

The Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order

NDR Mitigation Table

Planning Act 2008

Infrastructure Planning

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

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1 NDR Mitigation Table (Revision 0, 8 October 2014)

- This Schedule includes details of all required mitigation measures and monitoring for the proposed Scheme, during both the Construction and Operational phases. It includes all mitigation measures given in the Environmental Statement (Document Reference 6.1), and as such overlaps with the Construction Environmental Management Plan. Other mitigation measures have been included, that have been developed and refined as the detailed design process has continued, since production of the Environmental Statement.
- The Schedules have been produced to address each of the environmental disciplines addressed in the Environmental Statement.

 Many of the disciplines require similar, if not the same mitigation measures, particularly during the construction phase. For example the controlling of dust is a required mitigation measure when addressing air quality, but is also required to address potential impacts for nature conservation, geology and soils, materials etc.
- 1.3 Where necessary, indicative timings have been given. These relate mostly to Construction phase mitigation measures, and in many cases tie up with the specific timings in the bat and great crested newt EPS licence documents.
- 1.4 Monitoring of various environmental variables is also included. Various monitoring is proposed before, during and after construction.



1.5 Construction Phase:

Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
Air Quality	 The following mitigation measures will be required, with regard to site planning, to avoid or reduce dust-raising activities associated with earthworks, construction and include: Machinery and dust causing activities should be located away from sensitive receptors; All site personnel to be fully trained; and Trained and responsible manager on site during working times to maintain and carry out site inspections. 	Requirements 13 and 18.	Environmental Statement Volume 1 Chapter 4 Air Quality, Construction Environmental Management Plan (CEMP).	Throughout construction.
	The following mitigation measures will be required, with regard to construction traffic, to reduce potential adverse impacts on air quality during construction:	Requirements 12, 13, 17 and 18.	Environmental Statement Volume 1 Chapter 4 Air Quality, CEMP.	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline	Constitution in the same and a same and a same a	Requirement (In	Mitigation	Timing
Бізоірііте		addition to	Winganori	Tilling
		Requirement 4).		
		nequirement 4).		
	All loads entering and leaving site to be covered;			
	All vehicles switch off engines when stationary –			
	no idling vehicles;			
	Effective vehicle cleaning and specific fixed wheel			
	washing on leaving site and damping down of haul			
	routes;			
	Toutes,			
	No site runoff of water or mud;			
	On-road vehicles to comply to set emission			
	standards;			
	All non-road mobile machinery (NRMM) to use			
	ultra-low sulphur tax exempt diesel (ULSD) where			
	available and be fitted with appropriate exhaust			
	after-treatment from the approved list;			
	Minimise movement of construction traffic around			
	site; and			
	Site, and			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	 Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site. 			
	The following mitigation measures will be required, with regard to site activities, to reduce potential adverse impacts on air quality during construction: • Minimise dust-generating activities; • Use water as dust suppressant where applicable; • Cover, seed or fence stockpiles to prevent wind whipping; • Re-vegetate earthworks and exposed areas; and • Ensure concrete crusher or concrete batcher has permit to operate.	Requirements 12, 13, 17 and 18.	Environmental Statement Volume 1 Chapter 4 Air Quality, CEMP.	Throughout construction.
Carbon	The following mitigation measures will be required, to reduce the production of carbon emissions during	Requirements 16, 17 and 18.	Environmental Statement Volume 1 Chapter 5 Carbon,	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	construction:		CEMP.	
	Achieve a neutral cut and fill balance, to remove			
	the need for transporting bulk fill materials from or			
	to site. All excavated materials will be utilised			
	within the site;			
	Once the volume of contaminated materials is			
	known there will be remediation and burial under			
	landscape areas;			
	Cement stabilised granular material to be used to			
	reduce the import of quarried materials;			
	Recycled crushed glass filter material to be used			
	as an alternative to sand;			
	Ensure that the engines of all vehicles and plant on			
	site are not left running unnecessarily;			
	Ensure that plant will be well maintained, with			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	routine servicing of plant and vehicles to be completed in accordance with the manufacturer's recommendations and records maintained for the work undertaken; • Avoid the use of diesel or petrol powered generators and using mains electricity or battery powered equipment; • Maximise energy efficiency (this may include maximising vehicle utilisation by ensuring full loading and efficient routing); • Drivers of vehicles, while on the public highway, will be required to switch off their vehicle's engines when stationary to prevent exhaust emissions; and • Develop a Site Waste Management Plan, to identify materials that can be reused and recycled.			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
Cultural Heritage	 Archaeological mitigation will include: The provision of a Written Scheme of Investigation to be produced, and approved by the County Archaeologist; Completion of Geophysical and other surveys in those areas not covered to date; Targeted trial trenching in areas of archaeological significance already identified and those identified during subsequent investigations; and Production and execution of a programme of archaeological mitigation. This is likely to involve excavation of archaeological remains in advance of, and during the construction of the new road. Archaeological remains to be lost should be preserved by record, in accordance with 	Requirements 15 and 18.	Environmental Statement Volume 1 Chapter 6 Cultural Heritage, CEMP.	Prior to construction.



Environmental Discipline	Construction Phase Mitigation Measures professional standards and guidance.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	Historic Building and Landscape mitigation will include: The examination and recording of the unlisted historic farm buildings and WWII buildings within Rackheath Park. All historic fabric recovered from the site for re-use; and Those mitigation measures referred to in the Landscape section, to minimise visual intrusion.	Requirements 15 and 18.	Environmental Statement Volume 1 Chapter 6 Cultural Heritage, CEMP.	Prior to construction.
	Archaeological mitigation will include: Provision of a Written Scheme of Investigation to be produced, and approved by the County Archaeologist; Completion of Geophysical surveys in those areas not covered to date;	Requirements 15 and 18.	Environmental Statement Volume 1 Chapter 6 Cultural Heritage, CEMP.	Prior to construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	Targeted trial trenching in areas of archaeological significance already identified and those identified during subsequent investigations; and			
	 Production and execution of a programme of archaeological mitigation. This is likely to involve excavation of archaeological remains in advance of, and during the construction of the new road. Archaeological remains to be lost should be preserved by record, in accordance with professional standards and guidance. 			
	Historic Building and Landscape mitigation will include: The examination and recording of the unlisted historic farm buildings and WWII buildings within Rackheath Park. All historic fabric recovered from the site for re-use; and Those mitigation measures referred to in the	Requirements 15 and 18.	Environmental Statement Volume 1 Chapter 6 Cultural Heritage, CEMP.	Prior to and during construction.



