AECOM Sue Bell ECOLOGY

A6 Randalstown to Castledawson dualling

Lough Neagh & Lough Beg SPA

Statement to Inform the Appropriate Assessment (DRAFT)

Review & Updates
August 2016




Prepared for

transportni Department for Infrastructure www.infrastructure-ni.gov.uk

Rev	Date	Details	Prepared by	Checked by	Approved by
0	July 2014	SIAA – Review & Updates (DRAFT)	Sue Bell Principal (Sue Bell Ecology)	Gareth Coughlin Associate (Environmental Scientist)	Gareth Coughlin Associate (Environment Team Leader)
1	August 2014	SIAA – Review & Updates (DRAFT)	Sue Bell Principal (Sue Bell Ecology)	Gareth Coughlin Associate (Environmental Scientist) Ronnie Faloon Project Manager (TransportNI)	Gareth Coughlin Associate (Environment Team Leader)
2	Nov 2014	SIAA – Review & Updates (DRAFT)	Sue Bell Principal (Sue Bell Ecology)	Gareth Coughlin Associate (Environmental Scientist)	Gareth Coughlin Associate (Environment Team Leader)
3	August 2016	SIAA – Review & Updates (DRAFT)	Sue Bell Principal (Sue Bell Ecology) Dr. Paul Lynas Principal Ecologist	Gareth Coughlin Associate (Environmental Scientist)	Gareth Coughlin Associate (Environment Team Leader)

AECOM Infrastructure & Environment UK Ltd
Beechill House
40 Beechill Road
Belfast
BT8 7RP

Tel: 0044 (0) 28 9070 5111
Fax: 0044 (0) 28 9079 5651

www.aecom.com

Prepared for:

TransportNI
County Hall
Castlerock Road
Coleraine
BT51 3HS

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1. EXECUTIVE SUMMARY

1.1 Introduction

This document updates a previous Test of Significance (ToS) and Appropriate Assessment (AA) of proposals to upgrade the A6 between Randalstown and Castledawson. The assessment is required under The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) and considers whether the scheme will have Likely Significant Effects upon Lough Neagh and Lough Beg Special Protection Area (SPA) and Ramsar site, and if so, whether there would be an adverse effect upon the integrity of the SPA and Ramsar site.

The previous ToS and AA concluded that with the inclusion of mitigation measures, the scheme would not have an adverse effect on the integrity of Lough Neagh and Lough Beg SPA and Ramsar site. This document reviews the findings of the previous report in light of:

- The time that has elapsed since the previous AA and associated changes in background conditions;
- Developments in practice and understanding of the AA process;
- Amendments to the scheme; and
- Additional information about qualifying interests of the Lough Neagh and Lough Beg SPA and Ramsar site.

1.1.1 Previous Screening and Appropriate Assessment work

The previous Statement to Inform an Appropriate Assessment (SIAA) considered the Likely Significant Effects (LSE) of the proposals on Lough Neagh and Lough Beg SPA and Ramsar site arising from:

- Land-take for the planned road, resulting in a loss of grazing habitat used by one of the qualifying species (Whooper Swan);
- Disturbance to qualifying species (Whooper Swan) arising from construction activities;
- Introduction of vehicle movements in close proximity to areas used by qualifying species (principally Whooper Swan) leading to disturbance of qualifying species using grazing habitat during operation of the scheme;
- Disturbance to qualifying species (Whooper Swan) using an important roost site; and
- Changes to feeding quality of fields arising from changes to the hydrological regime caused by embankment and road run-off.

The SIAA concluded that LSE on water quality during construction could be avoided by the inclusion of a number of mitigation measures within the scheme and also that significant effects arising from run-off during operation of the scheme were unlikely owing to the inclusion of treatment of road run-off, which represents an improvement on the current situation.

The identified LSE were subjected to an Appropriate Assessment. It was concluded that there would be no adverse effect on the integrity of Lough Neagh and Lough Beg SPA and Ramsar site with respect to its Conservation Objectives.

1.1.2 Guidance and the Assessment Process

This assessment process is based on existing data sources, and has been reviewed in the context of relevant legislation and current guidance on the Habitats Regulations Assessment (HRA) process.

1.2 Background to the Project

The scheme includes two main elements involving creation of new dual carriageways and associated grade-separated junctions between the M22 at Randalstown and the Toome bypass, and between the Toome bypass and Castledawson. These elements have been examined at Public Inquiry, and are being progressed as a single scheme. The Direction Order and Environmental Statement Notice to Proceed were confirmed in March 2011. It is anticipated that construction will last between 3½ to 4 years.

1.3 Protected Sites Potentially Affected by the Scheme

The scheme runs close to, but outwith the boundary of a single European site - Lough Neagh and Lough Beg SPA and Ramsar site. The qualifying interests of the SPA comprise a number of wintering and breeding bird species. Additional bird species have been, or are being considered for inclusion as qualifying interests of the SPA.

All current and proposed qualifying interests of the Lough Neagh and Lough Beg SPA and Ramsar site were screened for LSE arising from the planned scheme. LSE were identified for a single qualifying interest (Whooper Swan), in relation to:

- Loss of grazing habitat used by qualifying interests (Whooper Swan);
- Disturbance of qualifying interests (Whooper Swan) using grazing habitat, during construction;
- Disturbance of qualifying interests (Whooper Swan) using grazing habitat, during operation of the scheme arising from vehicle movements on the new road;
- Disturbance of qualifying interests (Whooper Swan) using an important roosting site (McGrogan's Hole) as a result of nocturnal lighting of the planned Creagh Junction;
- Changes to quality of Lough Beg arising from pollution during construction; and
- Changes to feeding quality of fields arising from changes to the hydrological regime caused by embankment construction and road run-off.

Greylag Goose, which are also a qualifying interest, use similar areas to the Whooper Swan, however no LSE are predicted as this species is more tolerant of vehicle movements than Whooper Swans, is observed to feed in fields adjacent to the existing road, and will readily use other suitable habitat that is available in the vicinity.

1.4 Appropriate Assessment

Where a project is likely to give rise to significant effects on a European site, it can only be consented after undertaking an Appropriate Assessment of the implications of the

scheme on the integrity of the site, in light of that site's conservation objectives. Integrity is defined by the EU as the "*coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*".

The Conservation Objectives for Lough Neagh and Lough Beg are "*To maintain each feature in favourable condition.*" This overall objective is supported by supplementary objectives for Whooper Swan populations: "*No significant decrease in population against national trends, caused by on-site factors.*" There is also a relevant habitat objective: *"Maintain or enhance sites utilised as roosts.*"

Using existing data collected as part of national surveys, and new information about the frequency, distribution, and numbers of Whooper Swans that use particular fields, which was collected over the last eleven years (winter 2005/06 – 2015/16), each of the identified LSE was assessed for effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.

1.4.1 Loss of grazing habitat used by Whooper Swan

Fields around Toome are known to be an important wintering site for Whooper Swans. Nine years of monitoring data (at individual field level) have shown that whilst there are certain core fields used during most winters, there is some annual variation in the use of individual fields. Based on the research and analysis to date, the fields within the Toome complex are not thought to have reached their carrying capacity for Whooper Swans. Fields near Gortgill, east of the Lower Bann, are also thought to be used by swans counted within the Toome complex, further increasing the area of available habitat in the area.

The importance of fields along the route was assessed in four ways. This identified a total of four fields (617, 621, 624, 723), considered important for Whooper Swans, and which will experience some habitat loss or fragmentation as a result of the scheme. The combined anticipated loss of habitat from these fields is estimated as 2.84ha. Additional habitat that has been used by Swans at least once over the last nine winters will also be lost (approximately 12.48ha), although Swans have not been recorded from approximately half of this additional area during the past seven years.

Given the small amount of habitat that is to be lost, the proven ability of Whooper Swans to vary use of fields within the Toome complex between years, and that the carrying capacity of the complex has not yet been reached, meaning fields can accommodate displaced swans, it is concluded that the loss of this habitat would not result in the site failing to meet its conservation objectives and hence there would be no adverse effect upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.

1.4.2 Disturbance of Whooper Swan using grazing habitat during construction

Whooper Swans are known to be sensitive to certain types of disturbance. Observations at Toome and elsewhere suggest that the swans are more sensitive to pedestrians than vehicles.

Disturbance can be minimised by restricting the main construction works to periods when the Swans are absent (i.e. during the summer). There is adequate alternative habitat to accommodate any birds that are disturbed during construction works that cannot be accommodated during the summer period. It is concluded that effects arising from construction would not result in the site failing to meet its conservation

objectives and hence there would be no adverse effect upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.

1.4.3 Disturbance of Whooper Swan using grazing habitat during operation of the scheme arising from vehicle movements on the new road

Whooper Swan survey work has suggested that the existing A6 Toome Bypass does not seem to have had a markedly detrimental effect on the attraction of adjacent fields for Swans. The survey work conducted over the last eleven winters shows that swans do not take flight as a result of traffic on the existing A6, and swans have been observed feeding within 10m of the existing road (although a distance of 60m is more typical). Whooper Swans do appear more sensitive to pedestrians.

Based on the survey work, it appears that proximity of favoured fields to the road would not act as a barrier to their use as grazing habitat, providing that other factors (e.g. nutritional content and size) are maintained.

1.4.4 Disturbance of Whooper Swan using an important roosting site (McGrogan's Hole) as a result of nocturnal lighting of the scheme

McGrogan's Hole (Field 707) has been identified as a regular, but intermittent roost site for Whooper Swans feeding in the Toome complex. It is one of three known roost sites for the complex, and supplementary feeding at the site is thought to influence its attraction to Whooper Swans.

The roost site lies approximately 310m from the planned grade-separated Creagh Junction. The AA has considered the effects on Whooper Swans of irregular, night-time disturbance arising from vehicle noise, headlight glare and lighting. Mitigation to reduce the scale of any noise and light reaching the roost site has been included within the scheme design.

1.4.5 Changes to quality of Lough Beg arising from pollution during construction

Whilst the construction works will take place at some distance from the lough shore, construction will take place in close proximity to four minor watercourses, which are tributaries of Lough Beg. Specific mitigation measures have been included within scheme design to avoid the risks of pollution.

1.4.6 Changes to feeding quality of fields arising from changes to hydrological regime caused by embankment construction and road run-off.

