15. NATURE CONSERVATION

15.1 Introduction

This section outlines the key potential effects that the New Tyne Crossing may have on terrestrial ecological resources. A range of surveys and studies was undertaken during the course of preparation of the Environmental Statement in order to identify key terrestrial ecological resources present within the vicinity of the scheme. These studies sought to identify the presence of any significant ecological constraints to the proposals. The aim was to minimise the potential for occurrence of adverse effects and maximise any benefits that may be achieved as a result of the proposals.

15.2 Assessment Method

Ecological resources were assessed through original field survey and reference to available information where this exists.

The assessment of ecological and nature conservation resources carried out for the proposed scheme was undertaken in accordance with the guidance laid out in the *Guidelines for Baseline Ecological Assessment from the Institute of Environmental Assessment (1995)*. This comprised an identification of key resources; an assessment of the likely effects of the proposals on those resources; an assessment of the likely significance of those effects; determination of the need for, scope and design of any mitigation measures likely to be required.

An Extended Phase I Ecological Survey was carried out covering all habitats within the vicinity of the proposed scheme and its ancillary works (infrastructure, construction compounds, access routes). This survey was carried out according to English Nature's standard methodology (English Nature, 1990). A summary of the key findings of this survey where relevant to the effects of the proposed scheme is provided in Section 15.4 below. The complete survey is included in Appendix 15.1.

15.3 Significance Criteria

15.3.1 Assessment Criteria

The significance criteria, presented in Table 15.1, were determined to assess the potential direct, or indirect, effects on ecological features of the construction and operation of the proposed scheme.

TABLE 15.1: SIGNIFICANCE CRITERIA FOR NATURE CONSERVATION

Significance	Criteria
Severe adverse	Loss of, landtake, or permanent loss of value from sites of acknowledged national importance, such as Sites of Special Scientific Interest (SSSIs) or areas designated Special Areas of Conservation or Special Protection Areas under EU legislation.
Major adverse	Loss of, landtake, or permanent loss of value from Sites of National Conservation Importance (SNCI); loss of nationally rare habitat or species. Loss of or disturbance to protected species where no mitigation measures are able to be effectively implemented. Temporary adverse impacts that cannot be fully mitigated, which cause measurable loss of ecological value to significant ecological resources within SSSIs.
Moderate	Loss of, landtake, or permanent loss of value from sites considered to be of district ecological importance or those identified as of priority in

TABLE 15.1: SIGNIFICANCE CRITERIA FOR NATURE CONSERVATION	
adverse	relevant Biodiversity Action Plans. Adverse effects on protected species where mitigation measures are able to be successfully applied. Temporary adverse impacts that cannot be fully mitigated, which cause measurable loss of ecological value to significant ecological resources within other designated sites.
Minor adverse	Loss of, landtake, or permanent loss of value from sites of local ecological importance; severance to or disruption of linear habitat features likely to be valuable corridors and links for the movement of wildlife in the wider countryside, or loss of urban green space of some ecological value. Temporary adverse impacts that cannot be fully mitigated, which cause measurable loss of ecological value to sites or resources of local importance. Any other adverse effects on ecological resources within designated sites that do not meet the criteria above.
Not significant	No significant change in the nature conservation of the area.
Beneficial	Habitat creation and enhancement where this can achieve an overall benefit to ecological resources, or improvement of management techniques where ecological benefits can be achieved through such measures. Also measures designed to encourage the spread of or continued presence of protected species where these do not comprise mitigation measures in respect of potential adverse impacts of the proposals.

15.4 Baseline Data

15.4.1 Designated Sites

Designated sites of ecological importance were identified through consultation with the appropriate bodies during the course of this assessment. Figure 13.1 shows the locations of the sites of nature conservation interest present in North and South Tyneside in the general area of the scheme. The designations are shown in Appendix 13.2.

Two coastal Special Sites of Scientific Interest (SSSIs) occur to the north and south of the River Tyne entrance approximately 5-6km east of the proposed tunnel location. These are the Northumberland Shore SSSI and the Durham Coast SSSI respectively, and are designated primarily in respect of their provision of valuable breeding and overwintering sites for wetland birds.

No sites of national nature conservation importance occur on the north or south banks of the Tyne in the vicinity of the proposed scheme.