Environmental Discipline	Construction Phase Mitigation Measures Landscape section, to minimise visual intrusion.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
Landscape	Effective site management will ensure that waste materials and debris are controlled to avoid items from blowing off site. Careful planning and management of the construction process will minimise the loss of existing trees and shrubs.	Requirements 5, 6 and 18.	Environmental Statement Volume 1 Chapter 7 Landscape, CEMP.	Throughout Construction
	Temporary earth bunds or screening will be required to minimise the impacts of night time working and lighting at those locations where this is likely to take place. These include the Cromer Road and the Rackheath Rail bridges. The measures will be required to reduce impacts on sensitive receptors in the vicinity.	Requirements 5, 6 and 18.	Environmental Statement Volume 1 Chapter 7 Landscape, CEMP.	Throughout Construction
Nature Conservation	Measures would centre on good construction practice to ensure that disturbance in all its forms were minimised: • Effective, well thought-out measures to eliminate	Requirements 5, 6, 13, 14, 18, 24 and 25.	Environmental Statement Volume 1 Chapter 8 Nature Conservation, CEMP.	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	potential pollution events would be installed.			
	Refuelling of vehicles and plant would be allowed			
	only in specific areas away from sensitive			
	locations, over bunded trays. Fuel would be stored			
	in double-bunded bowsers and tanks. Spill kits			
	would be readily available at these locations;			
	Measures to prevent silt run-off from site			
	operations (such as construction of temporary			
	settlement lagoons) should be constructed as early			
	as possible in the works programme;			
	Dust suppression measures would be put in place,			
	and drainage would be carefully addressed to			
	eliminate the potential for pollution of the rivers,			
	other watercourses and groundwater;			
	Timing of works would be carefully considered, so			
	that disturbance at sensitive times would be			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	avoided as far as possible;			
	Lighting would be directional, with hoods wherever			
	possible, to reduce light spill;			
	Containers of open liquid would be sealed when			
	not in use, to ensure that birds and other species			
	were not subject to the risk of drowning;			
	Any pest control measures will be carried out			
	whilst ensuring that no risk of accidental poisoning			
	to barn owls (that might predate on poisoned mice,			
	rats etc.) would occur; and			
	Chemicals and other potentially harmful products			
	would be carefully stored such that no harm could			
	be caused.			
	Habitat clearance will take place over winter, outside of	Requirements 5	Environmental Statement	Winter
	the bird nesting season, to ensure that no breeding birds	and 18.	Volume 1 Chapter 8 Nature	2015/16.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	are affected.		Conservation, CEMP.	
	The temporary loss of habitats, where site compounds,	Requirement	Environmental Statement	Throughout
	materials storage, batching plants, topsoil storage etc. are	18.	Volume 1 Chapter 8 Nature	construction.
	required, has been minimised by careful design.		Conservation, CEMP.	
	Wherever possible they would be positioned on arable			
	land, avoiding habitat features of value;			
	All remaining trees, adjacent to the proposed works,	Requirements 6	Environmental Statement	Throughout
	would be protected in line with the requirements details in	and 18.	Volume 1 Chapter 8 Nature	construction.
	the Tree Protection Plans in the Arboricultural Impact		Conservation, CEMP.	
	Assessment, itself located in the Chapter 20 of Volume 2			
	of the Environmental Statement.			
	A temporary combined ditch/bund and lagoon will be	Requirements	Environmental Statement	To be
	installed adjacent to the proposed Scheme at the western	14 and 18.	Volume 1 Chapter 8 Nature	installed in
	end to ensure that no storm water, sediment,		Conservation, CEMP.	advance of,
	contaminants or pollutants are allowed to enter the River			and remain in



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to	Other References to Mitigation	Indicative Timing
		Requirement 4).		
	Wensum. Sediment will also be prevented from entering The Springs County Wildlife Site and associated watercourses.			place throughout, construction.
	The construction of Marriott's Way bridge will be phased to reduce the overall impact on Marriott's Way County Wildlife Site (and the protected species - mostly bats - that use it). The bridge deck and the approach ramps will be constructed during two separate winter seasons, in order that the length of habitat to be removed at any one time is minimised.	N/A	Environmental Statement Volume 1 Chapter 8 Nature Conservation, CEMP.	Winter 2015/16 and winter 2016/17.
	Fakenham Road Roadside Nature Reserve would be subject to a seed harvesting process at the appropriate time of year, so that seeds of the valuable species here could be stored during construction. The topsoil of the verge would then be carefully stripped and carefully stored away from other areas of topsoil. These would be	Requirement 18.	Environmental Statement Volume 1 Chapter 8 Nature Conservation, CEMP.	Seed harvesting to take place late summer 2015. Topsoil removed and



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	used to recreate the habitat towards the end of the			reinstated as
	construction period.			per
				construction
				programme.
				Seeds
				planted once
				soil
				reinstated.
	All mitigation accounting for the presence of bats will be	Requirements 5	Environmental Statement	Throughout
	in accordance with the bat EPS Licence documents. All	and 18.	Volume 1 Chapter 8 Nature	construction.
	work should take place under the supervision of the		Conservation, CEMP.	
	named ecologist in the licence documents.			
	The bat gantries will be installed early in the construction	Requirement	Environmental Statement	Winter
	phase, ideally over the first winter period, in order that	18.	Volume 1 Chapter 8 Nature	2015/16
	bats can use them throughout the remainder of the		Conservation, CEMP.	
	construction period, thereby reducing the impact of			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	severance and fragmentation, and allowing habituation to			
	begin as early as possible.			
	The buildings containing known bat roosts will be	Requirement	Environmental Statement	Gazebo Farm
	demolished to the methodology included in the bat EPS	18. (Also a	Volume 1 Chapter 8 Nature	Nov
	licence documents; this is likely to include demolishing by	requirement of	Conservation, CEMP.	2015/Feb
	hand in some locations, after a detailed inspection by,	the EPS		2016.
	and under the direct supervision of, the named ecologist	Licence).		Hall Farm
	in the EPS Licence documents a suitably qualified			Mar/Apr
	ecologist.			2016.
	Demolition of other buildings around Hall and Gazebo	Requirement	Environmental Statement	Nov
	Farms will be carried out after a detailed inspection by,	18. (Also a	Volume 1 Chapter 8 Nature	2015/Feb
	and under the direct supervision of, the named ecologist	requirement of	Conservation, CEMP.	2016.
	in the EPS Licence documents a suitably qualified	the EPS		
	ecologist.	Licence).		
	During the Construction phase, the bat mitigation	Requirement	Environmental Statement	Throughout



