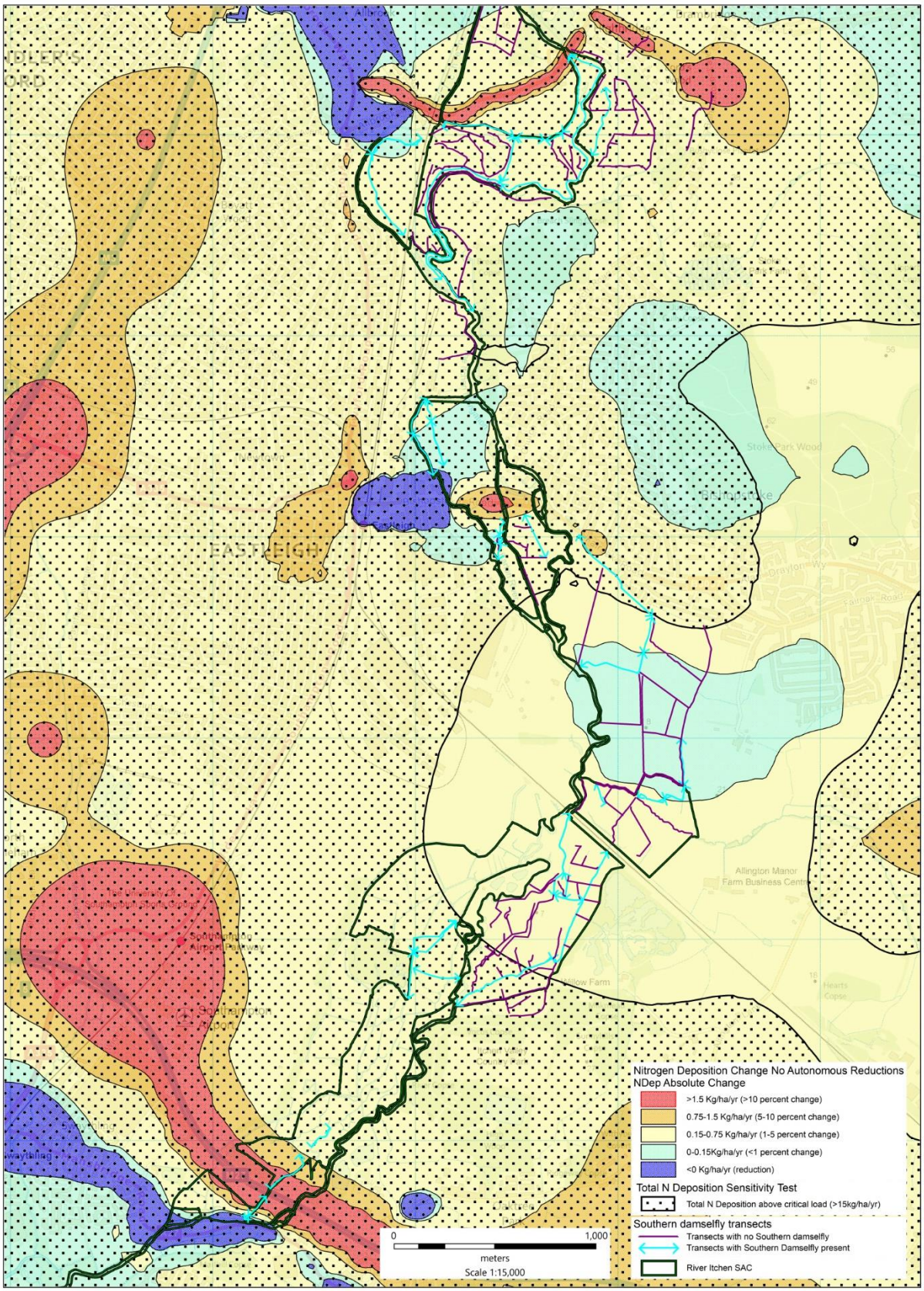

Figure 3: Nitrogen deposition model showing total nitrogen deposition >15kg/ha/yr (CL for Fen and Swamp habitats) showing predicted graduated change (>0.15kg/ha/yr) in combination, no autonomous reductions

Southern damselfly lay their eggs within swamp vegetation along water courses. This has been equated in the Local Plan HRA to S23 Other Water Margin Vegetation of the National Vegetation Classification (NVC). This marginal habitat was not identified within the flood plain vegetation survey, which focussed on vegetation types within the broader flood plain. As has also been discussed in the HRA, the impact of nitrogen deposition on this habitat is not likely to have a significant effect on its composition or structure unless very high increases in nitrogen deposition are involved. This has been verified by field survey that shows no indication of a decline of quality of Southern damselfly habitat due to proximity to roads. The specific marginal habitat most preferred by Southern damselfly (S23) is related to both the *Glyceria maxima* swamp (S5) and *Carex acutiformis* swamp (S7) however, no correlation has been identified between Southern damselfly and either of these vegetation communities. A total of 7.9 ha of these two swamp vegetation communities was identified within the >1% N deposition change contour, comprising 7.45 ha of S7 *Carex acutiformis* swamp and 0.45 ha of S5 *Glyceria maxima* swamp. These areas are concentrated within the Itchen Valley Country Park with no records elsewhere. Comparison of the distribution of these swamp vegetation communities within the distribution of Southern damselfly transects shows only a weak correlation between the presence of this vegetation and the presence of Southern damselfly.