Two non-statutory sites are present on the north bank of the Tyne - the River Tyne Entrance SNCI (Site of Nature Conservation Interest) at the mouth of the River Tyne, and another SNCI at Willington Gut upstream of the tunnels. In addition, a site of local conservation interest is present at Northumberland Dock.

On the south side, a further two non-statutory sites occur in close proximity to the proposed location of the tunnel approach roads, both of which are associated with the corridor of the River Don. These are Jarrow Slake SNCI (ST32) and River Don Saltmarsh SNCI (ST33), both of which are located immediately to the east of the proposed scheme. A further two local sites, surveyed as part of a South Tyneside Borough survey of potential SNCIs, are located at Straker Street and Cemetery Road. Both of these sites are also closely associated with the River Don corridor and lie immediately adjacent to the A19 south of the tunnel. For the purposes of this assessment these latter two sites are treated as if fully designated SNCI. All SNCIs are protected in the South Tyneside Unitary Development Plan.

In addition to the above designations, the River Tyne itself is noted as a Strategic Wildlife Corridor within the Tyne & Wear Nature Conservation Strategy. The River Don corridor is also considered a corridor for the movement of wildlife through the wider countryside.

15.4.2 Phase One Habitat Survey

A walkover survey by an experienced ecologist was undertaken of all land areas that may be potentially affected by the proposals. This survey was carried out according to English Nature's extended Phase One methodology, and is included in Appendix 15.1. A further survey was also made of the River Don Corridor; the report is included in Appendix 15.2. The survey results are also presented in Figures 15.1 and 15.2. In addition to providing an evaluation of any significant habitats present within the vicinity of the proposed works, this survey gave particular consideration to the possible presence of protected species within this area. Protected species of likely potential concern with respect to the scheme included bats and water voles.

Following indications of the presence of water voles associated with the River Don to the south of the Tyne, further detailed surveys were carried out in respect of this species. The River Don Survey is included in Appendix 15.2.

A summary of the main findings of this survey is given below:

- The lower stretches of the River Don and the River Tyne are tidal and contribute brackish water, saltmarsh and inter-tidal habitats. These habitats are considered to be locally very rare and potentially fragile (i.e. susceptible to disturbance). These areas are consequently of high local and regional nature conservation interest. They are expected to be easily damaged by changing water levels, pollution and/or excessive disturbance of the substrate. These areas provide a valuable feeding resource for gulls, terns and waders. This mudflat habitat has already been significantly reduced in size by development pressure, which has resulted in remaining mudflat areas being locally considered even more important for wildlife.
- Two ponds, at Church Bank and Straker Street, add to the habitat diversity of the site at this location. Ponds are regarded as a priority habitat in the Durham Biodiversity Action Plan.
- Most of the survey site has been landscaped. This has subsequently matured and is now considered a valuable resource for local people and for wildlife.
- Landscaping has used a wide diversity of both native and exotic tree and shrub species, which in turn has served to attract a large number of different bird species. Management of the open space areas has also helped to increase the number of different habitats present.

Several species of particular nature conservation concern were identified during the habitat survey. These included the following:

- Three faunal species of high importance were observed – water vole (protected under the Wildlife & Countryside Act 1981), and skylark and song thrush (listed as priority species in the UK Biodiversity Action Plan);
- Tadpoles were seen at the Church Bank pond and a common frog was seen near the Straker Street pond. Although this species is not protected, it is considered of local conservation importance.

15.4.3 Water Vole Survey

A Durham Biodiversity Project, supported by a partnership of the Environment Agency, English Nature, Durham Wildlife Trust and South Tyneside MBC, involved a water vole

survey of the River Don and its tributaries in South Tyneside. This was carried out during June and July 2000.

The survey found that water voles were present along virtually the entire surveyed length of the River Don (approximately 4.6km). The distribution of water voles starts from downstream of the normal tidal limit of the River Don near Jarrow Cemetery.

15.4.4 Bat Survey

A bat survey, included in Appendix 15.3 was carried out at Jarrow Cemetery in June 2000 as South Tyneside MBC thought that there may be bats in the cemetery. No roost sites were identified but four sightings were made, with the bats sighted, using the cemetery only as a feeding territory. This may have been a pipistrelle bat, and it may have been repeated sightings of one individual.