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	guidelines set out in DMRB Volume 10, Section 1, Part 8	18.	Volume 1 Chapter 8 Nature	construction.
	(HA 80/99 Nature Conservation Advice in Relation to		Conservation, CEMP.	
	Bats) would be strictly adhered to. Any lighting along the			
	route and within site compounds would be bat friendly.			
	The lighting would, wherever possible, be low level and			
	directional, oriented away from areas used by bats. This			
	is especially important near roost areas or important flight			
	routes. The use of hoods or cowls would further minimise			
	light spill. These issues are addressed in the CEMP.			
	Badger fencing would be installed early in the	Requirements	Environmental Statement	Winter
	construction phase, to reduce the likelihood of badgers	18 and 20.	Volume 1 Chapter 8 Nature	2015/16.
	straying onto the construction site.		Conservation, CEMP.	
	Open trenches would be covered at the end of each	Requirement	Environmental Statement	Throughout
	working day, or include a means of escape for any animal	18.	Volume 1 Chapter 8 Nature	construction.
	falling in (this would be a ramp at 45 degrees every 20m		Conservation, CEMP.	
	along the trench and can be either dug into the edge or a			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	plank to act as a ramp).			
	Any temporarily exposed open pipe system would be	Requirement	Environmental Statement	Throughout
	capped in such a way as to prevent badgers gaining	18.	Volume 1 Chapter 8 Nature	construction.
	access.		Conservation, CEMP.	
	All mitigation accounting for the presence of great crested	Requirements 5	Environmental Statement	Throughout
	newts will be in accordance with the GCN EPS Licence	and 18.	Volume 1 Chapter 8 Nature	construction.
	documents. All work should take place under the		Conservation, CEMP.	
	supervision of the named ecologist in the licence			
	documents.			
	Temporary fencing will be installed to the edges of the	Requirement	Environmental Statement	Feb 2016
	site extents close to each of the three meta-populations. It	18. (Also a	Volume 1 Chapter 8 Nature	
	will be installed at the very earliest suitable stage during	requirement of	Conservation, CEMP.	
	construction, at the following locations:	the EPS		
	Dog Lane, Horsford;	Licence).		
	Quaker Lane, Spixworth; and			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	Newman's Road, Rackheath.			
	Fencing will also be installed across the construction			
	zone to create closed blocks of habitat to aid the trapping			
	and relocation process, at Newman's Road, Rackheath.			
	The edge fencing at all locations will remain in place for			
	the duration of the construction period, although those			
	lengths across the construction area at Newman's Road			
	Rackheath will be removed once trapping and relocation			
	has finished, allowing construction to take place.			
	A period of trapping and relocation will take place, over at	Requirement	Environmental Statement	Apr/Jun 2016
	least 60 suitable days, and any trapped great crested	18. (Also a	Volume 1 Chapter 8 Nature	
	newts (and other species) relocated to the new	requirement of	Conservation, CEMP.	
	ponds/habitat. This process, once complete, will ensure	the EPS		
	that the construction area is free from newts etc. so the	Licence).		
	removal of habitat and the existing breeding pond can			
	take place.			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	The known barn owl nesting site that is to be directly	Requirement	Environmental Statement	Winter
	affected by the proposed Scheme would need to be	18.	Volume 1 Chapter 8 Nature	2015/16.
	removed, by a suitably experienced, licensed ecologist, at		Conservation, CEMP.	
	a time outside of the nesting season.			
	Where barn owl nesting, roosting and rest sites occur	Requirement	Environmental Statement	Throughout
	within 150m of construction activities appropriate	18.	Volume 1 Chapter 8 Nature	construction.
	screening with fine mesh will be installed under the		Conservation, CEMP.	
	supervision of a suitably qualified ecologist, to the edge of			
	the proposed Scheme.			
	If there is any indication that barn owls are nesting within	Requirement	Environmental Statement	Throughout
	150m of construction activities at any time, work would	18.	Volume 1 Chapter 8 Nature	construction.
	stop within 150m of the site until the matter can be fully		Conservation, CEMP.	
	investigated and appropriate mitigation measures			
	implemented. This should take place outside the nesting			
	season.			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	Where reptiles have been recorded, phased vegetation removal, whereby vegetation is first strimmed to a height of 150mm, and then on subsequent days strimmed to ground level.	Requirement 18.	Environmental Statement Volume 1 Chapter 8 Nature Conservation, CEMP.	Winter 2015/16.
Geology and Soils	To minimise impacts on soil structure and quality, the topsoil will be sequentially stripped from the working areas. Topsoil and subsoil will be stockpiled separately so that they can be replaced in the same sequential layers, in-keeping with the existing soil profile. Soil stockpiles will be clearly defined. Tracked equipment will be used where possible, and traffic will be confined to designated routes to minimise compaction.	Requirement 18.	Environmental Statement Volume 1 Chapter 9 Geology and Soils, CEMP.	Throughout construction.
	Soils will be stripped, handled, stored and reinstated using best practice procedures, in accordance with appropriate guidelines, such as DEFRA's 2009 'Code of Practice for the Sustainable Use of Soils on Construction	Requirement 18.	Environmental Statement Volume 1 Chapter 9 Geology and Soils, CEMP.	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	Sites'. Best practice procedures include topsoil and			
	subsoil stripping, stockpiling and placing.			
	Hazardous substances, including contaminated land,	Requirement	Environmental Statement	Throughout
	fuels, chemicals, waste and construction material, will be	18.	Volume 1 Chapter 9 Geology	construction.
	stored, handled, transported and disposed of in		and Soils, CEMP.	
	accordance with relevant legislation and best practice			
	guidance for mitigation of spillages and leaks. Measures			
	to be applied include the appropriate use of storage			
	containers, labelling of containers, the secure storage of			
	containers and regular checks for leaks.			
	The stockpiling of contaminated land will be avoided as	Requirement	Environmental Statement	Throughout
	far as possible. Where stockpiling is necessary, the	18.	Volume 1 Chapter 9 Geology	construction.
	contaminated material will be segregated and stockpiled		and Soils, CEMP.	
	on appropriately contained hardstanding and covered to			
	prevent spreading.			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	Procedures will be put in place should contaminated land be encountered including contact details of the relevant consultees and regulators. Should any unexpected contamination be encountered during the construction works, all works will cease whilst an assessment of the level and extent of contamination is undertaken. In all cases where contamination is identified, risk assessment will be undertaken to determine if remediation is required. Any clean-up will be conducted as part of the construction works.	Requirement 18.	Environmental Statement Volume 1 Chapter 9 Geology and Soils, CEMP.	Throughout construction.
	Emergency procedures will be in place to respond to potential accidental spillages and leaks. Particular consideration will be given to works around and displacement of the buried utilities.	Requirement 18.	Environmental Statement Volume 1 Chapter 9 Geology and Soils, CEMP.	Throughout construction.
	Construction workers will be provided with appropriate personal protective equipment and direct contact with soil	Requirement	Environmental Statement Volume 1 Chapter 9 Geology	Throughout



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	will be limited.	18.	and Soils, CEMP.	construction.
	Dust will be suppressed using best practice methods to prevent spread of potentially contaminated windblown material. Dust suppression measures will include wheel washing for vehicles leaving the site and re-vegetation of earthworks and exposed areas.	Requirements 12, 13 and 18.	Environmental Statement Volume 1 Chapter 9 Geology and Soils, CEMP.	Throughout construction.
	A Site Waste Management Plan (SWMP) has been developed for this Scheme and will be incorporated within the CEMP. This document outlines the procedures for storage and disposal of waste, including hazardous and potentially contaminated wastes, to ensure appropriate disposal and minimal associated environmental impacts.	Requirements 16 and 18.	Environmental Statement Volume 1 Chapter 9 Geology and Soils, CEMP, Site Waste Management Plan.	Throughout construction.
	Where piling or penetrative ground improvement is required through contaminated ground, especially in the	Requirement 18.	Environmental Statement Volume 1 Chapter 9 Geology	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	vicinity of source protection zones, works will be carried		and Soils, CEMP.	
	out in accordance with the EA "Piling into contaminated			
	sites" guidance and "Piling and Penetrative Ground			
	Improvement Methods on Land Affected by			
	Contamination: Guidance on Pollution Prevention" and a			
	Foundation Works Risk Assessment will be undertaken.			
Materials	The current project design aims to reduce the waste		Environmental Statement	Throughout
	produced by maximising the use of materials available		Volume 1 Chapter 10	construction.
	within the Schemes footprint, such as a cut and fill policy		Materials, CEMP.	
	for soil, sands and gravels.			
	A preliminary draft Site Waste Management Plan	Requirements	Environmental Statement	Throughout
	(SWMP) has been prepared. The SWMP aims to ensure	16 and 18.	Volume 1 Chapter 10	construction.
	that the waste produced in the construction phase, and		Materials, CEMP, Site Waste	
	other phases of the project is dealt with in accordance		Management Plan.	
	with the Duty of Care Provisions under the EPA and the			
	duty of care provisions, the Waste Strategy (2007) and			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	principles outlined within the Waste Hierarchy.			
Noise and Vibration	Limits for normal working hours and levels of noise at properties near to the proposed Scheme will be agreed in advance with the Local Authority and incorporated into the contract specification for the Scheme.	Requirements 8, 9 and 18.	Environmental Statement Volume 1 Chapter 11 Noise and Vibration, CEMP.	Throughout construction.
	The contract will also include a clause requiring that the best practicable means for noise control (BPM) be applied at all times. These would include the selection of the most appropriate method and plant for the job, adequate maintenance of plant, optimum siting of stationary plant, local screening and the education of the workforce. Restrictions may also be placed on the off-site haul routes and early/late delivery times. Potentially affected residents would be kept informed in advance of the works and a telephone complaint hotline be provided.	Requirements 8 and 18.	Environmental Statement Volume 1 Chapter 11 Noise and Vibration, CEMP.	Throughout construction.



