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

Applicant's comment on Written Representations by Natural England

Planning Act 2008

Infrastructure Planning

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

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Introduction

This document provides the Applicant's responses in respect of selected issues raised by Natural England in their Written Representation to the Examining Authority dated 3 July 2014. The Written Representation covers many issues. Some of these have been addressed elsewhere (including the Applicant's comments on Relevant Representations, and the Applicant's comments on other Written Representations). Therefore a limited selection of issues raised have been extracted and comments provided.

The points have been responded to where possible in the order they were raised. Each issue, or in some cases a summary of it, is shown in italics.

This document should also be read in conjunction with the Statement of Common Ground NCC/EX/6.

Response by Norfolk County Council

The first five sections of Natural England's Written Representations are statements of fact, relating to their role as a Statutory Body, legislation and policy, and a summary of conclusions from the ES, relating to those Valued Ecological Receptors that could be affected by the proposed Scheme. Therefore no comments are felt necessary for the following sections of the document:

- Introduction
- Status and Functions of Natural England
- Legislative Framework
- Policy Framework
- Conservation Designations, Features and Interests that could be affected by the proposed project

Section 6, Natural England's Concerns and Advice, is considered below, with issues and responses given as appropriate.

Applicant's comment on Written Representations

Representation

1.1 *Para 6.2.8: Natural England has advised that off-site mitigation to prevent sediment ingress to the River Wensum SAC and SSSI caused by increased traffic flows on key off-road routes caused by the scheme will be required in order to ensure no adverse impact on the integrity of the SAC and no adverse impacts on the special interest features of the SSSI.*

Applicant's comment

1.1.1. Norfolk County Council (NCC) anticipates that the efforts made to address comments on the Draft HRA Addendum, to the effect of the above, should satisfy Natural England and the Environment Agency that off-site mitigation measures will ensue that no additional sediment ingress into the River Wensum occurs. This has been secured with NCC's Highways and Asset Management teams, and with landowners, and will be detailed in the forthcoming, finalised HRA Addendum, which NCC hopes to publish in the near future.

Representation

2.1 *Para 6.2.9: It is important that the means/mechanics of delivering off-site mitigation to prevent sediment ingress to the River Wensum SAC and SSSI is demonstrated and secured pre-DCO consent and that the mitigation plan is secured through a suitably worded DCO requirement that includes the need to consult on the plan with Natural England.*

Applicant's comment

2.1.1. A requirement is to be imposed requiring a Surface Water Management Plan to be produced, and subsequently approved by the relevant

planning authority, in consultation with Natural England. The plan must include measures to prevent sediment entering the River Wensum.

Representation

3.1	<i>Para 6.2.10: Within the DCO the protection of water quality needs to be secured through application of suitable Construction and Environmental Management Plan (CEMP). The details are to be worked up and should include: (i) measures to avoid pollution of the watercourses (including ditches and field drains); (ii) agreed and effective measures for pollution incident control; (iii) clear communication of the relevant project team member responsible for maintaining overview of the subject area.</i>
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Applicant's comment

3.1.1. The CEMP will include the above details and processes as required.

Representation

4.1	<p>European Protected species – Bats</p> <p><i>Para 6.3.8: The licensing situation needs to be resolved. Once the draft mitigation licence has been re-submitted with the additional information included as requested, Natural England will be able to assess whether a EPS mitigation licence can be issued in due course.</i></p>
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Applicant's comment

4.1.1. Norfolk County Council (NCC) will be resubmitting a Draft EPS licence application in September 2014, once the additional survey data has been obtained and interpreted, and the licence documents revised and refined.

Representation

5.1 European Protected species – Bats

Para 6.3.9: Mitigation for impacts on bats will need to be integrated into the scheme's wider habitat related measures. This will need to form part of the work to draw up the Ecological Management Plan proposed as part of the DCO requirement covering the proposed CEMP.

Applicant's comment

- 5.1.1. Mitigation for impact on bats, including those wider habitat related measures, will be addressed in the Ecological Management Plan (EMP). A draft EMP will be submitted to the Planning Inspectorate on or before 4th August 2014. This will be updated and revised throughout the detailed design process, to ensure that it is suitably comprehensive and fit for purpose as construction commences.

Representation

6.1 European Protected species – Bats

Para 6.3.10: Further information on the specific design of the proposed seven bat gantries is required. Very little detail about the gantry design was contained in the ES.

Applicant's comment

- 6.1.1. Since production of the Written Representations NCC has heard from Natural England to say that information had been found in the Bat Technical Report that supported the ES and the EPS licence document. Revised draft plans have also been sent to Natural England in early July 2014.