Some of the fields within the Toome complex experience surface flooding after periods of heavy rainfall. Part of the planned road will be carried on embankment. This will not impinge on fields that experience flooding. As the flooding occurs as a result of surface ponding, rather than fluvial flooding, the embankment is not anticipated to create sufficient changes in availability of water to prevent the SPA from meeting its conservation objectives with respect to Whooper Swan.

1.4.7 In-combination effects

The AA has considered the effects of the planned scheme both alone and "in combination" with other projects and plans, as is required by the legislation. This includes both the cumulative effects arising from the project and the combined effects of different projects and plans that may influence the same European site.

Other projects in the wider area have been screened for "in combination" effects with the minor residual effects arising from the planned route i.e. displacement of some Swans from fields along the planned route. These projects have been identified through reviews of live applications supplied by DoE Planning and discussions with agencies. Consideration has been given to recently completed projects and those under implementation in addition to those that have been approved, but not yet implemented, and those which have been submitted for approval. The screening identified three projects or plans that could potentially have "in combination" effects: ongoing development of the Creagh Business Park, the effects of the recently completed Toome by-pass, and projects that could arise through the recently adopted Magherafelt Area Plan 2015. Following further consideration of the nature and scale of the minor residual effects arising from this scheme, and the nature and scale of effects arising from these other projects, it was concluded that there would be no adverse effect on the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.

1.5 Mitigation

Mitigation measures to avoid or reduce the scale of effects have been incorporated into the scheme. These comprise both generic design measures and specific measures to address identified LSE. In addition, the generic measures allow for promotion of management of fields within the Toome complex to enhance their attractiveness to Whooper Swans.

1.5.1 Generic measures

Mitigation incorporated within design of the scheme includes:

- Minimising the construction footprint within swan fields and locating drainage features in fields that are not regularly used by swans;
- Placing access routes and soft landscaping to reduce disturbance of swans by people;
- Incorporation of sustainable drainage features.

In addition, a Working Group has been established to oversee and guide the mitigation. This is facilitated by TransportNI and involves representatives from (at least) NIEA - NED, RSPB, DAERA – Countryside Management, and a Whooper Swan expert. This group is reviewing, commenting on, and (where pragmatic) influencing the detailed design and the development of prescriptive contract requirements to implement mitigation. These include, but not necessarily be limited to:

- Timing of works, e.g. restricting certain engineering works to avoid the period when swans are present;
- Adherence to Pollution Prevention Guidelines (PPGs);
- Landscape design to avoid headlight glare; and
- Use of cut-off lanterns or other measures to avoid light spill at McGrogan's Hole roost site.

As TransportNI does not have a direct role in field management, the Working Group is also promoting and facilitating management of fields to promote their attractiveness to Whooper Swans. This is addressing both the size of the fields and the nature and quality of foraging habitat available.

1.5.2 Measures to address specific LSE

1.5.2.1 *Loss of grazing habitat used by Whooper Swan*

The generic mitigation measures, including minimising the scheme footprint, will reduce the scale of effect of the scheme. Whilst there is adequate suitable habitat available within the Toome complex to accommodate any swans that are displaced, the attractiveness of individual fields is dependent on their management. This will be addressed through the Working Group, who will work together to ensure that suitable habitat is maintained in the complex.

1.5.2.2 *Disturbance of Whooper Swans during construction*

Prescriptive contract requirements will be included in the Employer's Requirements, to reduce disturbance to Whooper Swans. There are restrictions upon the type of construction activity that can be undertaken in the area between the Toome bypass and Deerpark Road to a period between mid-March and late September and further restrictions concerning the implementation of other activities, such as the siting of haul roads and location of stockpiles, during the period that swans are present.

1.5.2.3 *Disturbance of Whooper Swans during operation of the scheme*

Pedestrian and cycle facilities along the planned road have deliberately not been positioned along the northern side of the road between Toome bypass and Deerpark Road in an attempt to increase the distance between people and swans. New access points into fields have been positioned to ensure that swans have adequate sight-lines to see approaching vehicles. Access roads are located as close to the mainline as possible to reduce the area of disturbance.

Soft landscaping will be designed to ensure that sightlines are maintained and that disturbance to swans is minimised. These plans will be subject to comment by a Whooper Swan specialist and agreement by the Working Group. The position of accommodation overbridges has been discussed and agreed with a Whooper Swan specialist.

1.5.2.4 *Disturbance of Whooper Swans using McGrogan's Hole roost site*

Following discussions with a Whooper Swan specialist, the scheme design includes landscape planting and a solid bund around the edge of the planned Creagh Junction to reduce noise and light disturbance. The Employer's Requirements also specify the type of lighting that can be used.

1.5.2.5 *Changes to feeding quality of fields arising from changes to hydrological regime*

The embankments have been positioned to avoid fields of highest importance for swans. They will be designed to ensure that water movement through the embankment is maintained, through the use of pipes or drains and choice of material.

1.5.2.6 *Changes to quality of Lough Beg arising from pollution during construction*

The contract documents include a range of prescriptive measures to ensure the risk of pollution is minimised. These include:

- A requirement for the contractor to comply with relevant, published Pollution Prevention Guidelines (PPG1, PPG5, PPG6);

- A requirement to store oils and diesel, and undertake refuelling operations, in a bunded storage area away from watercourses and wetland areas; and A requirement to control litter levels on the site.

Additional pollution control measures will be required for the construction of the Annaghmore Road/ Bellshill Road Junction to avoid pollution of the Moyola River during creation of a Flood Compensation Area. These measures are included in the Employer's Requirements and include the creation of a temporary, impermeable stormwater runoff retention bund.

1.6 Monitoring and Reporting

TransportNI has made a commitment to undertake monitoring of the distribution of the Whooper Swan population within the Toome Complex prior to, during construction and for three years after the road opens to traffic. Annual monitoring reports will be submitted to the Working Group for information.

Whooper Swan populations in the Toome Complex continue to be monitored on an annual basis, and the reports are submitted to RSPB, NIEA and WWT.

Monitoring during construction of the scheme will be supervised by the Employer's site representative and the contractor. The Working Group will meet with the contractor during construction.

TransportNI has also made a commitment to promote an academic study into the variability of field use by swans.

1.7 Consultations

There has been ongoing consultation with a number of Stakeholders during the development of this scheme, including NIEA and RSPB. Their comments have helped guide the scope of the AA and the extent of Whooper Swan survey work that has been undertaken. NIEA and RSPB supported the conclusions of the previous SIAA that was produced.

1.8 Conclusion

In conclusion, having regard to the Environmental Statement, the SIAA, and the consultation responses to this assessment, the likely significant environmental effects of the proposed scheme have been assessed and have been sufficient to inform judgements to be reached with regard to the scheme. Accordingly, the construction and operation of the A6 Randalstown to Castledawson dualling scheme would not by itself, or in combination with other known plans or projects, adversely affect the integrity of Lough Neagh & Lough Beg SPA, or indeed any other Natura 2000 site.

2. INTRODUCTION

This document updates a previous Test of Significance and Appropriate Assessment of proposals to upgrade the A6 between Toome and Castledawson (Scott Wilson, 2008).

2.1 Context for this document and previous Appropriate Assessments

The Habitats Directive (92/43/EEC) as implemented via The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) requires, that prior to granting permission to proceed with a project or plan, a competent authority should consider whether that project or plan will have a "Likely Significant Effect" on a European site, either alone or in combination with other plans or projects. Where a project or plan is considered to have Likely Significant Effects, then the competent authority should, prior to undertaking, or granting permission or consent for that project or plan, make an Appropriate Assessment of the implications for the site in view of that site's conservation objectives.

There is a planned scheme to upgrade the A6 between Randalstown and Castledawson. These improvements, which have been progressed as a single scheme, were previously developed as two separate sections:

- A6 Randalstown to Toome dualling;
- A6 Toome to Castledawson dualling.

Draft Statutory Orders accompanied by an Environmental Statement were published for each section in March 2007 (Scott Wilson Scotland Ltd/Ferguson McIlveen 2007a & 2007b) and Public Inquiries were held 5 – 7 November 2007 (Randalstown to Toome) and 19 – 22 November 2007 (Toome to Castledawson). The Inspector reported to the Department in April 2008 (Robb & McAvoy 2008), recommending that both sections proceed, providing that the proposed layout of the junction at Annaghmore Road/Bellshill Road was revised. In 2011, the then Department for Regional Development (DRD) confirmed its intention to proceed with the scheme. A revised layout for the Annaghmore Road/ Bellshill Junction was prepared, which was located centrally between the Annaghmore Road and Bellshill Road, and a planning application accompanied by an Environmental Statement for this layout was published in November 2010. This revised junction layout was subject to a new Public Inquiry in February 2012. The Inspector reported to the Department, recommending that this alternative layout be revised again in light of comments and objections raised. The Department prepared a revised layout which passed between the Bellshill Road and the Moyola River and subsequently prepared another planning application accompanied by an Environmental Statement, which was published in June 2013. DoE Planning approved this application in December 2014.

In addition to the Environmental Statement, the Toome to Castledawson section of the route was screened for Likely Significant Effects upon European sites, following the requirements of the Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended). The planned route passes close to the boundary of Lough Neagh and Lough Beg Special Protection Area (SPA) and Ramsar site. Consequently, it was concluded that the planned road could have Likely Significant Effects (LSE) upon the site, and an Appropriate Assessment) of the implications for the site in view of its conservation objectives was required. The Randalstown to Toome route was not identified as having Likely Significant Effects on any European site. The revised Annaghmore Road/Bellshill Road Junction was also screened for LSE on European

Sites (URS, 2014). It was concluded that the junction would not have significant effects upon any European Site.

The conclusions of the Appropriate Assessment of the Toome to Castledawson section of the scheme were initially included within the A6 Toome to Castledawson Environmental Statement (2007) and were updated and published as a stand-alone document: "Article 6 Assessment incorporating Test of Likely Significance and Appropriate Assessment", in July 2008 (Scott Wilson, 2008).