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	The effects of potential noise and vibration impacts on affected communities can also be mitigated by effective communication between the Promoter, contractors and the public. The Construction Methodology describes specific measures for the management of community relations that contractors must apply including the establishing of local liaison groups, information and complaints hotline, information centre and website, weekly newsletter. Specific provisions for the notification of affected residents ahead of noisy works and the arrangements for the investigation and remediation of noise issues that may arise during construction are also required.	Requirements 8 and 18.	Environmental Statement Volume 1 Chapter 11 Noise and Vibration, CEMP.	Throughout construction.
	Where potentially significant construction noise and vibration effects have been predicted, the Contractor will be required to minimise the impacts to levels lower than	Requirements 8 and 18.	Environmental Statement Volume 1 Chapter 11 Noise and Vibration, CEMP.	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	those classed as significant impacts. Amongst others, this			
	may include the erection of temporary noise barriers			
	around working areas or alternative methods of working.			
	The Contractor will additionally be required to			
	seek prior consent under Section 61 of the Control of			
	Pollution Act 1974 for its works in advance of			
	commencing works, which will require 'best practicable			
	means' to be adopted at all times.			
	Temporary noise barriers or earth bunds will be required	Requirements 8	Environmental Statement	Throughout
	to control night time noise impact in the vicinity of the	and 18.	Volume 1 Chapter 11 Noise	construction.
	proposed Cromer Road and the Rackheath Rail bridges		and Vibration, CEMP.	
	and the main compound (between chainage 7250 and			
	7750). The details of these measures will be agreed with			
	the Local Authority as part of the Section 61 consent			
	process for these sites. The measures will be required to			
	reduce impacts on sensitive receptors in the vicinity.			



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
Effects on all Travellers	During construction, all diversion routes for Public Rights of Way (PRoW) and road closures will be sign posted clearly, with the intention of minimising construction delays and driver frustration. The majority of the route will be built offline with no interference to existing roads, reducing the disruption and consequent driver stress caused during construction. In addition, the construction programme will be developed to ensure that disruption to motorised and non-motorised users is minimised wherever possible.	Requirement 18.	Environmental Statement Volume 1 Chapter 12 Effects on All Travellers, CEMP.	Throughout construction.
	The following route-specific measures will also take place: • Breck Farm Way will remain open until the new Marriott's Way structure is completed. • A new roundabout is created where the NDR crosses Reepham Road. This will be constructed	Requirement 18.	Environmental Statement Volume 1 Chapter 12 Effects on All Travellers, CEMP.	Throughout construction.



Environmental Discipline	Construction Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
	 in phases using traffic signals to control the traffic. A new roundabout is created where the NDR crosses Drayton Lane. This will be constructed in phases using traffic signals to control the traffic. The construction of the new roundabout on Holt Road will be constructed in phases using traffic signals. This will be constructed before the permanent diversion of Drayton Lane is undertaken. A new roundabout is created where the NDR crosses Reepham Road. This will be constructed in phases using traffic signals to control the traffic. A new roundabout is created where the NDR crosses Drayton Lane. This will be constructed in phases using traffic signals to control the traffic. A new interchange is created where the NDR 			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	crosses Cromer Road. This will be constructed in			
	multiple phases using traffic signals to control the			
	traffic. As part of these works Holt Road, Hall Lane			
	(Holly Lane) and New Home Lane will all be			
	stopped up at the interchange. No closure will be			
	applied for on this important county road.			
	The emergency access to the airport from Old			
	Norwich Road will be closed. Alternative			
	emergency access through the site compound will			
	be discussed with the Airport Authority.			
	A new roundabout is created where the NDR			
	crosses North Walsham Road. This will be			
	constructed in phases using traffic signals to			
	control the traffic.			
	The construction of the tie-ins at Buxton Road will			
	be undertaken in phases using traffic signals to			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	control the traffic.			
	 A new roundabout is created where the NDR crosses North Walsham Road. This will be constructed in phases using traffic signals to control the traffic. 			
	A new roundabout is created where the NDR crosses Wroxham Road. This will be constructed in phases using traffic signals to control the traffic.			
	 A new roundabout is created where the NDR crosses Salhouse Road. This will be constructed in phases using traffic signals to control the traffic in order to construct the tie-ins. 			
	At Newman Road access to the park will be maintained at all times necessitating the use of traffic signals to construct the tie-ins.			
	Plumstead Road will only be closed off peak to			



Environmental Discipline	facilitate the delivery and placing of the bridge beams. At other times traffic will be controlled with signals to allow the abutments to be constructed.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation	Indicative Timing
Community and Private Assets	To mitigate for potential adverse impacts on agricultural practices and businesses, access to agricultural land will be maintained wherever possible, or new accesses provided.	Requirement 18.	Environmental Statement Volume 1 Chapter 13 Community and Private Assets, CEMP.	Throughout construction.
	Water pipes used for irrigation purposes will be maintained wherever possible during the construction and operational phases of the scheme according to land users' wishes.	Requirement 18.	Environmental Statement Volume 1 Chapter 13 Community and Private Assets, CEMP.	Throughout construction.
	Impacts on local communities would be mitigated for with the following general measures: • Communication and public liaison, including with Broadland District Council, Natural England,	Requirements 8, 16 and 18.	Environmental Statement Volume 1 Chapter 13 Community and Private Assets, CEMP.	Throughout construction.



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	Environment Agency, English Heritage,			
	landowners and their agents, the general public;			
	Air quality: including management and			
	minimisation of the effects of dust during the			
	process;			
	Noise control and monitoring: including use of 'best'			
	practicable means' for noise control and			
	appropriate construction noise management in			
	accordance with the Code of Practice BS 5228			
	Lighting: In order to prevent excessive disruption,			
	measures will be taken including: using downward			
	directed lighting; avoiding excessive additional			
	lighting; and directing lighting to where it is needed			
	to avoid light spillage.			
	Traffic disruption: construction movements and			
	deliveries are subject to controls regarding routing,			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	time of day, and point of access.			
	Other aspects of construction: Including:			
	construction compound layout and reinstatement;			
	ecological management; pollution control; air			
	quality management plan; and construction waste			
	management.			
	An alternative assess will be provided for the Mid Norfolk	Requirement	Environmental Statement	Throughout
	Shooting School to address the issue of severance during	18.	Volume 1 Chapter 13	construction.
	construction.		Community and Private	
			Assets, CEMP.	
Road	The following mitigation measures will be in place during	Requirements	Environmental Statement	Throughout
Drainage and	construction to reduce or eliminate potential adverse	14, 18, 24 and	Volume 1 Chapter 14 Road	construction.
the Water	impacts on the water environment during construction:	25.	Drainage and the Water	
Environment	Works will be undertaken in accordance with any		Environment, CEMP, Habitat	
	conditions imposed in consents for temporary		Regulations Assessment and	
			Addendum, and Mitigation	



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	discharges and abstractions (e.g. dewatering		Measures Action Plan.	
	excavations) obtained from the Environment			
	Agency;			
	Measures to control discharge of surface water			
	run-off from construction compounds will be			
	implemented;			
	All fuel and oils will be stored in accordance with			
	the Control of Pollution (Oil Storage) Regulations			
	2001. Storage areas will be located away from			
	surface water drainage, and will be within bunds			
	with sealed bases. Refuelling would always be			
	undertaken remote from drainage and surface			
	water features and using automatic shut-off fuel			
	delivery systems. Similar measures will be			
	implemented for the storage of chemicals;			
	Pumps, generators and other small items of plant			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	will be provided with drip trays to collect any oil/fuel			
	spills;			
	Where wheel washes are installed adjacent to site			
	accesses/egresses, these will be self-contained,			
	will recycle wash water where possible and will not			
	discharge directly to the environment;			
	Where practicable, topsoil (with vegetation) will be			
	replaced on earthworks areas to limit scouring and			
	the generation of silt-laden runoff;			
	Drainage from existing roads will not be impeded			
	during construction of road crossings;			
	Emergency response procedures will be			
	developed and implemented to cover any incidents			
	that might lead to release of pollutants to the			
	aquatic environment (including spillages to			
	ground).			