Representation

7.1 European Protected species – Bats

Para 6.3.11: Natural England welcomes the Schedule 1 provisions of the DCO relating to bat mitigation for each work plan, specifying the form and location of mitigation. However, only one provision (8.ii) refers to a specific location for a bat gantry. The other six gantries are covered by a general provision following the provisions for work plan 24 (page 57 of the DCO): “(i) the provision of bat boxes, bat gantries, newt fencing, badger fencing and boxes wildlife”. Given the importance of locating bat gantries at crossing points currently used by bats, and the intensive survey work commissioned by Norfolk County Council to inform their bat mitigation proposals, Natural England recommends that the specific locations for all the gantries are identified in the relevant work plan provisions of Schedule 1 of the DCO, in accordance with the locations identified in the general work plan and the Environmental Statement, (Table 2.8, Chapter 1).

Applicant’s comment

7.1.1. The Draft DCO will now include specific locations of the bat gantries.

Representation

8.1 European Protected species – Bats

Para 6.3.12: Details need to be provided on how mitigation and compensation measures will be secured in the long term, including their management and maintenance, given the importance of the NDR route for local bat populations over a wide area, and that the NDR is to help to facilitate growth and access to further developments which are proposed adjacent to the route corridor (Doc 6.1 of the ES, Chapter 1, section 1.3.1).

Applicant's comment

- 8.1.1. NCC will provide further information on how mitigation measures will be secured in the longer term in the Ecological Management Plan, and also in the Draft EPS licence documents that will make up the resubmission in September 2014.

Representation

9.1 European Protected species – Bats

Para 6.3.13: The current DCO does not include a requirement regarding European Protected Species; Natural England advises that a suitably worded requirement is added to the DCO requirements along the lines of the model provision for EPS.

Applicant's comment

- 9.1.1. Text has been included in the forthcoming revised Draft DCO to this effect.

Representation

10.1 European Protected species – Great Crested Newts

Para 6.3.17: The licensing situation needs to be resolved. Once the draft mitigation licence has been re-submitted with the additional information included as requested, Natural England will be able to assess whether a EPS mitigation licence can be issued in due course.

Applicant's comment

- 10.1.1. Norfolk County Council (NCC) will be resubmitting a Draft EPS licence application in September 2014, once the additional survey data has been obtained and interpreted, and the licence documents revised and refined.

Representation

11.1 European Protected species – Great Crested Newts

Para 6.3.18: Mitigation for impacts on great crested newt will need to be integrated into the scheme's wider habitat related measures. This will need to form part of the work to draw up the Ecological Management Plan proposed as part of the DCO requirement covering the proposed CEMP.

Applicant's comment

- 11.1.1. Mitigation for impact on great crested newts, including those wider habitat related measures, will be addressed in the Ecological Management Plan (EMP). A draft EMP will be submitted to the Planning Inspectorate on or before 4th August 2014. This will be updated and revised throughout the detailed design process, to ensure that it is suitably comprehensive and fit for purpose as construction commences.

Representation

12.1 European Protected species – Great Crested Newts

Para 6.3.19: Regarding the mitigation and monitoring plans for great crested newts included in the draft Construction and Environmental Management Plan (CEMP): A10.32 in the draft CEMP states that the temporary newt fencing to exclude great crested newts from the construction site can be removed to allow them to access newly landscaped areas as “...Recent research has demonstrated that a road that carries more than 20 vehicles per hour provides a deterrent to newts (as well as other amphibian and reptilian species).” The CEMP should include a reference to the research cited. This section of the CEMP must be updated to ensure it reflects the mitigation and monitoring requirements of any licence granted by Natural England.

Applicant’s comment

12.1.1. The CEMP will be updated to include this information. Note that, as the licence is not likely to be submitted until after the DCO decision is made, this information is not likely to be included in the CEMP in full until this time. This reflects the nature of this ‘live’ document.

Representation

13.1 Draft DCO

Para 6.7.2: Requirement 4 ties the implementation and construction of the authorised development to the approved plans. This should be amended to include a reference to the implementation and construction of the authorised development being within the scope of the ES.

Applicant's comment

13.1.1. Appendix 3 of the Environmental Statement (ES) (Document Ref 6.2) comprised a table drawing together all mitigation measures required within the ES. However, due to an error it was omitted from the ES document submitted to the Planning Inspectorate, although it has now been submitted separately (see appendix A). A requirement is being added to the DCO to require compliance with the table. This will ensure that the development is within the scope of the ES.

Representation

14.1 Draft DCO

Para 6.7.3: Natural England welcomes Requirement 7 which ensures that no development works can commence until a written Ecological Management Plan covering the ecological and nature conservation elements forming part of the relevant work number has been submitted to and, following consultation with the relevant district authorities, approved in writing by the relevant planning authority. Requirement 7 should be amended to ensure that the relevant planning authority also consults with Natural England before approving the Ecological Management Plan. The interplay between Requirements 7 and 19 requires further clarification, as discussed below.

Applicant's comment

- 14.1.1. Norfolk County Council agree that Natural England should be a consultee. Requirement 7 will be amended to reflect this. The Landscape and Ecological Management Plan will be annexed to the CEMP.