Although the pattern of tree planting within the cemetery provides sheltered areas for feeding, the nearness of the River Don may provide bats with more ideal feeding ground.

15.5 Effects on Nature Conservation

15.5.1 Construction Impacts

The Northumberland Shore SSSI and the Durham Coast SSSI would not be directly affected by the proposals owing to the location of both of these sites at a substantial distance from the scheme. However, the potential for indirect effects to take place through the movement of re-suspended sediment material associated with the dredging operations during the construction process have been discussed in Section 13.

The River Tyne Entrance SNCI and Willington Gut SNCI are sufficiently far from the site that they would not be directly or indirectly affected by the proposals. Jarrow Slake SNCI (ST32) and River Don Saltmarsh SNCI (ST33) would also not be directly affected by the works. These are also discussed in Section 13.

As the approach roads do not affect the potential SNCIs at Straker Street and Cemetery Road the impact at these sites would be **not significant**.

Although no work is planned within the River Don wildlife corridor, adjacent work is proposed on the approach to the tunnel. The River Tyne corridor may also be affected during the construction of the immersed tube tunnel sections at the Howdon Yard and during the dredging process and placement of the sections. Some disturbance to the passage of wildlife is therefore likely, although such effects would be temporary and impossible to effectively quantify. Effects on the terrestrial phase of the River Tyne as a strategic wildlife corridor would be temporary and localised and unlikely to cause any significant effects. Overall, this impact on the river corridors is therefore considered to be **minor adverse**.

The two ponds at Church Bank and Straker Street would not be directly affected by the proposals. However, given their proximity (Straker Street is nearest to the works but is over 200m away at the nearest point) to proposed works, there is a slight potential for pollution from surface runoff or accidental spillage of materials. The pond at Church Bank would not be affected as it lies on the opposite side of the River Don to the proposed works.

Planted landscape measures that exist throughout the general area of the proposals and which currently provide a local ecological resource would be retained where this is practicable. Without the application of mitigation, the loss of such areas is considered a **minor adverse** effect of the proposals.

Skylark, noted as of significance in the Phase One Survey undertaken, are unlikely to be significantly affected by the proposals. Key effects on this species would be those in which large, open, grassed areas are removed with consequent loss of nesting site potential. No such habitat removal would take place as a result of the proposals.

Song thrush also noted as of significance in the Phase One Survey may possibly be temporarily locally affected by the removal of mature landscaped areas which may serve as nesting sites or foraging areas for this species. Such effects are unlikely to be measurable, but could in any case be removed by introduction of appropriate new planting proposals within the landscape proposals for the scheme.

Given that the scheme would not extend into those areas known to be used by water voles, no direct adverse effects on this species is anticipated as a result of the proposals.

Due to junction layout changes, the scheme does not extend near Jarrow Cemetery. Hence, no direct adverse effects are anticipated.

There is little information available that allows the potential impact of noise on wildlife to be assessed. Observation seems to indicate that steady noise or predictable noise has no discernible effect. Predatory birds are seen hunting the area close to motorways and this indicates not only that they are not concerned about the noise from the vehicles but also that the prey are plentiful and are also not effected by the traffic noise. Birds are a familiar sight at airports where noise tends to more intermittent and have to be actively discouraged from occupying the areas close to the runways. It is known within the farming community that audible bird scarers frequently cease to be effective after a time if left in the same location, suggesting that birds become accustomed to intermittent noise after a period. Rabbits are frequently seen grazing the margins of fields adjacent to railway tracks and rarely take fright when trains pass.

The observations suggest that for many species disturbance due to noise is a short term effect. It is therefore concluded that any adverse effects are likely to occur during the construction phase, where noise sources new to the area will be observed. Any such effects are considered likely to be **minor adverse**, and of short duration. It is considered that noise from the operation of the tunnel would have a **not significant** impact on wildlife, as sources associated with the tunnel are already part of the existing environment to which wildlife will have already adapted.

15.5.2 Operational Impacts

Given that appropriate measures to prevent pollution are incorporated within the completed scheme, the impact of the operation of the tunnel on ecological resources would be **not significant.**

15.6 Mitigation and Enhancement

15.6.1 Site-Specific Measures

Mitigation measures with the purpose of minimising any potential adverse effects of the construction work proposed to take place within the river are discussed in Section 13.