Environmental	Construction Phase Mitigation Measures	DCO	Other References to	Indicative
Discipline		Requirement (In	Mitigation	Timing
		addition to		
		Requirement 4).		
	A temporary ditch/bund and associated lagoon will be	Requirements	Environmental Statement	To be
	installed at the western end of the proposed Scheme, to	14, 18 and 24.	Volume 1 Chapter 14 Road	installed in
	ensure that no overland flow, and associated sediment,		Drainage and the Water	advance of,
	contaminants or pollutants enter the River Wensum.		Environment, CEMP, Habitat	and remain in
			Regulations Assessment and	place
			Addendum, and Mitigation	throughout,
			Measures Action Plan.	construction.



Operational Phase:

Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
Air Quality	No specific incorporated mitigation measures are included for the operational phase of the proposed Scheme.		
Carbon	The proposed Scheme aims to address rising carbon emissions by freeing up road capacity across wider Norwich highway network to allow further provision of sustainable transport options e.g. facilities for public transport, cycling, walking etc.		Environmental Statement Volume 1 Chapter 5 Carbon.
	The proposed Scheme includes facilities and features for non-motorised vehicle users, to encourage and facilitate sustainable transportation options.		Environmental Statement Volume 1 Chapter 5 Carbon.
	Street lighting to be limited to Postwick Hub only, ensuring that energy requirements, and hence potential		Environmental Statement Volume 1 Chapter 5 Carbon.



Environmental Discipline	Operational Phase Mitigation Measures carbon production, are minimised. The extensive landscaping scheme will provide a means of carbon sequestration over the life of the proposed Scheme.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation Environmental Statement Volume 1 Chapter 5 Carbon.
Cultural Heritage	Sensitive landscaping is proposed. Provision of tree planting to screen views and reduce visual impact and blend the proposed Scheme into the settings of, heritage assets.	Requirement 5.	Environmental Statement Volume 1 Chapter 6 Cultural Heritage, General Arrangement drawings, Work Packages, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan.
	Provision of earth bunds and other earthworks features are also included, to reduce visual impact on, and blend the proposed Scheme into the settings of, heritage assets.		Environmental Statement Volume 1 Chapter 6 Cultural Heritage, General Arrangement drawings, Work Packages.
	Relict field corners in historic landscapes that are created through road construction will be subject to planting		Environmental Statement Volume 1 Chapter 6 Cultural Heritage, General



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	schemes.		Arrangement drawings, Work Packages, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan.
	At Beeston Park, the gradual grading of land towards the road will allow a visual connection to be retained when viewing the park towards the north. The planting here will mimic parkland landscaping.		Environmental Statement Volume 1 Chapter 6 Cultural Heritage, General Arrangement drawings, Work Packages, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan.
	Rackheath Park will also be screened by a combination of earthworks and landscaping.		Environmental Statement Volume 1 Chapter 6 Cultural Heritage, General Arrangement drawings, Work Packages, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
Landscape	The relative height of the road has been designed to minimise visual intrusion as far as possible. This has been achieved by designing the road in cutting and/or providing earth bunds to the sides wherever possible. The extensive landscaping scheme will be planted to integrate the road into the surrounding landscape and to reduce visual effects.		Environmental Statement Volume 1 Chapter 7 Landscape, General Arrangement drawings, Work Packages, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan. Environmental Statement Volume 1 Chapter 7 Landscape, General Arrangement drawings, Work Packages, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan.
	Habitats in the vicinity of the airport will have a reduced proportion of fruiting trees to reduce the attractiveness of the habitats to birds, to reduce the risk of bird strike for aircraft arriving at or leaving the airport. Also, the species		Environmental Statement Volume 1 Chapter 7 Landscape, Detailed Planting Proposal drawings, Landscape and Ecological Management Plan.



Environmental	Operational Phase Mitigation Measures	DCO Requirement	Other References to Mitigation
Discipline		(In addition to	
		Requirement 4).	
	mix for woodland planting in this area will be such that		
	low level growth, up to a maximum of 4 metres, is used.		
	Maintenance of the planting in this area will be sufficient		
	that a maximum height of 4 metres is maintained.		
Nature	The proposed Scheme will be in cutting with		Environmental Statement Volume 1
Conservation	embankments wherever possible, encouraging birds, bats		Chapter 8 Nature Conservation.
	etc. to fly across the road at a height that allows them to		
	avoid vehicle collision mortality. This overarching design		
	feature will also permit screening of the road for		
	surrounding habitats and species.		
	The landscaping scheme will provide replacement and	Requirement 5.	Environmental Statement Volume 1
	additional habitat. In some locations established trees		Chapter 8 Nature Conservation.
	and shrubs will be planted to provide viable, usable		
	commuting routes for use by protected species as soon		
	as planting occurs.		
	The landscaping scheme will also serve to screening the		Environmental Statement Volume 1



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	proposed Scheme from its surrounds, reducing disturbance on designated sites, habitats and species beyond the footprint of the proposed Scheme.		Chapter 8 Nature Conservation.
	Landscaping of areas will take place as soon as is practical, as construction is finished. This is likely to be during the subsequent winter period. In some locations established trees and shrubs will be planted to provide viable, usable commuting routes for use by protected species as soon as planting occurs. It will be maintained for a period five years, during which time any dead, dying or damaged trees or shrubs will be replaced like for like. After this period default highways maintenance regime will be adopted.	Requirement 5.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	A proportion of dead wood gleaned during habitat clearance will be retained and installed in landscaped areas, to provide decaying wood material, a food source for invertebrates, that themselves provide a food source	Requirements 5 and 18.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	for bats, birds, and other protected species.		
	The combined features of the landscaping design and the drainage system at The Springs will serve to ensure that the quality of habitats is maintained, and that additional areas of reedbed are provided.	Requirements 5 and 24.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	The drainage design for the proposed Scheme will ensure that storm events do not adversely affect watercourses and Designated Sites, including The Springs County Wildlife Site. It will also ensure that pollutants/contaminants do not enter surface water or groundwater. Where infiltration to groundwater takes place the inbuilt attenuation /filtering processes will ensure this. Where positive drainage is required, attenuation and filtering though created reedbeds will serve this purpose.	Requirement 24.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Two green bridges will be constructed, with woodland	Requirement 5.	Environmental Statement Volume 1



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	planting on approach ramps and hedgerows on the bridge decks, to provide continuity of significant flight routes for bats. They will also include tall, solid parapets to create a dark corridor, reducing illumination from headlights of vehicles on the road below. The green bridges will be at: • Marriott's Way (a bridge for pedestrians, cyclists and equestrians, with two hedgerows included on the deck); and • Middle Road (a bridge with two lanes of traffic, a shared use footway/cycleway and one hedgerow included on the deck). These bridges will be maintained by Norfolk County Council as Highways Authority.		Chapter 8 Nature Conservation.
	The Marriott's Way bridge and approach ramps have been designed such that as short a length of habitat as possible will be removed.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	Seven bat gantries will be installed, at the following locations: Deighton Hills – shooting school access track; Tree line south of Horsford; Quaker Lane; Beeston Estate 1 – Tree line/woodland north east of the Hall buildings; Beeston Estate 2 – Farm track off Beeston lane, west of The Springs; Double tree line off Toad Lane; and Smee Lane. These structures will also be maintained by Norfolk County Council.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Two other bridges on significant flight routes will include		Environmental Statement Volume 1