This updated version of the Appropriate Assessment has been prepared in recognition of:

- the time that has elapsed since the original Appropriate Assessment was undertaken and changes in background conditions that may have occurred during that time;
- the changes in practice and understanding of the Appropriate Assessment process, including publication of guidance for the Appropriate Assessment of road schemes as part of the Design Manual for Roads & Bridges ("*Assessment of Implications (of Highways and/or Roads Projects) on European Sites (Including Appropriate Assessment*)) (Highways Agency *et al.*, 2009) and recent case law concerning interpretation of the Habitats Directive in respect of Article 6 (Appropriate Assessment);
- the amalgamation of the different proposals into a single scheme and changes to the layout of the Annaghmore Road/ Bellshill Road Junction; and
- an increase in information about one of the qualifying interests of the European site (Whooper Swan).

2.2 Summary of previous screening and appropriate assessment work

Likely Significant Effects on European sites was considered during both selection and design of each section of the route.

Likely Significant Effects (LSE) arising from the Randalstown to Toome section of the route were screened out at an early stage of the project. Potential LSE arising from the Annaghmore Road/ Bellshill Road Junction were considered (URS, 2014). These focused on the hydrological link to the SPA and potential effects arising from sediment releases during construction of the junction and associated Flood Compensation Areas, and pollution during operation of the scheme. However, the scheme includes a number of mitigation measures that are integral to the proposals, which means that there are no LSE from this element of the scheme alone.

By contrast, a number of LSE arising from the Toome to Castledawson section of the route were identified (Scott Wilson, 2008). It was concluded that the road scheme could have LSE upon certain qualifying interests of a single European site: Lough Neagh and Lough Beg Special Protection Area (SPA) and Ramsar site. These LSE were in respect of:

- Land-take for the road resulting in a loss of grazing habitat used by one of the qualifying species (Whooper Swan);
- Disturbance to qualifying species (Whooper Swan) arising from construction activities;

- Introduction of vehicle movements in close proximity to areas used by qualifying species (principally Whooper Swan) leading to disturbance of qualifying species using grazing habitat during operation of the scheme;

- Disturbance to qualifying species (Whooper Swan) using an important roost site; and

- Changes to feeding quality of fields arising from changes to the hydrological regime caused by embankment and road runoff.

The Test of Significance Matrix for the Toome to Castledawson section, which was included within the previous Article 6 Assessment (Scott Wilson, 2008), also considered likely effects of run-off from the new road on water quality of Lough Neagh during both construction and operation. It concluded that LSE on water quality during construction could be avoided by the inclusion of a number of mitigation measures within the scheme. These are summarised in Section 7.7 of this report. LSE arising from run-off during operation of the scheme was also screened out. The scheme will result in a higher level of treatment of road run-off than is currently in place. This will result in an improvement in the quality of run-off compared to the current position (Water Quality & Drainage Chapter of the Environmental Statement for the scheme (Scott Wilson Scotland Ltd/ Ferguson McIlveen LLP, 2007b)).

Likely Significant Effects arising from unregulated discharges of sediment and chemicals to the Moyola River and thence to Lough Neagh and Lough Beg SPA during construction and operation of the Annaghmore Road/ Bellshill Road junction have also been considered (URS, 2014). This includes consideration of effects arising from excavation to create the new road, Flood Storage Areas and a new bridge across the Moyola River. Mitigation measures have been incorporated into the scheme design and the construction methods (See Section 7), which means that LSE can be screened out, and these aspects are not considered further.

The Qualifying Interests of Lough Neagh and Lough Beg SPA and Ramsar site include a number of wintering, passage and breeding bird species (see Section 4.2 for full list). The previous screening and Test of Significance for the Toome to Castledawson section focused upon the effects of the scheme on a single qualifying feature: Whooper Swan, as this species is present at important numbers in fields adjacent to the planned scheme. However, other qualifying species of the SPA (lapwing, golden plover, Greylag goose, wigeon and teal) have also been recorded as present in fields close to the scheme. Likely Significant Effects on these qualifying species have been documented in this updated version of the Statement to Inform the Appropriate Assessment (SIAA).

The Appropriate Assessment for the Toome to Castledawson section of the route concluded that the proposals (incorporating mitigation) would not have an adverse effect upon the integrity of the Lough Neagh and Lough Beg SPA and Ramsar site. The findings of this assessment were reported in the A6 Toome to Castledawson Environmental Statement and published as part of the Orders for the scheme, and subject to scrutiny as part of the public inquiry process.

2.3 Guidance and the Assessment process

This document has been prepared following the approach set out in Volume 11, Section 4, Part 1 of the Design Manual for Roads and Bridges (DMRB): "*Assessment of Implications (of Highways and/or Roads Projects) on European Sites (including Appropriate Assessment)*". The information in the original Test of Significance and

Appropriate Assessment for the Toome to Castledawson section of the scheme (Scott Wilson, 2008) has been edited and re-ordered to follow more closely the proposed structure for "*Statements to Inform an Appropriate Assessment*", as recommended within DMRB. This document also incorporates information contained in the Environmental Statements for both elements of the scheme (Randalstown to Toome and Toome to Castledawson), and the Habitats Regulations Assessment for the Annaghmore Road/ Bellshill Road Junction (URS, 2014).

The Northern Ireland Environment Agency (NIEA) has developed a template to assist Competent Authorities in ensuring that their projects will not have an adverse effect on the integrity of any Natura 2000 site. It is based on a template developed by the European Commission. Whilst the definitive structure of that template has not been followed within this document, it does cover all the aspects included within the template. As noted above, this document follows the structure proposed by DMRB as being most suitable for a road project.

Other guidance documents that have been used to support the Appropriate Assessment include:

- Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora;
- Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC);
- Assessment of plans and projects significantly affecting Natura 2000 Sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (EC, Jan 2007);
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended);
- The Habitats Regulations – A Guide for Competent Authorities (EHS, 2002); and
- The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2007 – Guidance Notes.

The terminology for Habitats Regulations Appraisal[1] and Appropriate Assessment that is used in this report broadly follows definitions as used by Tyldesley (2012).

2.4 Sources of information

This document draws upon information about the scheme that is contained in numerous reports produced to support the scheme, including the Environmental Statements for each section of the project (Scott Wilson Scotland Ltd/Ferguson McIlveen LLP, 2007a & 2007b). These documents are publically available through the

[1] *The term "Habitats Regulations Appraisal" is used to define the whole process of considering whether a plan is likely to have significant effects upon a European site and the "Appropriate Assessment" of the effect upon the integrity of the site. Some Authors may use the term "Habitats Regulations Assessment" to describe the same process.*

TransportNI (formerly Roads Service) website (www.infrastructure-ni.gov.uk/topics/road-improvements/a6-randalstown-castledawson-dualling-scheme).

The previous screening and Appropriate Assessment of the Toome to Castledawson section of the route was prepared by Scott Wilson (now AECOM). That document drew upon ecological information collected by Spouncer Associates (2006), including a detailed survey and assessment of the numbers and distribution of Whooper Swans using fields likely to be affected by the scheme (McElwaine & Spouncer, 2006). It was also informed by detailed discussions of route design and mitigation with G. McElwaine and various statutory and non-statutory bodies.
As part of the commitments made during the scheme development, Whooper Swan numbers have been monitored annually within the Toome area since winter 2005/06. This updated Statement to Inform the Appropriate Assessment is based upon and incorporates the data and analysis contained within the previous Test of Significance and Appropriate Assessment (Scott Wilson, 2008) and data about Whooper Swan numbers that has been collected since the original statement was produced (McElwaine 2007 - 2016).

Changes to the design of the Annaghmore Road/ Bellshill Road Junction have occurred since the original Appropriate Assessment was undertaken. The new design has been subjected to a Habitat Regulations Appraisal (URS, 2014). This document includes reference to and draws on conclusions made in that report.

This Statement to Inform the Appropriate Assessment (SIAA) also gives further consideration to “in-combination” effects (e.g. as a result of new schemes consented since the previous Assessment was undertaken), including effects upon other qualifying interests of the Lough Neagh and Lough Beg SPA and Ramsar site.

This version of the SIAA has been prepared by Sue Bell BSc, MSc CEnv, CEcol, MCIEEM, C.WEM, MCIWEM with inputs and additions by Gareth Coughlin BSc (Hons), MPhil, CEnv, CSci, C.WEM, FCIWEM of AECOM. It has been produced on behalf of AECOM and at the request of TransportNI. It forms a “shadow” Appropriate Assessment, which TransportNI, as Competent Authority, may adopt as the basis for its conclusions. It is based on field work and analysis undertaken by other individuals and organisations (as listed above). Whilst these reports have been reviewed for obvious errors, they have not been subject to independent verification and field checks.

3. BACKGROUND TO THE PROJECT

3.1 Purpose and objectives of project

The A6 forms part of the Key Transport Corridor (KTC) between the two principal cities of Belfast and Londonderry and is of strategic and economic importance within Northern Ireland. Increasing traffic will add to congestion on the existing road between Randalstown and Castledawson and reduce road safety. Consequently, TransportNI plan to construct a dual carriageway from the M22 Motorway at Randalstown via the existing dual carriageway Toome Bypass to the Castledawson Roundabout. The dual carriageway will deliver improved road safety and reduced journey times for both strategic and local road users, and the proposal is a priority scheme in the Regional Strategic Transport Network Transport Plan 2015. A new junction will be constructed to connect the Annaghmore and Bellshill Road to the new dual carriageway.

The planned improvements were initially progressed concurrently as two separate schemes, which lie either side of the existing Toome dual carriageway bypass:

- Randalstown to Toome – this covers a stretch of road approx. 7.3 km in length, lying between Randalstown and the eastern side of Toome; and
- Toome to Castledawson – this also covers a stretch of road approx. 6.7 km in length, lying between the western side of Toome and the Castledawson Roundabout.

Each scheme was subject to a separate draft Direction Order, draft Vesting Order, and Environmental Statement. Separate Public Inquiries were held in November 2007. The Inspector recommended that both schemes proceed, providing that the proposed layout of the junction at Annaghmore Road/Bellshill Road was revised. A modified junction layout for the Annaghmore Road/ Bellshill Road has been developed and reviewed at Public Inquiry. TransportNI is planning to implement the upgrades, including the new junction scheme, as a single project.

The Direction Order and Environmental Statement Notice to Proceed for each section of the scheme were confirmed in March 2011; the Vesting Order will remain in Draft until funding for the scheme has been confirmed.