Table 2: Extent of flood plain vegetation types within no autonomous reduction >1% change N deposition within the River Itchen SAC; none of these vegetation types equate to Habitats Directive Annex I habitats

Vegetation type	**NVC Community**	**Area (Ha)**
Juncus fen pasture	M22	0.42
Juncus/Filipendula fen pasture	M22/M27	1.56
Semi-improved grassland (spp-rich)	M22/MG5/MG	2.03
Juncus fen pasture	M22/MG8	1.15
Filipendula/Phragmites fen	M27/S26	1.02
Juncus pasture	MG10	8.20
Semi-improved grassland	MG6	59.77
Semi-improved grassland	MG6/MG11	25.56
Improved grassland	MG7	58.02
Deschampsia pasture	MG9	3.95
Urtica ruderal vegetation	OV25	1.15
Epilobium hirsutum rank fen	OV26	12.00
Phragmites rank fen	S26	0.06
Phragmites fen	S26/OV26	2.80
Glyceria maxima swamp	S5	0.45
Carex acutiformis swamp	S7	7.45
Carex fen	S7/OV28	2.04
Broadleaved swamp woodland	W2	0.28
Broadleaved woodland	W	4.04
Total	**-**	***191.95***

4. Conclusions of impact on the River Itchen SAC

The no autonomous reduction model of air quality predicts a very significant increase in the area of the Borough within the >1% nitrogen deposition change contour. This has the potential to affect a large part of the River Itchen SAC.

An analysis of the number of Southern damselfly survey transects within the >1% N deposition contour shows an increase in length of water course threatened by N deposition from 1,962m to 8,529m, an increase of 264%.

Further analysis has been undertaken by Air Quality Consultants to identify by how much the 1% change in N deposition is exceeded for each individual Southern damselfly transect. This shows that for the majority of Southern damselfly transects there is <5% change in Nitrogen deposition (93%). Of the 7% of Southern damselfly transects with >5% change, 4% are within the 5-10% change contour and 3% within >10% change.

Although increases in N deposition of >1% are predicted along many Southern damselfly water courses, due to the aquatic nature of the specific micro-habitat used for egg laying, there is no strong relation between aerial N deposition and the quality or extent of habitat used by Southern damselfly. This is a function of the role of phosphate in limiting plant growth in chalk river systems where nitrogen is in excess. The APIS Website states "In most lowland rivers and burns, nitrogen inputs from catchment land-use, not deposition from the atmosphere, are likely to be much more significant". Field survey of potentially affected Southern damselfly habitat has been undertaken which also confirms no evidence of a relationship between the distribution of the habitat and distance from the main highways. Although there are localised increases in predicted nitrogen deposition of >5% these are not considered likely to have adverse effects on the integrity of the SAC.

Further analysis has also been undertaken of the extent of different vegetation communities within the revised >1% N change contour. None of the vegetation communities within the SAC that are potentially affected conform to Habitats Directive Annex I habitat types. Some of these vegetation types are however of high nature conservation value and contribute to the River Itchen SSSI designation features. Impacts of nitrogen deposition on SSSI features is however beyond the scope of the Habitats Regulations Assessment.

Given the above it is concluded that, even assuming no autonomous reductions, there will be no adverse effect on the integrity of the River Itchen SAC as a result of changes in nitrogen deposition.

5. Solent Maritime SAC / Solent & Southampton Water SPA/Ramsar

In relation to the Solent Maritime SAC / Solent & Southampton Water SPA/Ramsar, the critical load for saltmarsh habitats (20-30 kg/ha/yr) is higher than for fen and swamp, and locations where this is predicted to be exceeded are confined to the M27/A27 crossings of the Hamble. The current HRA states at paragraph 6.2.41:

"The results of this modelling were overlain with the SPA/Ramsar boundaries and habitat data to assess the area of impacted saltmarsh habitat as shown in Figure 6.4 and Figure 6.5. Saltmarsh habitats shown in Figure 6.5 include Halimione spp., Juncus gerardii, Saltmarsh grass and Spartina spp.. No saltmarsh habitat within the SAC or Ramsar site will be within the 65m zone adjacent to the M27 where nitrogen deposition is predicted to exceed 20 kg N/ha/yr. It can therefore be concluded that there will be no likely significant effect from nitrogen deposition on the Solent Maritime SAC or Solent and Southampton Water Ramsar, and these sites can be screened out from further assessment."

The revised No Autonomous Reduction contour does not affect this conclusion and hence the initial assessment can be retained.

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- Any works undertaken as a consequence of the recommendations provided within this report should be subjected to the necessary health & safety checks and full risk assessments.

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