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	'dark corridors' for bats. These include at least one lane for traffic, and a shared use cycleway/footway that will have solid parapets to create a dark corridor that bats can use to cross the proposed Scheme. These bridges are at: • Buxton Road; and • Newman's Road These structures will also be maintained by Norfolk County Council.		Chapter 8 Nature Conservation.
	One culvert, at Rackheath Park, has been designed such that it can be used by bats as an underpass, at a significant flight route that is coincident with a watercourse that the proposed Scheme will cross. The underpass is of sufficient dimensions that bats would fly through it, beneath the road. These dimensions have been taken from other underpasses that bats are known to use. This structure will be maintained by Norfolk		Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	Operational Phase Mitigation Measures County Council.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	Bat houses shall be provided in advance of the demolition of the existing roosts, in accordance with the requirements of, and to the designs, within the Bat EPS Licence documents. These are at the following locations: • Gazebo Farm, Rackheath; and • Hall Farm, Rackheath. These bat houses will be maintained by Norfolk County Council.	Requirement 5.	Environmental Statement Volume 1 Chapter 8 Nature Conservation, Bat EPS Licence Documents.
	Bat boxes will be installed in trees to be retained, close to the existing known roosts that will be lost to the development.		Environmental Statement Volume 1 Chapter 8 Nature Conservation, Bat EPS Licence Documents.
	Bat boxes shall be provided in various blocks of woodland in the vicinity of the proposed Scheme in advance of the loss of those roosts in trees. These will include:		Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	 Operational Phase Mitigation Measures Drayton Drewray (24 bat boxes); Spixworth Plantation (15 bat boxes); and Heath Wood (9 bat boxes). 	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	With the exception of the Postwick Hub and a short length of the NDR on the southbound approach to the Business Park roundabout, no street lighting is proposed. This will serve to limit impacts on bats along the length of the proposed Scheme.	Requirement 32.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Badger fencing would be installed where badger populations are known to exist, to reduce the likelihood of their straying on to the carriageway. It will be required at the following locations: • Sett 1, at Deighton Hills; • Sett 2, at Drayton Drewray; and • Sett 5, at Sprowston Wood.	Requirement 20.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	Operational Phase Mitigation Measures The fencing will be maintained by Norfolk County Council.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	Badger fencing will also be installed at the location of Sett 7, Marriott's Way, with a view to directing badgers up and over the green bridge. The fencing will be maintained by Norfolk County Council.	Requirement 20.	Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Badger setts (all currently unoccupied) would be closed, between July and November.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Four new ponds, and associated aquatic and terrestrial habitat creation/landscaping, will be created close to Gazebo Farm, Rackheath, to replace the lost great crested newt breeding pond in this location. The ponds and landscaping will be maintained by Norfolk County Council.	Requirement 5.	Environmental Statement Volume 1 Chapter 8 Nature Conservation, Great Crested Newt Licence Documents.
	Two of these ponds will be created and landscaped/planted up in advance of the construction period, to create viable, established ponds into which		Environmental Statement Volume 1 Chapter 8 Nature Conservation, Great



Environmental	Operational Phase Mitigation Measures	DCO Requirement	Other References to Mitigation
Discipline		(In addition to	
		Requirement 4).	
	great crested newts can be translocated, early in the		Crested Newt Licence Documents.
	construction period. The remaining two ponds will be		
	created and landscaped/planted up during the		
	construction period.		
	The landscaping scheme will be supplemented with		Environmental Statement Volume 1
	refugia and hibernacula for use by great crested newts, in		Chapter 8 Nature Conservation, Great
	the vicinity of each of the individual meta-populations.		Crested Newt Licence Documents.
	Other existing ponds at Newman's Road, Rackheath,		Environmental Statement Volume 1
	under the ownership of Norfolk County Council and/or the		Chapter 8 Nature Conservation, Great
	Contractor, will be improved. Silt will be removed where		Crested Newt Licence Documents.
	possible, and overhanging tree canopies cut back to allow		
	light to reach the ponds and encourage growth of		
	aquatic/semi-aquatic plants. Further aquatic and semi-		
	aquatic plants would be planted to further improve the		
	condition of these ponds for breeding great crested newts		
	Bird boxes will be installed in suitable woodland areas to		Environmental Statement Volume 1



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	compensate for the loss of potential breeding sites. An artificial nest bank with a minimum of 50 nest cavities would be created to compensate for the likely loss of a small sand martin colony near Spring Farm, Taverham. This would be incorporated into the drainage lagoon near the Fakenham Road.	nequirement 4).	Chapter 8 Nature Conservation.
	Ten barn owl boxes would be erected in a series parallel to the proposed route at 2 km intervals, at a distance of at least 1.5 km from the proposed Scheme. The majority of these boxes would be placed on the northern side of the proposed route as the land to the south has a strong urban component and is therefore less suitable for barn owls. Boxes would be installed where there is suitable roosting and foraging habitat.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Grassland would include appropriate short sward seed mixtures, to provide food sources for terrestrial invertebrates and to ensure that vegetation does not grow		Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	Operational Phase Mitigation Measures too high, thereby allowing the warming effect of the sun. Mowing/cutting of grassland habitats would be undertaken after the flowering season and the arisings removed to prevent the accumulation of nutrients and the consequent development of rank grassland.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation Environmental Statement Volume 1 Chapter 8 Nature Conservation, Landscape and Ecological Management Plan.
	The presence of deer has been accounted for on the proposed Scheme by the inclusion of wide verges along the majority of the proposed route. The landscaping scheme has been designed in such a way that there is little or no woodland or scrub vegetation adjacent to the road where known crossing points are severed by the proposed Scheme.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.
	Signing along the carriageway would indicate to motorists that they were entering an area where deer populations are known, providing an early indication as to potential issues.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	In addition, it is intended that deer scaring devices (reflectors) would be installed where known crossing points are severed. These would be mounted on posts, and would reflect approaching car headlights towards the adjacent habitats, creating a dazzling effect that would startle deer and deter them from crossing when vehicles are approaching.		Environmental Statement Volume 1 Chapter 8 Nature Conservation.
Geology and Soils	A cut and fill balance for the earthworks will minimise the amount of soil permanently removed from site.		Environmental Statement Volume 1 Chapter 9 Geology and Soils.
Materials	A cut and fill balance for the earthworks will minimise the amount of soil permanently removed from, and brought into the site.		Environmental Statement Volume 1 Chapter 10 Materials.
Noise and Vibration	A thin surface course (TSC) will be applied to the new carriageways along the length of the NDR Scheme. This material reduces the generation of tyre noise relative to that for hot-rolled asphalt.	Requirement 33.	Environmental Statement Volume 1 Chapter 11 Noise and Vibration.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	A number of bunds, false cuttings and barriers have been included in the Scheme designs, which will reduce noise impacts.	Requirement 21.	Environmental Statement Volume 1 Chapter 11 Noise and Vibration.
	Any dwellings at which the predicted traffic noise is found to satisfy the criteria for sound insulation measures in accordance with the Noise Insulation Regulations 1975 (i.e. a design year level > 68 dB and an increase of at least 1 dB etc.) will be offered either sound insulation measures or a grant instead.		Environmental Statement Volume 1 Chapter 11 Noise and Vibration.
Effects on all Travellers	Impacts for motorised and non-motorised users of the existing network have been taken into account with regards to severance and changes to journey length and amenity in developing the Scheme design. As a result, the Scheme incorporates several roundabout junctions along the route to give direct access to the following radial routes and the communities they link with. Where		Environmental Statement Volume 1 Chapter 12 Effects on all Travellers.



Environmental Discipline	Operational Phase Mitigation Measures individual or joint access to properties would be severed by the proposed NDR, arrangements would be made to provide new access points to existing roads.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	A grade separated junction would be provided at the crossing with the A140 Cromer Road, which would also give access to the B1149 Holt Road. The new junctions would be designed to meet the joint objectives of minimising delay for vehicles passing through the junction whilst maintaining a safe passage of all road users.		Environmental Statement Volume 1 Chapter 12 Effects on all Travellers.
	Visibility standards for the proposed Scheme will be in accordance with DMRB Volume 6, providing good sight distances to junctions, across verges, and around obstacles such as safety barriers. All junctions would have appropriate advance signing to assist drivers to make route choices in good time. Together with the inclusion of a series of dedicated cycle ways and footpaths, these measures would ensure that vehicle		Environmental Statement Volume 1 Chapter 12 Effects on all Travellers.