Further details on the strategic need for the scheme are set out in Section 1.2 of each of the Environmental Statements produced to accompany each section of the project (Scott Wilson Scotland Ltd/Ferguson McIlveen LLP, March 2007a & 2007b). The location of the planned scheme is shown in Figure 1.

A summary of the Habitats Regulations Assessment (HRA) work that has been undertaken to date was provided in Section 2.2 of this SIAA. These assessments concluded that part of the overall scheme - the section lying between Toome and Castledawson - would give rise to Likely Significant Effects upon Lough Neagh and Lough Beg Special Protection Area and Ramsar site. With the inclusion of mitigation measures, it was concluded that there would be no adverse effect upon the integrity of the SPA.

This Statement to Inform an Appropriate Assessment has been prepared to accompany the whole scheme, but in light of the previous screening exercises, it focuses on the LSE arising from the section of road lying between Toome and the Castledawson Roundabout.

N

Notes:

- AREA OF INTEREST

SCALE: N.T.S.

Project Title
A6 RANDALSTOWN TO CASTLEDAWSON DUALLING

Client
transportni

Drawing Title
LOCATION OF SCHEME

Purpose of issue
FOR INFORMATION

AECOM Internal Project No.
47062632

Scale @ A3
AS SHOWN

Drawing Number
FIGURE 1

Rev
0

AECOM Infrastructure & Environment UK Limited Beechill House
Beechill Road, Belfast
BT8 7RP
T: +44 (0)28 9070 5111
F: +44 (0)28 9079 5651
www.ursglobal.com

AECOM

Sue Bell ECOLOGY

3.2 Scheme design & land take

3.2.1 Introduction

A brief description of the route proposals is provided below and is sub-divided into the two main sections of the route: Randalstown to Toome, and Toome to Castledawson. Greatest detail is provided for the section lying between Toome and Castledawson, as this is the stretch that has been previously identified as giving rise to LSE upon Lough Neagh and Lough Beg SPA and Ramsar site.

Further details of the design features of each section of the road can be found in Section 1.5 of the Environmental Statements for each scheme, which can be viewed on the TransportNI website (www.infrastructure-ni.gov.uk/topics/road-improvements/a6-randalstown-castledawson-dualling-scheme).

3.2.2 Randalstown to Toome

The scheme will provide 7.3km of newly-constructed Dual 2-Lane All Purpose (D2AP) carriageway between Randalstown and Toome. The existing single carriageway road will be retained to provide local access to Moneynick and the surrounding area.

Each carriageway will comprise two traffic lanes, each 3.65m wide. These will be bordered on both sides by 1m wide edge strips. There will also be a 2m wide verge. The carriageways will be separated by a central reservation approximately 2.5m wide. Lay-bys have been included in the scheme.

The scheme will commence at the western end of the M22 motorway at Randalstown. It will deviate from the existing road and continue offline to the south of the existing Moneynick Road, before joining the Toome Bypass, east of Toome, at the Drumderg Roundabout. A new compact grade-separated junction at the end of the M22 Motorway will connect to the Moneynick Road at Randalstown.

3.2.3 Toome to Castledawson (incorporating Annaghmore Road/ Bellshill Road Junction)

The route comprises a combination of on-line upgrading and new offline construction to provide 6.7km of Dual 2-Lane All Purpose (D2AP) carriageway. It also involves construction of three new compact grade-separated junctions, footways, a new bridge over the River Moyola and new vehicle and pedestrian accommodation bridges. The proposed route on the Toome to Castledawson stretch would pass close to, but outwith the boundary of, one European Site (Lough Neagh and Lough Beg SPA – see Section 4) for a distance of approximately 1.2 kilometres. The closest point of the earthworks for the scheme lies within approximately 105m southwest of the boundary of the SPA (see Figures 2 & 3).

The cross-sectional dimensions of the carriageway will be the same as for the section between Randalstown and Toome (see Section 3.2.2).

The offline section of the new road will leave the existing Toome Bypass, east of the Creagh Roundabout, in a north-westerly direction on a newly constructed embankment that is no more than 3m high. It will pass close to, but not encroach upon, the boundary of the Lough Neagh and Lough Beg SPA (see Section 4) before continuing in a north-westerly direction towards Aughrim Hill.

Both the existing Toome bypass and planned scheme would form the new alignment of the strategic route after construction.

Notes:

SPECIAL PROTECTION AREA (SPA) BOUNDARY

Project Title

A6 RANDALSTOWN TO CASTLEDAWSON DUALLING

Client

transportni

Drawing Title

SCHEME LAYOUT
(AERIAL BACKGROUND)

Purpose of issue

FOR INFORMATION

AECOM Internal Project No.
47062632

Scale @ A3
1:20,000

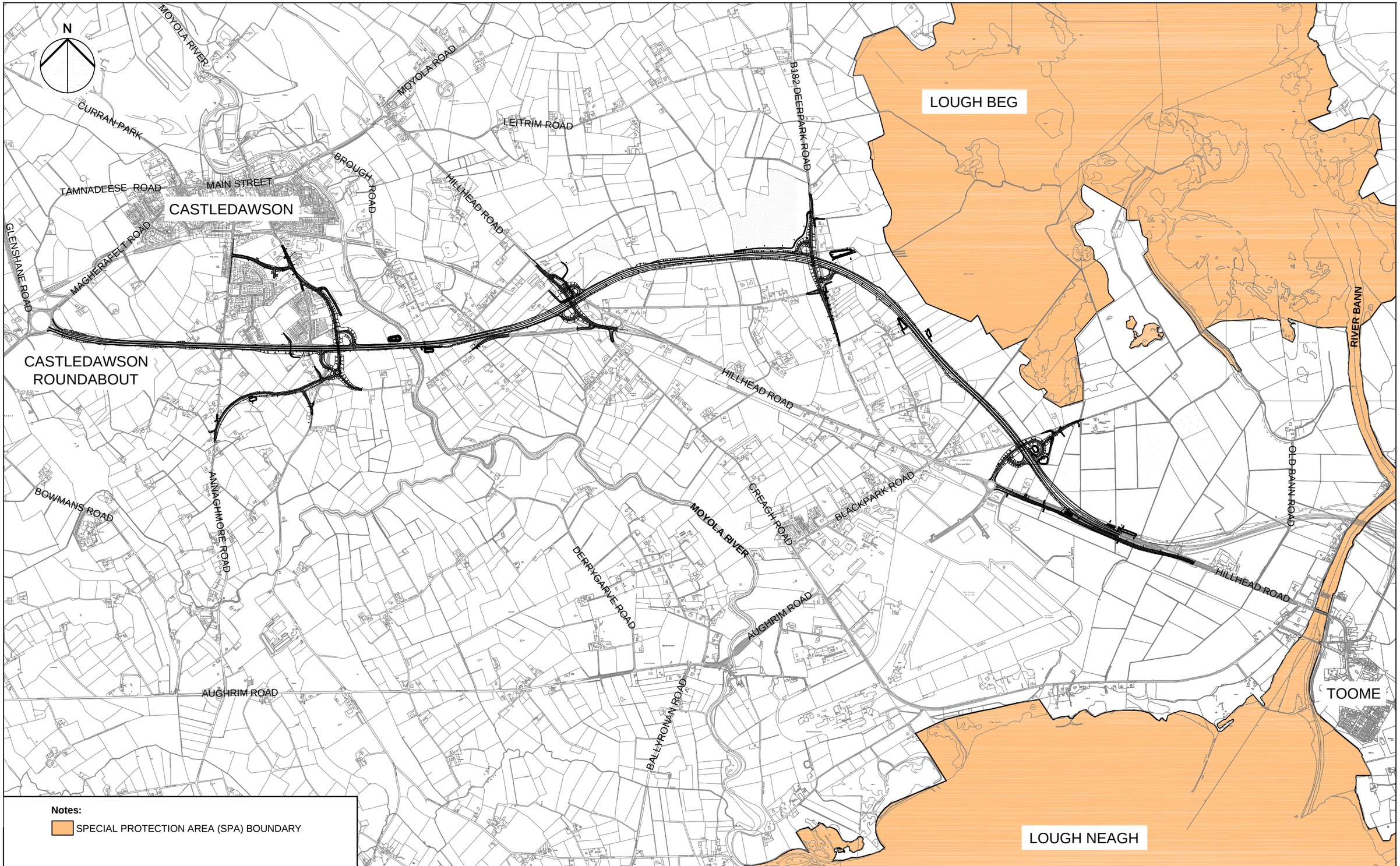
Drawing Number
FIGURE 2

Rev
0

AECOM Infrastructure & Environment UK
Limited Beechill House
Beechill Road, Belfast
BT8 7RP
T: +44 (0)28 9070 5111
F: +44 (0)28 9079 5651
www.ursglobal.com

AECOM

Sue Bell ECOLOGY



Notes:

SPECIAL PROTECTION AREA (SPA) BOUNDARY

Project Title

A6 RANDALSTOWN TO CASTLEDAWSON DUALLING

Client

transportni

Drawing Title

SCHEME LAYOUT
(VECTOR BACKGROUND)

Purpose of issue

FOR INFORMATION

AECOM Internal Project No.
47062632

Scale @ A3
1:20,000

Drawing Number
FIGURE 3

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0

AECOM Infrastructure & Environment UK
Limited Beechill House
Beechill Road, Belfast
BT8 7RP
T: +44 (0)28 9070 5111
F: +44 (0)28 9079 5651
www.ursglobal.com

AECOM

Sue Bell ECOLOGY

The Annaghmore Road/ Bellshill Road Junction lies to the western end of the route. The junction proposals cover an area of c. 11ha to either side of the existing road. The proposed junction is situated adjacent to the Moyola River, which is a tributary of Lough Neagh (which lies approximately 5.5km downstream). A Flood Compensation Area is also required as part of this junction scheme.

The scheme design includes a number of in-built mitigation measures (see Section 5). These measures include minimising the footprint of the scheme, inclusion of sustainable drainage features, and use of construction phase runoff temporary storage measures.

The planned route will result in the loss of habitat, which is a mixture of reseeded and/or improved pasture with tree/scrub boundaries (further details of the habitat affected are included in Table 25 of the winter 2005/2006 Whooper Swan Report and in Section 6.1 of this SIAA). Although, none of this habitat lies within the boundary of the SPA, some of these areas are used by qualifying interests of the SPA. The areas which will be affected are discussed in Section 6 of this report.