Representation

15.1 Draft DCO

Para 6.7.4: Requirement 19 concerning the CEMP should be amended to clarify the interplay between the CEMP and the Ecological Management Plan referenced in Requirement 7 (1) and (2). The ES includes a draft Construction and Environmental Management Plan which "translates the requirements of the Environmental Statement for the construction works of the NDR into specific guidance and measures to be followed by the Contractors.", within which all ecological and landscape mitigation, related management plans, monitoring arrangements and limits on operational activities should be included. The further development and approval of the CEMP and any Ecological Management Plan annexed to the CEMP should be undertaken in consultation with Natural England and secured through a suitably worded DCO requirement.

Applicant's comment

- 15.1.1. Norfolk County Council agree, the Draft DCO will be amended to reflect this.

Appendix A

Environmental Topic	Mitigation Measures During Construction
Air Quality	<p>The key effects during the construction phase are associated with dust-raising activities associated with earthworks, construction and trackout. This includes the handling of spoil, loading and unloading of trucks and the movement of the trucks around the construction sites and onto the local road network.</p> <p>The proposed Scheme has a number of incorporated mitigations for the construction phase which are principally aimed at reducing dust effects from the construction activities and will be included within the Construction Environmental Management Plan (CEMP) (Volume 2, Chapter 19- Construction Environmental Management Plan).The construction phase will include the mitigation measures presented below and will reduce the dust risk from each of the sources assessed.</p> <p>Site Planning</p> <ul style="list-style-type: none"> • Plan site layout – machinery and dust causing activities should be located away from sensitive receptors where possible. • All site personnel to be fully trained. • Trained and responsible manager on site during working times to maintain and carry out site inspections. <p>Construction Traffic</p> <ul style="list-style-type: none"> • All loads carrying potentially air-borne material 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.

	<ul style="list-style-type: none"> • Damping down of haul routes. • No site runoff of water or mud. • On-road vehicles to comply to set emission standards as set out in the CEMP. • 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. • Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site. <p>Site Activities</p> <ul style="list-style-type: none"> • 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. • Ensure concrete crusher or concrete batcher has permit to operate.
Carbon	<p>In the construction phase, a number of design features have been incorporated to minimise the impact where possible. These design decisions include:</p> <ul style="list-style-type: none"> • Achieving a neutral cut and fill balance, removing 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 will be used to reduce the import of quarried materials; and
- Recycled crushed glass filter material as an alternative to sand.

Measures to reduce the impact of construction works will also be implemented through the CEMP. These will include the following typical measures relating to construction plant and construction traffic.

- Ensuring that the engines of all vehicles and plant on site are not left running unnecessarily;
- Requiring that plant will be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturers recommendations and records maintained for the work undertaken;
- Avoiding the use of diesel or petrol powered generators and using mains electricity or battery powered equipment;
- Maximising energy efficiency (this may include maximising vehicle utilisation by ensuring full loading and efficient routing);
- An instruction will be given to drivers of vehicles, while on the public highway, to switch off their vehicle's engines when stationary to prevent exhaust emissions;
- Development of a Site Waste Management Plan which will identify materials that can be reused and recycled; and
- Requiring that plant will be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturer's recommendations and records maintained

		for the work undertaken.
Cultural Heritage	Approach To Mitigation	Mitigation by design is the preferred option, and for the NDR has included: works to reduce potential impacts on the settings of heritage assets such as choice of routeing of the NDR, planting trees or shrubs, creation of bunds to reduce road noise and block views, and/or grading the back of bunds for return to agriculture and integration with the local topography. These measures can, however, also themselves have an impact on archaeological remains.
	Archaeological mitigation	<p>The preferred mitigation option for archaeological sites is to preserve them in situ. Where this is not possible, the alternative is to make a detailed record of the archaeological remains that would be lost in accordance with professional standards and guidance. This is referred to as 'preservation by record'. Due to the general nature of the construction, preservation in situ will be difficult to achieve (through avoiding impacts on archaeological remains) in many areas, although there may be opportunities, for example under landscape bunds or construction compounds, where construction activities can be controlled to prevent damage. Additional strategies (fieldwalking, geophysical survey & targeted trial trenching) employed to inform the baseline study will form part of the overall preservation by record mitigation strategy.</p> <p>As described above, not all areas of the route have been archaeologically surveyed and therefore, an additional programme of survey will be required to finalise the mitigation strategy.</p> <p>Fieldwalking and Geophysical Survey</p> <p>Due to alterations in the design of the new road some areas such as roundabout and the edges of the road have not been subject to geophysical survey, where access has not been possible. These areas will be surveyed, where possible, to inform the archaeological mitigation strategy.</p> <p>Targeted Trial Trenching</p> <p>Following completion of the geophysical survey, additional targeted trial trenching will be</p>