Environmental	Operational Phase Mitigation Measures	DCO Requirement	Other References to Mitigation
Discipline		(In addition to	
		Requirement 4).	
	travellers' fear of potential accidents is low, resulting in a		
	positive benefit for Driver Stress once the Scheme is		
	open.		
	Approximately 25km of new links suitable for use by		Environmental Statement Volume 1
	NMUs would be provided along the route, together with		Chapter 12 Effects on all Travellers.
	improved surfacing on some existing rights of way:		
	Bridleways = 11487m;		
	• Cycle Track = 2140m;		
	Cycle Track (with right of way on foot) = 288m;		
	 Shared Use Footway Cycleway = 7039m; 		
	 Private Means of Access (PMA) = 5848m; 		
	PMA combined with Cycle Track (with right of way		
	on foot) = 425m;		
	PMA combined with diverted Restricted Byways =		
	966m (RB6 93m + RB5 646m + RB3 227m);		



highway maintenance purposes.

Environmental Discipline	 Operational Phase Mitigation Measures PMA combined with Bridleway = 2497m; PMA combined with Cycle Track = 1140m; and, Restricted Byway (RB7) = 73m. 	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
Community and Private Assets	Farm businesses with the potential to be impacted upon by the NDR will be compensated financially. This compensation will generally be provided as a lump sum and will be designed to cover land-taken, severance, injurious affection and disturbance (e.g. crop loss).		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.
	Farms severed by the proposed NDR route or whose existing field access arrangements are to be removed by the scheme will have new field access points installed according to the land user's wishes. Such access points could take the form of new gateways leading off existing or new highways, or farm access tracks also used for		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	Water pipes used for irrigation purposes will be maintained wherever possible during the construction and operational phases of the scheme according to land users' wishes.		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.
	Agricultural land temporarily taken out of production will be returned to its original land grade throughout the scheme. Soil will be excavated, stored and re-spread according to best practice as outlined in DEFRA's "Construction Code of Practice for the Sustainable Use of Soils on Construction Sites". For certain holdings the developers have also agreed for the land to be sown in accordance with each land user's wishes.		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.
	Where tenant farmers are renting land from Norfolk County Council their tenancy agreements will be terminated and, where possible, new agreements arranged on other areas of land.		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.



Document Reference: NCC/EX/81
eferences to Mitigation

Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	The measures designed into the scheme to mitigate flooding and climate change impacts include the provision of infiltration lagoons and culverts to minimise impacts on existing drainage impacts. Landscaping measures will also help to provide ecosystem services to surrounding farmland which will help farms to adapt to climate change, such as providing habitats for pollinating species and the use of woodland for sheltering.		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.
	A new access will be provided to the Mid Norfolk Shooting School.		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.
	Replacement land will be sought for the City of Norwich Aviation Museum, to replace the area of land lost to the proposed Scheme.		Environmental Statement Volume 1 Chapter 13 Community and Private Assets.
Road Drainage and the Water	To minimise risk to the water environment in accordance with the SUDS Manual (CIRIA, 2006), discharges of routine runoff to surface water and groundwater will flow	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
Environment	through a three tiered treatment system. Where carriageway alignment and safety considerations permit, runoff will flow through a grassed swale, then discharge to a lined settlement pond, followed by an infiltration pond (if discharging to groundwater) or a surface flow wetland (if discharging to surface water), as agreed with the Environment Agency. Where swales are not feasible, a two tiered treatment train is provided (lined pond and infiltration pond).		
	A substantial proportion of the contaminants from highway runoff are held in suspended particles in the runoff. Partial removal of dissolved pollutants including some metals and salts, prior to discharge to surface water, would occur through: • Settlement of suspended sediment over grass verges (where present), in unlined swales and settlement ponds.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment.



Environmental Discipline	 Adsorption of colloidal particles and soluble chemical compounds onto organic materials and clays in fine sediments held in vegetated treatment areas in retention ponds. Uptake (and breakdown) of chemical elements and compounds as part of the metabolic activity of bacteria/algae in areas of vegetative treatment 	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	(particularly in the root zone). Swales are to be lined where infiltration via unlined swales has the potential to have a significant adverse effect on groundwater as a resource. The main mitigation measure taken to protect groundwater has been to establish that 1.2 m or more of unsaturated ground would exist between the base of an	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Addendum to ES and FRA; Habitats Regulation Assessment and Addendum. Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment.



Environmental Discipline	Operational Phase Mitigation Measures infiltration pond and the underlying water table in high groundwater level conditions.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	Where this is not possible, Lagoon 17, 18 and 18A (The Springs) will be lined and discharged to surface water. The drainage design will incorporate permanently wet surface flow wetlands within the second lagoon, with a hydro-brake controlling the outflow rate.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Addendum to Environmental Statement and Flood Risk Assessment.
	All drainage networks will be constructed with measures to contain any accidental spillage of harmful substances. The measures will prevent the spillage reaching the final discharge point by containment within the initial lined settlement pond.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment.
	Flood risk will be mitigated in the following ways: • Drainage networks will be installed, capable of storing volumes of road runoff and overland flow for a 1:100 year event plus 30% for climate	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment; Addendum to Environmental Statement



Environmental	Operational Phase Mitigation Measures	DCO Requirement	Other References to Mitigation
Discipline		(In addition to	
		Requirement 4).	
	change;		and Flood Risk Assessment.
	Soakaway systems and culverts under the road		
	will be installed to control and direct overland flow		
	(i.e. flow originating from outside the Scheme		
	boundary), in circumstances where the flow cannot		
	be directed to a drainage lagoon;		
	Lagoons 1A, 8A and 13A will provide storage for		
	overland flow during a 1:100 year event plus 30%		
	for climate change for their associated surface		
	water catchments;		
	The drainage lagoons will regulate discharge rates		
	to surface waters at the existing greenfield runoff		
	rates (Lagoons 17, 18 and 18A);		
	Infiltration lagoons with half drain-down times		
	exceeding 48 hours will be designed to contain		
	additional runoff from a follow-on 1 in 10 year		
	storm within the freeboard, as requested by the		



Environmental Discipline	Environment Agency; and The area of new slip roads to be drained to the A47 surface water drainage system would be no greater than the area of the existing merge slip road onto the A47 eastbound that is to be decommissioned. As such, there will be no significant change to existing drainage. There will be no change to flood risk in this area as concluded in the FRA.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	To mitigate for the potential increase in flood risk from overland flow, culverts are proposed at the low points of larger overland flow catchments, where flow is not directed and stored within the proposed infiltration lagoons. The culverts will convey the overland flow to the down gradient side of the road to prevent flooding upstream of the road and embankments. In most catchments, spreader ditches are also proposed along	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Volume 2 Chapter 21 Flood Risk Assessment.