3.3 Timescales

The Direction Order and Environmental Statement Notice to Proceed were confirmed in March 2011 for each part of the scheme; Vesting Orders will remain in Draft until funding for the scheme has been confirmed. At present, it is envisaged that construction will commence in autumn 2016.

It is anticipated that construction of the scheme will take place over a 3½ to 4 year period.

4. PROTECTED SITES POTENTIALLY AFFECTED BY THE PROPOSALS

4.1 Introduction

The Habitats Regulations require consideration of Likely Significant Effects on European sites (also known as Natura 2000 sites). These comprise Special Protection Areas (SPAs) designated under the Birds Directive and Special Areas of Conservation (SACs) designated under the Habitats Directive.

The scheme runs close to, but remains outside the boundary of one European site: Lough Neagh and Lough Beg Special Protection Area (SPA). The proximity of the route to the boundary of the SPA is shown in Figure 3. Lough Neagh and Lough Beg SPA was classified on 1st April 1999. The SPA includes three eutrophic water bodies: Lough Neagh; Lough Beg; and Portmore Lough; together with surrounding swamp, fen, wet grassland and swampy woodland. The area of the site is 41,188 ha.

Lough Neagh and Lough Beg are also covered by other statutory nature conservation designations. The boundary of the SPA follows the boundaries of Lough Neagh Area of Special Scientific Interest (ASSI), Lough Beg ASSI and Portmore Lough ASSI. The area has also been designated as a Ramsar site on 5th January 1976 (i.e. a wetland of International importance). The Ramsar boundary largely follows that of the SPA, though extends slightly beyond the SPA boundary, south of Lough Beg.

4.2 Qualifying Interests

Lough Neagh and Lough Beg SPA has been classified for populations of wintering and breeding bird species.

Details of the qualifying interests are provided in Table 4.1 and Appendix A. The list of qualifying species at the site has been amended since the site was originally classified (01/04/1999). These amendments have resulted from a UK-wide review of SPAs co-ordinated by the Joint Nature Conservation Committee (JNCC) in the late 1990s, which was published in 2001. Updates are also made in the light of new bird survey data that have been collected. The list of qualifying interests shown in Table 4.1 includes all species listed on the original citation for the SPA (DOE, 1998), the Qualifying Interests published by JNCC in 2001 as a result of the UK review of SPAs[2], and the lists of Qualifying Species included within the latest Site Condition Monitoring report available for Lough Neagh and Lough Beg SPA (NIEA, 2013).

There have been some changes in the Qualifying Interests since the site was first classified. Some of these differences are in relation to the Article of the Birds Directive under which a particular species qualifies. For example, Golden Plover now qualifies under Article 4.1 rather than Article 4.2. Some new species have been identified as Qualifying Interests. For example, the breeding seabird assemblage was not included on the citation at the time of the original classification of the SPA. One species, Mute Swan, is listed as a Qualifying Interest on the original citation (as a component of the over-wintering assemblage of birds qualifying under Article 4.2), but is not listed on the SPA data form for the site (JNCC, 2006) or on the updated SPA description following review of sites (JNCC, 2001) or in the Site Condition Monitoring Report (NIEA, 2013). As a precaution, the Likely Significant Effects of the planned road scheme on all Qualifying Interests have been re-screened in this document (see Section 4.6).

[2] *http://jncc.defra.gov.uk/default.aspx?page=2073*

Table 4.1: Qualifying Interests of the Lough Neagh and Lough Beg SPA (based on updated list (2001) included on JNCC website[3] and additions included in NIEA Site Condition Monitoring report for site (2013).

Article of Birds Directive 2009/147/EC	Qualifying Interests
Article 4.1: *Regularly supporting populations of International importance (1% or more of the GB population) of species listed in Annex I of the Directive in winter*:	• Bewick's Swan (*Cygnus columbianus bewickii*) • Whooper Swan (*Cygnus cygnus*) • Golden Plover (*Pluvialis apricaria*)
Article 4.1: *Regularly supporting populations of International importance (1% or more of the GB population) of species listed in Annex I of the Directive during breeding season*:	• Common tern (*Sterna hirundo*)
Article 4.2: *Regularly supporting populations of International importance (1% or more of the biogeographical populations) of migratory species (other than those listed in Annex I) in winter:*	• Goldeneye (*Bucephala clangula*) • Great Crested Grebe (*Podiceps cristatus*) • Pochard (*Aythya farina*) • Scaup (*Aytha marila*) • Shelduck (*Tadorna tadorna*)[1] • Tufted duck (*Aythya fuligula*) • Black-headed Gull (*Larus ridibundus*)[2]
Article 4.2: *Wetland of international importance, regularly supporting over 20,000 waterbirds in winter (waterbirds as defined by the Ramsar Convention).*	• >20,000 species of wintering wildfowl including nationally and internationally important numbers of species listed above AND: • Coot (*Fulicara atra*) • Gadwall (*Anas stepera*) • Little grebe (*Tachybaptus ruficollis*) • Shoveler (*Anas clypeata*) • Cormorant (*Phalacrocorax carbo*) • Greylag goose (*Anser anser*) • Teal (*Anas crecca*) • Mallard (*Anas platyrhynchos*) • Wigeon (*Anas penelope*) • Lapwing (*Vanellus vanellus*) • Mute Swan (*Cygnus olor*)[3]

[3] http://jncc.defra.gov.uk/default.aspx?page=2073)

Article of Birds Directive 2009/147/EC	Qualifying Interests
Article 4.2: *Supporting a seabird assemblage of International importance during the breeding season.*	• Breeding seabird assemblage including[2]: • Lesser Black-backed Gull (*Larus fuscus*) • Common Gull (*Larus canus*) • Black-headed Gull (*Larus ridibundus*) • Common Tern (*Sterna hirundo*)

Key:

1: Not listed as qualifying species by JNCC, but included in NIEA Site Condition Monitoring Report (2013)

2: Listed as qualifying species by JNCC, but NOT included in NIEA Site Condition Monitoring Report (2013).

3: Only listed on original SPA citation for the site (NIEA, 1998).

4.3 Conservation Objectives

The conservation objectives for Lough Neagh and Lough Beg SPA have been taken from a document published by NIEA (undated) to accompany the original citation. This means that not all qualifying species are covered.

The Conservation Objectives for Lough Neagh and Lough SPA are "*To maintain each feature in favourable condition*".

There is also a series of component objectives for some of the qualifying interests. These are summarised in Table 4.2 below. Further details about the conservation objectives and proposed management for the site are included in Appendix B.

Table 4.2: Component Objectives for Qualifying Interests of Lough Neagh and Lough Beg SPA *(Source: NIEA, undated)*

Feature	Component Objective
• Common tern breeding population • Great Crested Grebe breeding population	• No significant decrease in population against national trends, caused by on-site factors • Fledging success
• Great Crested Grebe passage population	• No significant decrease in population against national trends, caused by on-site factors.
• Whooper Swan wintering population • Bewick's Swan wintering population • Golden plover wintering population • Great crested grebe wintering population • Goldeneye wintering population • Scaup wintering population • Pochard wintering population • Tufted duck wintering population • Little grebe wintering population • Cormorant wintering population • Greylag Goose wintering population • Shelduck wintering population • Wigeon wintering population • Gadwall wintering population • Teal wintering population • Mallard wintering population • Shoveler wintering population • Coot wintering population • Lapwing wintering population	• No significant decrease in population against national trends, caused by on-site factors.
• Waterfowl assemblage wintering population	• No significant decrease in population against national trends, caused by on-site factors. • Maintain species diversity contributing to the Waterfowl Assemblage.
• Habitat	• To maintain or enhance the area of natural and semi-natural habitats potentially usable by feature bird species, subject to natural processes. • Maintain the extent of main habitat components, subject to natural processes. • Maintain or enhance sites utilised as roosts.

N.B. Only includes some of the Qualifying Interests for reason given above.

4.4 Condition of Qualifying Interests

4.4.1 Overview

NIEA undertakes "condition monitoring" of designated sites. Data for wintering bird species is derived from Core Counts undertaken as part of the Wetland Bird Survey (WeBS), organised by the British Trust for Ornithology (BTO). Breeding data for Common Terns and Great Crested Grebe were collected as part of dedicated surveys. The BTO also publishes the WeBS data, including identification of "Alerts" for species that are considered to have shown declines in numbers. The Irish Whooper Swan Study Group (IWSSG) counts Whooper Swans throughout Ireland every winter. In addition, as part of work to assess the effects of this scheme, an annual monitoring programme of Whooper Swans present within fields west of Toome has been carried out since 2005, which was extended to include fields around Gortgill in 2008 (McElwaine & Spouncer, 2006; McElwaine, 2007 - 2016).

4.4.2 Site Condition Monitoring

The assessment of condition is made by comparison of numbers against a Common Standards Monitoring baseline index (CSM). These are derived from historical records as the minimum annual total of the species recorded from the 7 years prior to designation as a SPA. The five-year means of species at a site are calculated from the most recent data sets available and are compared against the CSM baseline. Sites that are in favourable condition have a five-year mean that is greater than the CSM index (NIEA, 2013).

A summary of the status of each of the qualifying interests, for which data are available, is included as Table 4.3 (NIEA, 2013).

Table 4.3: Assessment of condition of qualifying interests of Lough Neagh & Lough Beg *(Source: NIEA, 2013)*

Qualifying feature	Condition
Bewick's Swan (wintering)	Unfavourable
Whooper Swan (wintering)	Favourable
Golden Plover (wintering)	Favourable
Common Tern (breeding)	Favourable
Goldeneye (wintering)	Unfavourable
Great Crested Grebe (wintering)	Favourable
Pochard (wintering)	Unfavourable
Scaup (wintering)	Favourable
Tufted Duck (wintering)	Unfavourable

Qualifying feature	Condition
Great Crested Grebe (breeding)	Favourable
Coot (wintering)	Unfavourable
Gadwall (wintering)	Favourable
Little Grebe (wintering)	Favourable
Shoveler (wintering)	Unfavourable
Cormorant (wintering)	Favourable
Greylag Goose (wintering)	Favourable
Teal (wintering)	Unfavourable
Mallard (wintering)	Unfavourable
Wigeon (wintering)	Unfavourable
Lapwing (wintering)	Favourable
Shelduck (wintering)	Favourable
Waterbird assemblage (wintering)*	Unfavourable
Seabird assemblage (including Black-headed Gull) (breeding)	Not reported
Great Crested Grebe (passage)	Favourable

*Note: * Separate data for Mute Swan not available*

Thirteen of the features have been assessed as being in Favourable condition. This includes two of the three species that qualify under Article 4.1 of the Birds Directive (Whooper Swan and Golden Plover). Bewick's Swan has been classified as unfavourable as no birds were recorded from the site during the survey periods over the previous 5 years.