		<p>undertaken in areas of archaeological significance, identified by the surveys and the assessment report.</p> <p>Preservation by Record</p> <p>A programme of archaeological mitigation in defined and specific areas of archaeological importance identified in this assessment and through further surveys will need to be undertaken. A mitigation strategy will be produced, and agreed with Norfolk Landscape Archaeology following completion of the above surveys.</p> <p>This mitigation will be factored into the Scheme's construction programme. The requirements for archaeological mitigation will be set out in an overarching archaeological Written Scheme of Investigation, and will also need to be incorporated into the Construction Environmental Management Plan (CEMP) and their implementation facilitated and monitored by an Archaeological Manager and/or an Archaeological Clerk of Works.</p> <p>The archaeological work is likely to involve excavation of remains in advance of, and during the construction of the proposed Scheme. A mitigation strategy will be produced, and agreed with Norfolk Landscape Archaeology. The sites identified which will require archaeological mitigation are listed below:</p> <p>NHER/Site Archaeological Resource</p> <ul style="list-style-type: none">• NHER 30315 – Possible Iron Age Ditch and bank-on line of parish boundary;• NHET 30315 – Field systems of possible IA date evaluated by trial trenches and further associated features seen in 2012 geophysics to the west;• NHER 124468 – Prehistoric discrete features;
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		<ul style="list-style-type: none"> • NHER 49748 – Ditch or pit with early Neolithic pottery; • NHER 49758 –Rectilinear enclosure and possible ring ditches; • NHER 123955 – Large prehistoric enclosure and cropmarks; • NHER 124298 – Early Saxon pits and ditch; • NHER 51049 – Deserted medieval village (edge of)- Rackheath; • NHER 50501 – Deserted medieval village- Rackheath; and • NHER – 18131 – Large rectilinear enclosure. Probably dates from the Bronze Age. Also prehistoric pits and burnt mound recorded in trial trenches.
	Historic Building mitigation	<p>There will be no direct physical impacts on any listed buildings identified within the study area. Visual impacts on the setting of historic buildings have been minimised as much as possible, with impacts on all buildings considered within the mitigation outlined in the Landscape Chapter.</p> <p>Construction of the road will result in the loss of some unlisted historic farm buildings and WWII buildings within Rackheath Park. These will be recorded to supplement the existing report on the farmhouse (NHER 42007) and all historic fabric recovered from the site for re-use.</p> <p>In the case of WWII buildings in the vicinity of Gazebo Farm, these will be investigated and recorded as part of a wider investigation into the WWII buildings and occupation of the parkland.</p>
	Historic Landscape mitigation	<p>As a general historic landscape mitigation principle, relict field corners that are created through road construction will be subject to planting schemes. This has a benefit in general historic landscape as it means the lines of the former field boundaries are fossilised.</p> <p>Mitigation measures include new planting and a combination of mounding and planting to tie into</p>

		<p>existing parkland and blend the new road into the landscape</p> <p>Beeston Park - Where the route crosses the former parkland to the north of Beeston Hall, a gentle graded mound would screen views of the NDR from the Hall without appearing intrusive within this sensitive landscape. Planting would be restricted to clumps of specimen trees to reinforce the parkland feel. Further east towards Beeston Lane however, a combination of mounding and dense planting would be provided to screen the route from the estate cottages and the church. It is also proposed to update the NCC/UEA survey of 1989–91 to include all changes since this report was produced and to produce a comprehensive photographic record.</p> <p>Rackheath Park - Extensive mitigation planting and screen mounding is proposed along the route which would help to blend the new road into the landscape and screen it from affected properties.</p> <p>Horsham St Faith Airfield - A record of any WWII remains will be made ahead of any site works. It is proposed to relocate the museum to a nearby site of similar size.</p>
Landscape and Visual		<p>Mitigation of the scheme has involved optimising the route alignment in order to retain existing features or vegetation of interest and reduce visual impact. This has involved lowering the vertical alignment and adjusting the horizontal alignment where possible in order to minimise landscape and visual intrusion, subject to engineering considerations.</p> <p>An extensive landscaping scheme has been designed (see drawings MMD-233906-DT-0866 to MMD-233906-DT-0878 MMD-233906-DT0941 (DCO Document 2.8 - Detailed Landscape Planting Proposals), in order to integrate the road into the surrounding landscape as far as possible, and to reduce visual effects near housing. This has involved extensive mounding and grading out of side slopes to blend the road as far as possible into the surrounding topography, together with linking the road planting with adjoining existing vegetation. New planting has been provided in excess of the 6 to 1 replacement ratio recommended by the Forestry Commission, and the species chosen will be mostly native and deciduous, to reflect those found in the immediate locality.</p>