Environmental Discipline	Operational Phase Mitigation Measures the road edge or embankment toe. The ditches will direct flow to the culverts and promote infiltration.	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	Lagoons 17, 18 and 18A will be constructed with a hydrobrake controlling the outflow rate at a greenfield runoff rate. Erosion protection measures at the discharge points from Lagoons 17, 18 and 18A, and at the downstream outfall point of all culverts conveying overland flow beneath the Scheme, will also be installed.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Addendum to Environmental Statement and Flood Risk Assessment.
	At chainage 100 there is a bridleway that is at risk of flooding from overland flow during a 1:100 year storm event. To avoid this occurring a retention bund will be constructed with a crest level to be specified with reference to the maximum flood levels calculated in the FRA, plus a 300mm freeboard. The flood bund will ensure access to the bridleway is maintained during and following storm events.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Volume 2 Chapter 21 Flood Risk Assessment.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	To mitigate for potential adverse impacts on private and public drinking water supplies, a default 50m radius Source Protection Zone 1 has been assigned to all private water supplies used for drinking water, and all infiltration systems have been excluded from within this zone to protect its integrity.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment.
	Swale no. 27 and Lagoons 28, 29 and 30 are located within the temporary SPZ1 surrounding the AWS public water supply close to Postwick. Swale no. 27 and Lagoon 28 are both lined and discharge to Lagoon 30. The only structures discharging to groundwater within the SPZ1 are Lagoons 29 and 30. A three stage treatment step and pollution control systems is proposed in both these locations. An unsaturated zone of more than 5m has been provided beneath the base of Lagoons 29 and 30 as agreed with the Environment Agency.	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	The culverts, spreader ditches, swales and attenuation lagoons proposed in the drainage design will be maintained in accordance with policies, standards and practices of NCC's Transport Asset Management Plan and The SuDS Manual (CIRIA, 2007).	Requirement 24.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Volume 2 Chapter 21 Flood Risk Assessment.
	In order to maintain the efficiency of the SuDS elements of the proposed drainage design, regular maintenance will be required. It is anticipated that swales, filter trenches and detention ponds will require regular inspection, litter and debris removal, and grass cutting, as well as occasional maintenance such as sediment management and vegetation replacement to retain design capacities and functionality. As outlined in the NCC's Transport Asset Management Plan (2013/14-17/18), the routine maintenance of the	Requirements 24 and 25.	Environmental Statement Volume 1 Chapter 14 Road Drainage and the Water Environment, Volume 2 Chapter 21 Flood Risk Assessment.



Environmental Discipline	Operational Phase Mitigation Measures	DCO Requirement (In addition to Requirement 4).	Other References to Mitigation
	responsibility of Norfolk County Council.	riequirement 4).	
	Existing drainage features will be improved and in some	Requirements 24	Habitats Regulations Assessment and
	cases reinstated in locations upstream of the proposed	and 25.	Addendum, and Mitigation Measures
	Scheme, where potential impacts associated with		Action Plan.
	sediment ingress into the River Wensum would otherwise		
	be predicted. Regular maintenance, in line with the above		
	described Transport Asset Management Plan will ensure		
	their effectiveness is maintained. These are detailed in		
	the Habitats Regulations Assessment Addendum, and the		
	associated Mitigation Measures Action Plan appended		
	within.		



Monitoring Requirements

Environmental Discipline	Monitoring	Duration and Timing
Air Quality	A visual inspection of dust on surfaces such as street furniture, cars and window sills (usually within 100m of the site boundary) should be undertaken, ideally daily during periods when operations causing large volumes of dust are ongoing. A log should be made available to the local authority if requested.	Throughout construction.
Carbon	None proposed.	N/A
Cultural Heritage	None proposed.	N/A
Landscape	Monitoring and maintenance of landscaping, during which time any dead or dying plants/trees would be replaced with new.	For five years after completion of construction. The Contractor will be responsible for this during the first two years, after which time responsibility would be handed to Norfolk County Council.
Nature Conservation	Unmanned static bat monitoring, at the 12 locations as during 2013 survey season.	15 years (years 1, 2, 3, 5, 10 and 15). Three visits per season. Late April, June and September each



Environmental Discipline	Monitoring	Duration and Timing
		year.
	Manned static monitoring of bat bridge and bat tunnel locations.	15 years (years 1, 2, 3, 5, 10 and 15). Three visits per season. Late April, June and September each year.
	Bat vehicle collision mortality surveys at 10 selected monitoring locations.	15 years (years 1, 3, 5, 10 and 15). Two early morning surveys per season. Late April and September each year.
	Bat roost counts of known roosts within 50 m of the works area.	15 years (years 1, 3, 5, 10 and 15). Two dusk surveys per roost, per season. May-August inclusive each year (repeat at same time each monitoring visit for each roost).
	Monitoring counts of each bat house.	15 years (years 1, 2, 3, 5, 10 and 15). Two dusk surveys per house, per season. May-August inclusive each year (repeat at same time each monitoring visit for each roost).
	Bat box occupancy checks.	15 years (years 1, 3, 5, 10 and 15). Twice a year,



Environmental Discipline	Monitoring	Duration and Timing
		per season. May/June and August/September.
	Bat hibernation roost surveys of known roosts within 2 km.	15 years (years 1, 3, 5, 10 and 15). Jan to March.
	Radio-tracking of barbastelles.	7 years (years 1 and 7). May/June or Aug each year, focussing on same areas identified as important through baseline surveys.
	Monitoring of all badger setts will be required, to ensure that the assessments of impacts, and mitigation measures, remain appropriate.	Prior to construction.
	GCN population surveys of known existing breeding pond at Quaker Lane, Spixworth and the four new ponds would be carried out.	6 years (years 1, 2, 3, 4, 5 and 6). Six surveys per season. April to June.
	Breeding Bird Surveys of the proposed Scheme prior to and after construction.	Prior to construction, and years 1, 2, 3, 4, and 5. Three visits per season, March to June.
	Occupation of the ten barn owl boxes should be monitored by a suitably qualified ecologist holding a valid Natural England or British Trust for Ornithology licence to disturb	3 years (years 1 and 3). One visit per season.



Environmental Discipline	Monitoring	Duration and Timing
	breeding barn owl in Norfolk.	
	Monitoring of the aquatic invertebrate communities should be carried out during and following construction to establish whether there has been any change from the baseline.	During construction, and years 1, 3 and 5. Two surveys per season, in Spring and in Autumn.
	Monitoring of the Desmoulin's whorl snail population should be carried out during and following construction to establish whether there has been any change from the baseline.	During construction, and years 1, 3 and 5. Two surveys per season, in Spring and in Autumn.
	The reseeded areas of Hoary Mullein at the Fakenham Road Roadside Nature Reserve will be monitored to ensure establishment.	After construction.
Geology and Soils	None proposed.	N/A
Materials	None proposed.	N/A
Noise and	Further noise monitoring to take place at a number of key	During the two months preceding the



Environmental Discipline	Monitoring	Duration and Timing
Vibration	receptors in order to give us a comprehensive picture of baseline conditions. This would inform the evaluation of future claims under the Land Compensation Act, addressing the implications of any depreciation in property value resulting from one of the 'physical factors' of which noise and vibration form a part.	commencement of construction.
	For the purposes of assessing construction noise (and possibly vibration), monitoring would be undertaken during the course of construction activities to ensure compliance with any limits imposed.	Throughout construction.
	It is likely that further ad-hoc monitoring would also be required in response to individual complaints.	As necessary during construction.
Effects on all Travellers	None proposed.	N/A
Community and Private Assets	None proposed.	N/A



Environmental Discipline	Monitoring	Duration and Timing
Road Drainage and the Water Environment	Monitoring of surface water quality, and groundwater quality and levels in the streams at The Springs, Rackheath.	To commence six months prior to any pre- construction works. The monitoring will continue during construction at frequencies to be agreed with the Environment Agency.
	The drainage performance of all lagoons should be monitored to ensure that they are performing as expected	On completion.
	The effectiveness of the hydrobrake and erosion protection measures at the discharge points from Lagoons 17, 18 and 18A and all culverts conveying overland flow beneath the Scheme will be regularly monitored by Norfolk County Council to ensure their effectiveness.	On completion.
	Monitoring of the effective functioning of the drainage features improved or reinstated, particularly those upstream of the proposed Scheme to address sediment input into the River Wensum, will be carried out in conjunction with the ongoing maintenance. This will be in line with the requirements of the Habitats Regulations	On completion.



Environmental Discipline	Monitoring	Duration and Timing
	Assessment Addendum and the Mitigation Measures Management Plan therein.	