Three of the diving duck species (Pochard, Tufted duck and Goldeneye) have all shown a decline in numbers since winter 2001-02 (Allen & Mellon, 2006). There is some evidence to suggest that there are site-specific reasons for these observed declines, including increasing nutrient levels within Lough Neagh, which could have triggered changes in the chironomid larvae that are a major food item of these birds (Maclean *et al*, 2006). Recent research suggests that primary productivity at the site has declined, leading to a reduction in the availability of invertebrate prey. These changes have coincided with changes in climate, meaning that diving ducks have access to suitable habitat closer to their summer breeding grounds (Tománková, 2013).

4.4.3 *Bird Alerts*

The BTO publishes Alerts for wetland species that have undergone major declines in numbers. Alerts are based on trends in species numbers assessed over the short-, medium- and long-terms (5, 10 and up to 25 years respectively) and also since site-designation. High-Alerts are issued for species that have exhibited a decline in numbers in excess of 50%; Medium-Alerts are issued for species where numbers have declined between 25% and 50%. The Alerts system also makes a comparison between changes at a site and regional and national trends to suggest whether changes are likely to be a response to local pressures, or broader-scale changes.

Alerts have been triggered for 12 of the 18 species that could be assessed for Lough Neagh and Lough Beg SPA (See Table 4.4) (Cook *et al.,* 2013). All these species are qualifying interests of the ASSI and SPA. The status of Greylag Goose, another qualifying interest, has not been assessed.

High Alerts have been triggered for ten of the qualifying interests (marked in red in Table 4.4); Medium Alerts have been triggered for eight of the qualifying interests (marked in amber in Table 4.4). The level of Alert triggered for a particular species may vary depending on the timescale over which changes are considered. For all but one of these species (Shelduck) a comparison between trends at the site and broad scale trends suggests that these declines may be driven by factors un-related to the site (Cook *et al.*, 2013). This is considered further below for each qualifying interest.

Table 4.4: Species Alerts issued by BTO for Lough Neagh and Lough Beg SPA (*Source : Cook et al., 2013*)

Species	First winter	Reference winter	% change in numbers over specified time period		
			Short-term	Medium-term	Long-term
Bewick's Swan	89/90	08/09	-93	-98	-100
Whooper Swan	89/90	09/10	10	36	46
Greylag Goose (Icelandic)	-	-	-	-	-
Shelduck	89/90	09/10	-18	-17	-28
Wigeon	89/90	09/10	-46	-52	-43
Gadwall	89/90	09/10	-18	-19	24
Teal	89/90	09/10	-33	-42	-57
Mallard	89/90	09/10	-19	-28	-29
Shoveler	89/90	09/10	-15	-16	-62
Pochard	89/90	09/10	-7	-66	-76
Tufted Duck	89/90	09/10	-27	-70	-69
Scaup	89/90	09/10	-5	4	150

Species	First winter	Reference winter	% change in numbers over specified time period		
Goldeneye	89/90	09/10	-27	-59	-71
Little Grebe	-	-	-	-	-
Great Crested Grebe	89/90	09/10	4	17	-10
Cormorant	89/90	09/10	-14	-14	70
Coot	89/90	09/10	-24	-73	-67
Golden Plover	92/93	09/10	-33	-60	-33
Lapwing	92/93	09/10	-22	-57	-40

Note: Only species shown in Red or Amber are subject to Alerts

Key:

***Red** indicates a High Alert for the specified time period;*

Amber indicates a Medium Alert for the specified time period.

Short-term: 5 years; Medium-term: 10 years; Long-term: up to 25 years

4.4.3.1 *Swans*

Populations of both Bewick's and Whooper Swans have been counted on a five-yearly basis since 1986 by the Irish Whooper Swan Study Group (IWSSG). Historically, Toome was one of the sites used most regularly by Bewick's Swan in Northern Ireland (McElwaine & Spouncer, 2006), but there has been a continued decline in the numbers of that species wintering in Ireland. Numbers recorded during census of the species have declined from 145 in 1995, to 35 in 2000, to 13 in 2005 (Worden *et al.*, 2006) and only a single bird was recorded in Northern Ireland in 2010 from the Upper Bann River (Boland *et al.*, 2010). This is consistent with the SCM conclusions for the site, where no Bewick's Swans were recorded from Lough Neagh for the five years leading up to the assessment (NIEA, 2013). Only a single bird has been recorded from the Toome complex during a single winter (2007/08) between winters 2005/06, and 2013/14 (McElwaine & Spouncer, 2006; McElwaine, 2007 – 2014). It is thought that the reasons for the observed declines are not linked to site-specific factors, given the widespread decline in numbers throughout Ireland (Cook *et al.*, 2013).

By contrast, numbers of Whooper Swans remain high and have increased within the Lough Neagh and Lough Beg SPA in recent years. Lough Neagh and Lough Beg combined have been identified as the top site for this species in Ireland during the 2000, 2005 and 2010 swan censuses, holding 1421, 1517, and 1803 Whooper Swans respectively (Boland *et al.*, 2010). The importance of fields around Toome for this species has been demonstrated through annual monitoring work undertaken for this study. Whilst there has been some annual fluctuation in numbers, the five-year average peak numbers of Whooper Swan in fields near Toome have increased from 389 (calculated in the five-year period up to and including winter 2005/06 (McElwaine & Spouncer, 2006)) to 504 (calculated in the five-year period up to and including winter 2012/13 (McElwaine, 2013)).

The BTO records that wintering Mute Swan numbers, as measured by Wetland Bird Surveys, have increased from the mid-1980s to around 2000 (Austin *et al*., 2014).

4.4.3.2 *Shelduck*

The status of shelduck is based on information held on the WeBS website (Cook *et al.,* 2013). There has been a long-term decline in the numbers of shelduck over-wintering on Lough Neagh and Lough Beg SPA, resulting in BTO triggering Alerts for the long-term. The pattern of change does not appear to be tracking either the Northern Ireland or the overall British trend, and it is thought that the decline in numbers at Lough Neagh and Lough Beg are most likely due to site-specific pressures.

4.4.3.3 *Wigeon*

The status of Wigeon is based on information held on the WeBS website. The numbers of Wigeon over-wintering at the site have been decreasing in the medium term, as have numbers throughout Northern Ireland and Great Britain. As the proportion of birds supported by this site remains stable, it is thought that the decline in numbers is due to broad-scale population trends, rather than conditions at this site (Cook *et al.,* 2013).

4.4.3.4 *Gadwall*

The numbers of Gadwall that over-winter on Lough Neagh and Lough Beg SPA have remained relatively stable in the long term, as have numbers over-wintering in Northern Ireland, although the site trend does not appear to be tracking that of the rest of Northern Ireland. The site is supporting an increasing proportion of the regional and country-wide numbers, suggesting the environmental conditions remain relatively favourable and that this site is becoming increasingly important for this species (Cook *et al.,* 2013).

4.4.3.5 *Teal*

The numbers of Teal over-wintering at Lough Neagh and Lough Beg are decreasing in the long-term, although the numbers of this species over-wintering in Northern Ireland appear to have remained relatively stable over the same period. The declining proportion of the regional numbers supported by this site suggests that site-specific pressures may be affecting this species (Cook *et al.,* 2013). Alerts have been triggered for the long-, medium- and short-terms and the period since designation.

4.4.3.6 *Mallard*

The numbers of Mallard over-wintering at the site have been stable in the short-term, although they have previously declined. The proportion of both the regional and country-wide trends supported by this site remains stable, despite declining numbers, suggesting that this decline is being driven by broad-scale shifts in distribution rather than local pressures (Cook *et al.,* 2013).

4.4.3.7 *Shoveler*

The numbers of over-wintering Shoveler have been stable in the medium-term, although they previously showed a decline, triggering Alerts for the long-term and the period since designation. By contrast, over-wintering numbers within Northern Ireland have decreased in the long-term. Whilst the site trend does not appear to be tracking that of Northern Ireland, it is similar to the regional and British trends, suggesting that there are broad-scale population trends, rather than site-specific factors at work.

4.4.3.8 *Pochard*

Over-wintering Pochard numbers have been stable in the short-term, although they previously declined. Alerts have been triggered for the medium- and long-terms and the period since designation. As the trends at the site are similar to the regional and British trends, it is thought that the declining numbers underpinning these Alerts result from broad-scale population trends.

The highest densities of Pochard appear to occur in the south of Lough Neagh (Maclean, 2006) and are beyond the scope of influence of the planned scheme.

4.4.3.9 *Tufted Duck*

The numbers of over-wintering Tufted Duck at the site have been decreasing in the medium-term, having previously peaked. Alerts have been triggered for the long-, medium- and short-term, and the period since designation. The trend in numbers at the site is similar to observed trends at the regional and British level, suggesting that the declining numbers result from broad-scale population trends. Highest densities of tufted duck appear to be associated with the southern shores of Lough Neagh (Maclean, 2006).

4.4.3.10 *Scaup*

By contrast, there has been an increase in the numbers of over-wintering Scaup on Lough Neagh and Lough Beg SPA over the long-term. The stable proportion of regional numbers supported by this site suggests the environmental conditions remain relatively favourable for this species. There are low densities of this species recorded from Lough Beg (Maclean 2006).

4.4.3.11 *Goldeneye*

Goldeneye is another species for which over-wintering numbers at the site have been declining in the long-term. Alerts have been triggered for the long-, medium- and short-terms and the period since designation. There are similarities between the declining site trend and the regional and British trends, suggesting that the declining numbers underpinning these Alerts result from broad-scale population trends. Highest densities of this species are associated with the south-west areas of Lough Neagh and the central area of Lough Beg.