	<p>In the vicinity of the airport (approximately 2 km either side of Horsham St. Faith) the planting mixes would be adjusted to reduce the risk of bird strike hazards to aircraft; shrub planting would be kept trimmed to 2 m in height and the percentage of large trees reduced. In addition, the proportion of berry producing shrubs would also be reduced, to avoid attracting large flocks of birds which could prove hazardous to aircraft.</p> <p>Effective mitigation measures for short-term construction impacts are difficult due to the short time scale for the proposed implementation of the works. This would preclude effective screening through planting. However, good and 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. This will be achieved through the Construction Environmental Management Plan (CEMP) (Volume 2, Chapter 19- Construction Environmental Management Plan).</p> <p>The construction sequence has been optimised to avoid double handling of material and excessive vehicle movements (e.g. the earthworks balance is designed to ensure that wherever possible only localised movement of material will be necessary along individual stretches of the new road).</p>
Nature Conservation	<p>General</p> <p>All Construction phase mitigation measures will be included in the CEMP (Volume 2, Chapter 19- Construction Environmental Management Plan). This will describe all general mitigation measures and procedures to be followed throughout the Construction phase, at all locations within the proposed Scheme, and so would act to reduce impacts on all Valued Ecological Receptors.</p> <p>Measures would centre on good construction practice to ensure that disturbance in all its forms is minimised. Effective, well thought-out measures to eliminate 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.</p> <p>Dust suppression measures would be put in place, and Construction phase drainage would be</p>

		<p>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 avoided as far as possible. Lighting would be directional, with hoods wherever possible, to reduce light spill as far as possible.</p> <p>Whilst these measures will be ubiquitous throughout the proposed Scheme, where specific Construction phase mitigation measures have been identified which would specifically benefit one designated site, habitat or species, further, specific Construction phase mitigation measures are also described as necessary.</p>
	Statutory Designated Sites	Construction phase mitigation would be in accordance with those measures already described, and would be employed throughout the Construction phase across the whole site.
	Non-Statutory Designated Sites	<p>During construction, adherence to the CEMP would ensure that the disturbance to the sites will be minimised.</p> <p>A length of Marriott's Way CWS would be lost to the proposed Scheme. The length of the CWS to be directly affected has been minimised as far as possible, such that the approach ramps to the overbridge would be as steep as design parameters allow. The proposed earth banks, either side of the approach ramps, would be planted with those species currently growing in this location, to replicate the habitats that are to be unavoidably lost. In the wider context, the proposed landscaping scheme would provide connectivity between Marriott's Way and other areas of semi-natural habitat, where currently little exists.</p> <p>Fakenham Road RNR, which is within the footprint of the proposed Scheme, 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. On completion of construction in this location, it would be returned to site and used to re-build the verge. The harvested seeds would then be</p>

		<p>replanted, allowing the existing seedbank within the soil to remain loosely in the same location. These two processes would maximise the chances of the existing valuable flora re-establishing.</p> <p>The lengths of Important Hedgerows to be removed have been minimised as far as possible. Replacement hedgerows will be planted as part of the proposed landscape scheme.</p>
	Bats	<p>During the Construction phase, the bat mitigation guidelines set out in DMRB Volume 10, Section 1, Part 8 (HA 80/99 Nature Conservation Advice in Relation to 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 potential use of hoods or cowls would further minimise light spill.</p>
	Badgers	<p>As the setts under the footprint of the Scheme will be closed (setts 3, 4, 6 and 7) and the remaining setts are more than 100m away, mitigation during construction will be limited to ensuring as far as possible the safety of any badgers which may stray into the works areas. In most cases it is possible to install permanent badger fencing coincident with the proposed Scheme boundary during the early stages of construction. Once in place it would not need to be moved or altered, so it would remain in place through operation as well as during construction.</p> <p>The following additional mitigation measures would be implemented on site during construction:</p> <p>Ensure chemicals are safely stored;</p> <p>Open trenches would be covered at the end of each working day, or include a means of escape for any animal falling in (this should be a ramp at 45° every 20m along the trench and can be either dug into the edge or a plank to act as a ramp); and</p> <p>Any temporarily exposed open pipe system would be capped in such a way as to prevent badgers gaining access.</p>

		<p>On completion of construction, permanent badger fencing will be installed in conjunction with the proposed Green Bridge at Marriott's Way, to ensure that badgers do not stray onto the carriageway here, and to encourage them to use the Green Bridge.</p>
	<p>Great Crested Newts</p>	<p>The ponds used by the Dog Lane, Horsford meta-population are at least 100 metres north of the proposed Scheme. The available terrestrial habitat between these ponds and the proposed Scheme is limited to a small number of arable field margins, and there are no ponds suitable for use by newts south of the proposed Scheme, so it is not considered necessary to provide continuity of access to habitats beyond the proposed Scheme in this location.</p> <p>A precautionary approach will be employed whereby newts will be excluded from the footprint of the Scheme by the installation of temporary newt fencing during construction. This would be installed coincident with the northern fence-line demarcating the proposed Scheme extents, over sufficient length to ensure that newts using the ponds on Dog Lane would not then be able to enter the construction area. It will be installed during the earliest stages of the construction process. Its installation will be timed in order to eliminate or minimise adverse impacts on newts, and to ensure that no newts are likely to remain within the construction area. The fencing will remain in place throughout the construction phase.</p> <p>The Quaker Lane, Spixworth meta-population, using pond 16, is 100 metres from the proposed Scheme. As with the Dog Lane, Horsford meta-population, newts will be excluded from the scheme by the installation of temporary newt fencing. This will be installed coincident with the northern fence-line demarcating the proposed Scheme extents, including the temporary and construction areas required for the road and the associated features such as the proposed drainage lagoons in this area. It would be installed over sufficient length to ensure that newts using the pond on Quaker Lane would not be able to enter the construction area. As with the above, it will be installed during the very earliest stages of the construction process.</p> <p>The Newman Road, Rackheath meta-population will be subject to the loss of one breeding pond, in</p>