Although the two ponds at Church Bank and Straker Street would not be directly affected by the proposals, protection measures are recommended at Straker Street to prevent the occurrence of adverse indirect impacts during construction. It is recommended that this pond is fenced to prevent accidental disturbance by construction workers and vehicles, and that appropriate protection measures are provided to prevent pollution occurring from accidental spillage of materials and surface runoff to Straker Street and the River Don.

Where previously planted landscape measures exist and these are of ecological, visual or amenity value, and such measures cannot be retained within the proposed scheme, these would be replaced with new measures following construction of the scheme. New landscape measures would be introduced following ecological design guidance, to ensure that this is able to mitigate fully any loss and that potential for its improvement as an ecological resource exists in the future. In this way a **minor adverse** effect would be reduced to a **not significant** or a **beneficial** effect. Ecological design measures would be incorporated within the

landscape design proposals for the scheme. Consideration would also be given to the creation of new areas to be of value for nature conservation where this is practicable within the landscape planting scheme that is proposed. This could also be expected to result in beneficial effects.

Measures would be included within the landscape planting proposals to encourage the presence of a range of wildlife species, in particular, birds. These would include specific consideration of song thrush given its acknowledged presence within the local area.

In order to ensure that indirect impacts do not occur on water voles, measures would be provided to ensure that any pollution impacts would be prevented at the potential SNCIs at Straker St and Cemetery Road. Where works are proposed in close proximity to these sites, the sites would be temporarily fenced to ensure that encroachment into them does not take place. Given that such measures are implemented, impact on water voles is anticipated to be a **minor adverse** impact at worse during construction, reducing to no impact following completion of the works.

15.6.2 Ecological Design Measures

To achieve the maximum benefits to terrestrial ecological resources with the completed scheme, a range of ecological design measures should be included within the scheme design. These can most effectively be implemented as components of the landscape strategy that would normally be applied. They should be implemented at the detailed design stage through the Code of Construction Practice.

The following specific mitigation and enhancement measures should be beneficially included within the detailed landscape proposals for the scheme:

15.6.2.1 Vegetation/Habitats

- Provision of ephemeral habitats, nectar-rich flora (possibility of seed collected from site to be re-sown in selected areas if practical/valuable);
- Presumption in favour of the encouragement of natural re-colonisation opportunities rather than planting with new vegetation as a best way of maximising ecological value over time.
- Dense and protective shrub cover including berry-bearing plants should be included to provide habitats and feeding resources for a range of wildlife. Ideally these areas should be continuous with other and existing areas of ecological value;
- Use of traditional, native species in planting schemes (though not necessarily exclusively);
- Exclusion of invasive and undesirable species of poor ecological value such as Japanese knotweed, Himalayan balsam, bracken, rhododendron, in planting schemes;
- Favour non-use of pesticides and herbicides and reduction of intensity of mowing regimes to 2-3 times per year.

15.6.2.2 Water Voles

- Avoid encroachment into areas of known water vole activity;

15.6.2.3 Bats

- Maximise invertebrate habitat opportunities (water features, artificial refugia, linear features);
- Use of nectar-rich species in planting schemes.

15.7 Residual Effects

Following implementation of the proposed mitigation measures, on completion of the proposed works the following residual effects of the scheme are anticipated:

Impact on the River Tyne and the River Don corridors would be **minor adverse** at worst. These effects would be expected to reduce with time following completion of the works.

Effects on water voles would be restricted to those associated with construction disturbance. Following construction activities, any effects arising would cease and no further adverse effects would take place.

15.8 References

Institute of Environmental Assessment (1995). Guidelines for Baseline Ecological Assessment, E & FN Spon, UK

English Nature (Nature Conservancy Council) 1990, Handbook for Phase I habitat survey - a technique for environmental audit, JNCC.

Wildlife & Countryside Act 1981, HMSO, UK

DEFRA (1994): Biodiversity: The UK Action Plan, 1994, JNCC.

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Young Nature (2000). Jarrow Cemetery: Bat Survey

Young Nature (2000). River Don Corridor Survey

Durham Biodiversity Project (July 2000), Water Vole Survey Report and Conservation Recommendations for the River Don, South Tyneside