4.4.3.12 *Little Grebe*

Over-wintering numbers of Little Grebe at the site have remained relatively stable long-term. The stable proportion of both regional and country-wide numbers supported by this site suggests the environmental conditions remain relatively favourable for this species.

4.4.3.13 *Great Crested Grebe*

The numbers of over-wintering Great Crested Grebe at the site have also remained relatively stable long-term. However, the numbers present at the site represent an increasing proportion of regional and country-wide numbers of this species. This suggests the environmental conditions remain relatively favourable and that Lough Neagh and Lough Beg are becoming increasingly important for this species.

4.4.3.14 *Cormorant*

The numbers of over-wintering Cormorant at the site are stable in the medium-term, having previously increased. The proportions of both regional and country-wide numbers supported by this site suggest the environmental conditions remain relatively favourable for this species.

4.4.3.15 *Coot*

There have been decreasing numbers of over-wintering coot at the site in the medium-term, although numbers were previously relatively stable. Alerts have been triggered for the medium- and long-terms and the period since designation. The trend in numbers at Lough Neagh and Lough Beg is similar to declining numbers at the regional and British level, which suggests that the declining numbers underpinning these Alerts result from broad-scale population trends.

4.4.3.16 *Golden Plover*

Golden Plover wintering numbers have also been decreasing at Lough Neagh and Lough Beg in the medium-term and have decreased in Northern Ireland in the short-term. The declines in numbers are thought to result from broad-scale population trends (Cook *et al.,* 2013).

4.4.3.17 *Lapwing*

Lapwing numbers have also been decreasing in the medium-term at the site and at a Northern Ireland level. The similarity between the declining site trend and the regional and British trends suggests that the declining numbers underpinning these Alerts result from broad-scale population trends (Cook *et al.,* 2013).

4.5 Value of site and the qualifying interests to the Natura 2000 network

All-Ireland studies of swans have shown the importance of the Toome area for wintering and migrating Whooper Swans. Lough Neagh and Lough Beg combined were found to be the top site for this species in 2000 and 2005 (McElwaine & Spouncer, 2006) and again in 2010 (Boland *et al.,* 2010).

Both WeBS and IWSSG counts show that the annual peaks for Whooper Swans in 2005/06 were about double the minimum qualifying criterion as a site of international importance. On many occasions, individual fields within the complex held peaks above the nationally important figure (McElwaine & Spouncer, 2006).

In addition, the Toome site provides important stopover habitat for Swans en route to other wintering sites. There is some indication that the area is used as a staging area by Whooper Swan on the return (spring) migration to Iceland (Cook *et al.,* 2013).

Within Europe, it has been estimated that around two-thirds of the Icelandic flyway Whooper Swans have been recorded from the island of Ireland in 2000 & 2005, meaning that the Lough Neagh/Lough Beg area is highly important for this species.

The site has been described as the most important site for diving ducks in Great Britain and Ireland (Maclean *et al.,* 2006). The area surrounding Lough Beg occasionally hosts small numbers of diving ducks, but these are mainly associated with the open water areas.

4.6 Qualifying Interests subject to Appropriate Assessment

The previous Screening exercise and Test of Significance summarised the Likely Significant Effects of the road scheme on qualifying interests of Lough Neagh and Lough Beg SPA (pp16 – 19 Article 6 Assessment report, Scott Wilson, 2008). It concluded that a single qualifying interest, Whooper Swan, would be subject to LSE. As part of the revision process, the effects of the scheme upon other qualifying interests of the site have been given further consideration. Table 4.5 provides a summary of the distribution of each of these qualifying interests and screens these for Likely Significant Effects arising from the scheme. The conclusions were discussed and agreed in a meeting held with RSPB, NIEA, IWSSG and URS in July 2014.

Not all of the qualifying interests of the Lough Neagh and Lough Beg SPA have been identified as subject to Likely Significant Effects as a result of the planned scheme. Based on Table 4.5, it can be seen that Likely Significant Effects have been identified for Whooper Swan.

Greylag geese also use some of the same fields as Whooper Swans. Counts and observations during the annual Whooper Swan study of greylag goose appear to indicate a sedentary population of 60 – 70 geese, which are supplemented by further, presumably truly "wild" birds, which can more than double the population. This supposition is supported by the occasional recording of marked birds known to be from the Icelandic breeding population.

These totals for the Toome complex are similar to, or, indeed, at times greater than the latest peak winter figures for the species, counted during the Wetlands Bird Survey (WeBS), which is compiled by the British Trust for Ornithology (BTO). This records overall peaks for Lough Beg (including the Toome main complex) of 170 and 166 for 2010/2011 and 2011/2012 respectively. It therefore appears that the Toome main complex at times holds most of the birds counted around Lough Beg. The most up-to-date figures suggest that similar numbers have been retained at Lough Beg, for example in 2014/15, there were five counts of mid-winter flocks in excess of 100 birds, peaking at 182 in late December 2014. In the previous winter 2013/14, numbers were apparently lower, peaking at 107, whereas in winter 2012/13, 206 swans were recorded on the 30 December 2012 (Whooper Reports 2011-2015).

In the recent published results of WeBS (Holt *et al*., 2012)[1], Lough Neagh and Lough Beg figures are combined, and appear under Greylag Goose (British/Irish) as opposed to Greylag Goose (Icelandic). With a 5-year average up to the winter of 2010/2011 of 992, this combined figure indicates that the overall site of Lough Neagh / Beg is the most important in Northern Ireland. No all-Ireland threshold for importance has been set for the species.

Whilst greylag geese are using similar fields to the Whooper swans, the geese do not appear to be restricted in their use of the Toome complex, with their smaller population having been recorded in a wide range of swan fields across the count area (Whooper Report, 2015) and on that basis, appear to be mobile throughout the Toome Complex. This includes high numbers adjacent to the existing A6 road in Field 635 on 27 January 2015 (Photograph in Whooper Report, 2015), proving that the geese appear to readily habituate to vehicles and are tolerant of vehicle movements. They appear to frequently occur within the same fields as the whoopers, although this is not always the case. Moreover, like the whoopers, they tend to roost in McGrogan's Hole, and SW Lough Beg, sometimes using Paddy's Dub when flooding allows (Whooper reports 2011-2016).

Based on the numbers and habitat preferences of the geese as described above, as recorded during the Whooper swan wintering counts, no Likely Significant Effects are anticipated. It has been proven that sufficient habitat would remain to easily support the numbers of Whooper swans recorded in the area and on this basis, would also ensure plenty of habitat for the smaller number of greylag geese.

Bewick's Swans are known to have used fields around the Toome area in the past. As noted in Section 4.4.3, the incidence of this species in Northern Ireland is declining, with few birds recorded over the past few years. This is reflected at Lough Neagh, where only a single bird has been recorded from the Toome area over the past eight winters. Given that only a single bird has been recorded from the survey area over the past nine winters, this species is not considered further.

Consequently, the Appropriate Assessment will consider the implications of the scheme for the Lough Neagh and Lough Beg SPA in light of its conservation objectives in relation to Whooper swan.

Likely Significant Effects on Golden Plover as a result of habitat loss to agricultural fields nearby, but outside of the SPA, are not anticipated due to a number of factors.

Firstly, the golden plover population that exists within the SPA has plentiful preferred Lough Neagh shoreline (c.125km) and other short-vegetation habitats within and adjacent to the SPA which are available to the species at any one time. The flocking behaviour of the species aggregates its numbers to only selected areas within this large available habitat, ensuring that plentiful food resources are always available within the SPA. Examples of the species' mobility within an area are well documented. Whilst golden plovers have been recorded to utilise traditional 'home ranges' in winter, they are well known for making large cold weather-based movements where mixed plover flocks often aggregate and move to the coast or disperse more widely across the UK and Ireland (Gillings and Fuller, 1999), in search of improved feeding grounds.

A wintering golden plover population of over 4000 individuals exists within Lough Neagh & Lough Beg SPA (Table 4.5). The Lough Beg shoreline regularly supports golden plover (Crowe, 2005). The latest SPA Condition Monitoring Report (NIEA, 2013) has indicated that the Lough Neagh & Lough Beg SPA golden plover interest feature is in favourable condition at 274% of the Common Standard's Monitoring value (Table 4.5).

Table 4.5: Five-year peak counts of golden plover for the entire Lough Neagh & Lough Beg SPA from WeBS annual maxima "core" counts 2006/07 - 2010/11.

Year	2006 / 2007	2007 / 2008	2008 / 2009	2009 / 2010	2010 / 2011	CSM	Mean Peak	% CSM
Golden plover numbers	6475	3129	7097	4047	1539	1626	4457.40	274.13

CSM (Common Standards Monitoring baseline value) = winters 1990/91 – 1996/97. 5 yr mean = Mean annual counts for 5 years of most recently available data. %CSM = 5 year mean as a percentage of the CSM.

In spite of this, Cook *et al.* (2013) outline how golden plover wintering numbers have been decreasing at Lough Neagh & Lough Beg in the short, medium and long-terms, and have decreased at a national Northern Ireland level in the short-term. However,

these declines in numbers are thought to represent broad-scale population trends and be reflective of them at a national [British Isles] level (Cook *et al*., 2013).

Locally, within the Lough Beg Toome complex (which includes the agricultural area to be lost and therefore impacted by the planned road, outside of the SPA), WeBS counts (summarised for 5 years – winters 2007/08 to 2011/12) highlight that there was an average of 282 individuals within this count sector (Table 4.6).

Table 4.6: Five-year winter peak counts for golden plover in the Lough Beg and Creagh Swan Fields WeBS count section.

Year	2007/08	2008/09	2009/10	2010/11	2011/12	Mean Peak
Golden plover numbers	0	0	12	1400	0	282

The information presented in the above tables is in broad agreement with other studies which have shown that whilst golden plovers may return regularly to traditional haunts, they do move around considerably, dependant on habitat preferences and availability (Gregory, 1987). Golden plovers have a preference for short vegetation, especially short grassland and winter cereals (Gregory 1987, Mason & MacDonald 1999) and large, open fields. Shorelines/estuaries are also frequently used, especially when other habitats are unsuitable (longer vegetation length) (Gregory, 1987). Both suitable shoreline and short-grazed habitats are available, even within the Lough Beg area. Based on the above findings summarised in Mason & MacDonald (1999), the smaller, less open fields (the majority of which are being utilised by the planned road scheme) would be less preferred by golden plovers. However, the Lough Beg / Lough Neagh shoreline is always available as a feeding resource all through the winter period.