		<p>addition to areas of terrestrial habitat suitable for use by great crested newts. Further to the precautionary exclusion process described for the two above meta-populations, it would be necessary to carry out a trapping and exclusion exercise, to remove newts from these areas in advance of any construction taking place. In advance of this, it will be necessary to create new receptor ponds to which the relocated newts can be relocated.</p>
	<p>Breeding Birds</p>	<p>The main mitigation measure for reducing impact on breeding birds would be to carry out habitat clearance during the winter months when breeding activity can be ruled out. The early phase of the construction programme has been formulated with this principle at its core.</p> <p>All temporary areas associated with construction, for example access tracks, lay down areas and compounds, would be sited to minimise their impact on breeding birds. Areas of amenity or heavily grazed grassland or arable land have been selected for these temporary areas as far as possible, which would be reinstated after construction. Where this is not possible then alternate areas would be provided to compensate for this loss.</p> <p>During construction, industry best practice guidelines relating to potential disturbance would be followed. These would ensure that light emissions are minimised by reducing construction during the hours of darkness and providing lamps that allow their illumination to be directed away from sensitive areas. Any chemical spills would be cleared quickly and effectively to prevent accidental poisoning of birds and other wildlife, and any dangerous or sharp equipment should be stored safely when not in use. Construction procedures would be subject to national limits for noise and pollution emissions. This would serve to reduce the effects on wildlife locally.</p>
	<p>Barn Owls</p>	<p>The known nesting site that is to be directly affected by the Scheme would need to be removed, by a suitably experienced, licensed ecologist, at a time outside of the nesting season. As already described, habitat clearance would take place outside of the nesting season, in order that no nesting or breeding birds would be affected.</p> <p>Where nest, roosting and rest sites occur within 150m of construction activities appropriate</p>

		<p>screening with fine mesh will be installed under the supervision of a suitably qualified ecologist, to the edge of the proposed Scheme. Where nesting, roosting and resting sites are to be removed during construction these will be capped or blocked under the supervision of a suitably qualified ecologist.</p> <p>If there is any indication that barn owls are nesting within 150m of construction activities at any time, work would stop within 150m of the nesting site until the matter can be fully investigated and appropriate mitigation measures implemented.</p> <p>Site compounds would be managed to ensure that potential impacts on barn owls were eliminated or reduced. Measures would be taken to ensure that there was no risk of barn owls drowning in open containers of liquid, as this avoidable mechanism of mortality has been recorded in the past.</p>
	<p>Aquatic Invertebrates</p>	<p>The proposed Scheme would not have any direct impacts on the aquatic invertebrates at The Springs. However, it will be necessary to mitigate for potential indirect impacts such as pollutants and silt entering surface and groundwater here, and for potential alterations to the groundwater hydrological regime, that would otherwise affect the availability of suitable aquatic and semi-aquatic vegetation on which Desmoulin's whorl snail lives.</p> <p>The following general mitigation measures will be put in place:</p> <p>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;</p> <p>Spillages of liquid to ground during construction would be mitigated by implementation of an environmental management plan with appropriate refuelling procedures, including an effective spill containment plan, to ensure that it does not enter either the surface or groundwater; and</p> <p>Groundwater and water table monitoring would take place to ensure that no changes to groundwater levels occur.</p>

		These measures will be incorporated into the Construction Environmental Management Plan.
	Terrestrial Invertebrates	No specific mitigation measures are proposed in relation to the habitats of above average suitability for invertebrates at the immature plantation woodland at The Springs as no further mitigation is required. However, it will benefit from those mitigation measures aimed at reducing the adverse impacts of other aspects of the proposed Scheme.
	Habitats	<p>The permanent loss of areas of valuable habitat to the proposed Scheme would be mitigated by the proposed landscaping scheme, which would ensure that similar habitat is provided. The temporary loss of habitats, where site compounds, materials storage, batching plants, topsoil storage etc are required, has been minimised by careful design. Wherever possible they are positioned on arable land, avoiding habitat features of value.</p> <p>The remaining trees and woodland would be protected during construction, with fencing to eliminate impacts within root protection areas, as required by British Standard 5837:2012 Trees in Relationship to Design, Demolition and Construction.</p>
	Reptiles	It is considered that the reptile populations within the ZOI are sufficiently low that individuals could be effectively displaced from the areas where they were recorded, using a precautionary approach. Phased vegetation removal, whereby vegetation is first strimmed to a height of 150mm, and then on subsequent days strimmed to ground level, would be used to displace reptiles, as sufficient habitat would remain beyond the proposed Scheme footprint to allow them to move with no adverse effects.
	Deer	The potential risk of deer collisions with vehicles has been addressed by the following measures. The Scheme design includes wide verges and swales along the majority of the proposed route. Further, 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.

Geology and Soils	Soils	<p>The Scheme incorporates a carefully designed cut and fill balance to ensure all excavated materials will be utilised within the site.</p> <p>Works will be undertaken in accordance with appropriate guidelines such as DEFRA’s 2009 Code of Practice for the Sustainable Use of Soils on Construction Sites.</p> <p>Stripping of soils for temporary works, storage of materials and reinstatement upon completion using best practice procedures.</p> <p>Sequential stripping of topsoil and separate stockpiling of topsoil and subsoil. Stockpiles will be clearly defined.</p> <p>Tracked equipment will be used where possible, and traffic will be confined to designated routes to minimise compaction.</p> <p>Works will be undertaken in accordance with appropriate guidelines such as DEFRA’s 2009 Code of Practice for the Sustainable Use of Soils on Construction Sites.</p> <p>Procedures will be put in place should contaminated land be encountered including suitable management/ remediation.</p> <p>Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of, according to relevant legislation and best practice guidance to mitigate spillages and leaks.</p> <p>Procedures will be put in place should contaminated land be encountered including suitable management/ remediation.</p>
	Geology	A cut and fill balance has been developed to ensure all excavated materials will be utilised within the site.

	Surface water	<p>Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of, according to relevant legislation and best practice guidance to mitigate spillages and leaks.</p> <p>Procedures will be put in place should contaminated land be encountered including suitable management/ remediation.</p>
	Ground water	<p>Procedures will be put in place should any contaminated land be encountered, including suitable management/ remediation.</p> <p>Where this might be related to pile foundations, a Foundation Works Risk Assessment in accordance with EA guidance will be undertaken.</p> <p>Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of, according to relevant legislation and best practice guidance to mitigate spillages and leaks.</p> <p>Procedures will be put in place should any contaminated land be encountered, including suitable management/ remediation.</p> <p>Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of, according to relevant legislation and best practice guidance to mitigate spillages and leaks.</p> <p>Procedures will be put in place should any contaminated land be encountered, including suitable management/ remediation.</p>
	Construction workers	Use of appropriate Personal Protective Equipment, toolbox talks and good site hygiene procedures.
	General	Dust suppression using best practice methods to prevent spread of potentially contaminated

	public	windblown material. The Construction Environmental Management Plan will cover the issue of dust.
	Fauna and Flora	<p>Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of, according to relevant legislation and best practice guidance to mitigate spillages and leaks.</p> <p>Procedures will be put in place should contaminated land be encountered including suitable management/ remediation.</p> <p>Tracked equipment will be used where possible, and traffic will be confined to designated routes to minimise compaction.</p> <p>The Materials section of this report discusses mitigation measures to protect materials in the area of the Scheme. A cut and fill balance has been developed to ensure all excavated materials will be utilised within the site.</p> <p>The Ecology chapter of this report describes the re-use of excavated soil to create earth banks; this will mitigate the likely disturbance experienced by wildlife.</p>
Materials		<p>To limit the potential impacts upon resources in the region and increase the projects resource efficiency with regards to materials and waste have been considered. Approaches to mitigation are recommended for the scheme below.</p> <ul style="list-style-type: none"> • Quarry materials are only to be used as a back-up if site won materials are not adequate. Therefore effective use of excavated site materials is essential • Avoid damage of materials when decommissioning and transporting to the scheme, will maximise their usability. Use recycled materials instead of new materials • The recycled content in the new material should be maximised. Materials should be ordered for when they are required; this will reduce stockpiling and reduce excess materials that will

		<p>increase wastage. Where possible materials should be sourced as locally as possible to reduce the transport distance.</p> <ul style="list-style-type: none"> • Segregation of waste materials and correct storage to avoid damage. • Segregation of waste materials in the storage sites to maximise the opportunities for recycling any waste material. This can be helped by storing materials with best practise to avoid damage. • Waste to landfill should be minimised through waste management (described above). When required the landfills chosen should be in close proximity to the scheme to reduce the transport distance of waste. <p>A preliminary Site Waste Management Plan (SWMP) has been prepared for the Scheme and is included in Volume 2, Chapter 19: Construction Environment Management Plan). The agreement of, and compliance with the SWMP will be secured by requirements in the Development Consent Order (DCO). The SWMP aims to ensure that the waste produced in the construction phase, and other phases of the project is dealt with in accordance with the Duty of Care Provisions under the EPA and the duty of care provisions, the Waste Strategy (2007) and principles outlined within the Waste Hierarchy.</p>
Noise	Traffic noise	<p>Primary measures: Reduction at source:</p> <p>A thin surface course (TSC) would be applied to the new carriageways along the length of the NDR highway within the Scheme. This material reduces the generation of tyre noise relative to that for hot-rolled asphalt (HRA). The beneficial effect from TSC increases with traffic speed, but reduces with time and wear.</p> <p>Secondary measures: barriers and bunds</p> <p>A number of bunds, false cuttings and barriers have been included in the Scheme design which</p>

reduce noise impacts, and which are summarised below:

	Chainage (approx)	Length (approx)
South side of NDR		
Bund	1250-2200	950
Bund	2500-2900	400
Bund	3000-3250	250
2m barrier fence	3250-3450	200
Bund	3450-4100	650
Bund	5400-6500	1100
Bund	8450-8900	450
Bund	10400-10900	500
Bund	12350-13700	1350
Bund	17250-17500	250
Bund	17700-19000	1300
North side of NDR		
Bund	1000-1150	150
Bund	1350-1700	350

		Bund	4000-6500	2500
		Bund	7900-12100	4200
		Bund	13850-14150	300
		Bund	14850-15100	250
		Bund	15750-16100	350
		Bund	16250-16900	650
		Bund	17000-17150	150
		Bund	17700-19000	1300
		Total		17600
	Construction Noise	<p>Limits for normal working hours and levels of noise at nearby properties will be agreed in advance with the Local Authority and incorporated into the contract specification for the Scheme. The contract will also include a clause requiring that the best practicable means for noise control (BPM) be applied at all times. These should 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 will be placed on the off-site haul routes and early/late delivery times. Potentially affected residents should be kept informed in advance of the works and a telephone complaint hotline be provided.</p> <p>Incorporated mitigation related to construction noise and vibration is documented within the Birse Civils document 'Norwich Northern Distributor Road (NDR) Construction Methodology' (CM) (19), dated April 2013 (Volume 2, Chapter 2: The Scheme), which will be implemented alongside the CEMP throughout the construction period. The CM identifies a series of measures to reduce the environmental effects during the construction period and covers environmental and safety aspects</p>		

		<p>affecting the interests of residents, businesses, all road users and the general public in the vicinity of the works.</p> <p>The CM 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.</p> <p>Where potentially significant construction noise and vibration effects are predicted, recommendations have been made to minimise the impacts to levels lower than 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.</p>
<p>Effects on all Travellers</p>		<p>During construction, all diversion routes for PRow and road closures will be signposted clearly, with the intention of minimising delays and frustration. Since the road would be a new road passing across a predominantly agricultural landscape, the majority of the route will be built 'off-line' with little 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. The following roads are crossed by the NDR and a new roundabout is proposed to be constructed. In all cases they will be constructed in phases using traffic signals to control traffic.</p> <ul style="list-style-type: none"> • Breck Farm Way will remain open until the new Marriott's Way structure is completed. • Reepham Road.

- Drayton Lane.
- Holt Road. This will be constructed before the permanent diversion of Drayton Lane is undertaken.
- Reepham Road.
- Drayton Lane.
- Wroxham Road.
- Salhouse Road.
- North Walsham Road.

A new interchange is created where the NDR 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.

The emergency access to the airport from Old Norwich Road will be closed. Alternative emergency access through the site compound will be discussed with Norwich International Airport.

The construction of the tie-ins at Buxton Road will be undertaken in phases using traffic signals to control the traffic.

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 at off peak times to 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.

<p>Socio-economics</p>	<p>A Construction Environmental Management Plan (CEMP) will be produced which sets out measures to remove, reduce or manage the socio-economic effects of construction activities. The key measures that are established in the CEMP have been outlined in the following sections.</p> <ul style="list-style-type: none"> • Air Quality • Noise • Nature Conservation • Effects on all Travellers.
<p>Water Resources and Land Drainage</p>	<p>Surface Water</p> <p>Road drainage network and infiltration ponds to be installed at an early stage. No direct discharges into ditches or watercourses feeding the Wensum.</p> <p>No direct discharge to be permitted in and around 'The Springs'.</p> <p>All runoff in these areas to be controlled and contained in ponds prior to discharge to enable settlement.</p> <p>CEMP Method Statements to be developed based on appropriate Environment Agency Pollution Prevention Guidelines (PPG).</p> <p>No direct discharge to be permitted. Only discharge via temporary storage and silt trap systems.</p> <p>All construction compounds to have properly bunded and contained storage facilities for hazardous soluble substances.</p> <p>All batching plant areas (e.g. concrete or bitumen) to be on concrete pads with properly constructed drainage to contain spillages.</p>

	Groundwater	<p>Compliance with Environment Agency PPG.</p> <p>Following pollution prevention measures required in SPZ1 within GP3.</p> <p>No abstraction/dewatering permitted within 50m radius (nominal SPZ1).</p> <p>No routine discharges will be permitted to ground of any contaminated water.</p>
	Flood Risk	<p>Consent required from Environment Agency/IDB for any temporary dewatering during earthworks and road construction.</p> <p>Discharge from Lagoon 18 at or near the greenfield runoff rate.</p> <p>Improved conveyance of overland flow through the new culvert and ditch under track that leads to AWS pumping station; a larger culvert installed under Wroxham Road and 2500mm culvert at chainage 14750.</p>