Secondly, the annual and monthly fluctuations in number and occurrence do not indicate a reliance on any particular fields, either inside or outside the SPA boundary. Therefore, any fields which would be impacted as a result of the planned scheme would clearly not play an essential part of the annual lifecycle of the species, which is as mobile as outlined below.

The results from both the entire Lough Neagh & Lough Beg SPA (Table 4.5) and the results from the local Lough Beg area (Table 4.6) highlight the mobile nature of this species in winter, shown by the fluctuations in number. This is further shown by the variable monthly peaks from the same area (Table 4.7), which highlight how the numbers varied from 0 to 1400 individuals during the WeBS core counts. This would suggest that the birds are moving around in variable-sized flocks and are not necessarily dependant on any one area within the Lough Beg area or SPA as a whole.

Table 4.7: Five-year (2007/08 to 2011/12) peak monthly counts for Golden Plover in the Lough Beg and Creagh Swan Fields WeBS count section.

Month	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Golden plover numbers	0	20	1400	12	80	350	0

Table 4.8: Summary of Likely Significant Effects of the planned road scheme on qualifying interests of the Lough Neagh and Lough Beg SPA

This table has been compiled using mainly anecdotal evidence and sightings made by personnel from RSPB, NIEA, IWSSG and AECOM. The table, sightings and other information was shared at a consultation meeting held with between the above parties in July 2014.

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
	Common Name	Latin Name			
Article 4.1 of Birds Directive 2009/147/EC *Regularly supporting populations of International importance (1% or more of the GB population) of species listed in Annex I of the Directive in winter*	Bewick's Swan	*Cygnus columbianus bewickii*	No significant decrease in population against national trends, caused by on-site factors.	Occur mainly on stubbles during autumn and winter cereals, potatoes and open grassy fields during winter, especially flooded areas. Roosts on water bodies.	**Occurrence:** Previously frequently occurred in Toome complex but are now rare in Northern Ireland due to a withdrawal of the main winter- flyway distribution limits back to England and Western Europe. Bewick's Swan is now extremely rare in Ireland, even in its former stronghold in Wexford. Routinely looked for as part of WS survey work – last study sighting at Toome was a single bird, seen 16.12.07 at SW Lough Beg, then 27.01.08 in Field 611. Lough Neagh/Beg are no longer nationally important for this species. **Likely Significant Effects:** None, as the species is rarely recorded in the study area.
	Whooper swan	*Cygnus cygnus*	No significant decrease in population against national trends, caused by on-site factors.	Occur mainly on stubbles during autumn and winter cereals, potatoes and open grassy fields during winter, especially flooded areas. Roosts on water bodies.	**Occurrence:** Occurs throughout the winter in the Toome complex, the most important Whooper swan site in Ireland. Well-studied species in this area and numbers are known even down to field level and sometimes down to individual birds. Annual monitoring reports submitted by G. McElwaine detail their locations and numbers. Breeds in small numbers on Lough Beg. **Likely Significant Effects:** A number of LSE have been identified (see Section 2.2 of this report) : • Land take for the road resulting in a loss of grazing habitat; • Disturbance arising from construction activities; • Introduction of vehicle movements in close proximity to areas used by swans leading to disturbance whilst using grazing

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
					habitat during operation of the scheme; • Disturbance of Swans using an important roost site; and • Changes to feeding quality of fields arising from changes to the hydrological regime caused by embankment and road runoff. An Appropriate Assessment is required.
	Golden Plover	*Pluvialis apricaria*	No significant decrease in population against national trends, caused by on-site factors.	Winter visitors, around the lough shores, and in some associated open fields. Often occurs in large flocks.	**Occurrence:** Frequently around the shoreline of the entire Lough Neagh/Beg. Large flocks often numbering many thousands of birds are commonplace as birds feed or roost together, often mixed with other species such as lapwings and other waders. Overall SPA numbers can be up to 10,000 but are more usually around 7-8,000. Lough Beg is important for this species in winter (holds approximately 2,000 birds), particularly in the south-western corner. They occur in the larger (often flooded) fields in large numbers and those around McGrogan's Hole. Fields 620, 623, 625, 746, 708 have been well used (RSPB pers. comm). They prefer the short grazed swards, however, as a mobile species, they move around within the wider area. Whilst they usually occur in their preferred habitats, they are not considered to be particularly site faithful. RSPB have confirmed that management work with landowners is improving farmland further up Lough Beg, which is expected to improve the habitat for Golden plover. **Likely Significant Effects:** Due to their mobility and ability to use a wide variety of fields and habitats within the Toome complex, the main preferred fields around McGrogan's Hole being located away from the proposed road route and the areas further north along the shore becoming more suitable for Golden Plover use, any effects of the scheme are not considered to be significant.

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
Article 4.1 of Birds Directive 2009/147/EC *Regularly supporting populations of International importance (1% or more of the GB population) of species listed in Annex I of the Directive during breeding season*:	Common Tern	*Sterna hirundo*	No significant decrease in population against national trends, caused by on-site factors.	Summer visitors, nests on structures and islands. Feeds over shallow water.	**Occurrence:** Medium-sized colony located on a large raft in Lough Beg, just off the Mullagh area, since installed in 2008. Large colony located in Antrim Bay on WW2 torpedo testing platform and a smaller colony on a purpose-built raft within Portmore Lough. Birds feed around the fringes of both loughs, mostly in the shallow edges. **Likely Significant Effects:** None expected as birds feed and congregate away from the planned road route.
Article 4.2 of Birds Directive 2009/147/EC *Regularly supporting populations of International importance (1% or more of the biogeographical populations)of migratory species (other than those listed in Annex I) in winter*	Goldeneye	*Bucephala clangula*	No significant decrease in population against national trends, caused by on-site factors.	Feed and roost in open water in Loughs Neagh/Beg.	**Occurrence:** Winter visitor which occurs in large numbers offshore in Lough Neagh/Beg. **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality.
	Great Crested Grebe	*Podiceps cristatus*	No significant decrease in population against national trends, caused by on-site factors.	Feed and roost in open water in Loughs Neagh/Beg.	**Occurrence:** Resident birds whose numbers are boosted by an influx of passage and wintering birds. During winter months, most birds occur out from the shore and are known to cross between Lough Neagh and Belfast Lough. **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
	Pochard	*Aythya farina*	No significant decrease in population against national trends, caused by on-site factors.	Feed and roost in open water in Loughs Neagh/Beg.	**Occurrence:** Occur in large rafts out in the open water of Lough Neagh and Lough Beg. Use the sheltered bays by day and feed over 500m out at night (Evans & Day 2001). **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality
	Scaup	*Aythya marila*	No significant decrease in population against national trends, caused by on-site factors.	Feed and roost in open water in Loughs Neagh/Beg.	**Occurrence:** Occur in large rafts out in open water of Lough Neagh and Lough Beg. Use the sheltered bays by day and feed over 500m out at night (Evans & Day, 2001). **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality.
	Shelduck[1]	*Tadorna tadorna*	No significant decrease in population against national trends, caused by on-site factors.	Feed and roost in open water and shorelines of Loughs Neagh/Beg.	**Occurrence:** Occurs throughout Lough Neagh / Beg. No particular known locations in proximity to the planned road scheme. **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality
	Tufted duck	*Aythya fuligula*	No significant decrease in population against	Feed and roost in open water in Loughs Neagh/Beg.	**Occurrence:** Occur in large rafts out in open water of Lough Neagh and Lough Beg. Use the sheltered bays by day and feed over 500m out at night (Evans & Day, 2001).

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
			national trends, caused by on-site factors.		**Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality.
	Black-headed Gull[2]	*Chroicocephalus ridibundus*	None available.	Islands, shallows to forage in.	**Occurrence:** Located especially around Antrim Bay area, but also occur throughout the Lough Neagh / Beg complex. Various islands now have colonies of Black-headed gull. **Likely Significant Effects:** None expected, as birds feed and congregate away from the planned route.
Article 4.2 of Birds Directive 2009/147/EC *Wetland of international importance, regularly supporting over 20,000 waterbirds in winter (waterbirds as defined by the Ramsar Convention). Includes species listed above plus the following*	Coot	*Fulica atra*	No significant decrease in population against national trends, caused by on-site factors.	Around the shoreline and reedbeds although can form larger numbers and mix with other bird species in open water.	**Occurrence:** Occurs throughout Lough Neagh / Beg. **Likely Significant Effects:** None, as the birds are associated with open water and shoreline habitats which are well away from the planned road scheme The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality
	Gadwall	*Anas strepera*	No significant decrease in population against national trends, caused by on-site factors.	Occur in small numbers in open water and close in to shore.	**Occurrence:** Occurs throughout Lough Neagh / Beg in low numbers. In times of extreme flooding, dabbling ducks, including Gadwall, are known to move right up through Paddy's Dub and beyond to avail of food resources released by the effects of the flooding. At these times, the ducks may come much closer to the route of the planned road. However, outside the SPA, the ducks will feed at the limits of the flooding wherever they may be. In recent years, this will be well below the planned route. **Likely Significant Effects:** None, as the birds are usually associated with shoreline habitats, which is well away from the planned road scheme. Only during extreme flooding will the birds use areas that are closer to the planned road scheme, outside of the SPA. Landscaping proposals will act as a screen to these areas, minimising disturbance,

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
					while the birds can continue to feed [unaffected] at the limit of the flooding on the flooded debris material.
	Little Grebe	*Tachybaptus ruficollis*	No significant decrease in population against national trends, caused by on-site factors.	Around the shoreline and reedbeds in particular.	**Occurrence:** Occurs throughout Lough Neagh / Beg. **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality
	Shoveler	*Anas clypeata*	No significant decrease in population against national trends, caused by on-site factors.	A dabbling duck which occurs around shoreline habitats.	**Occurrence:** Occurs in comparatively low numbers throughout Lough Neagh but is found more commonly in Lough Beg (Crowe, 2005). Generally found around the shorelines especially in sheltered bays. Can be found in the south-western end of Lough Beg. In times of extreme flooding, dabbling ducks including Shoveler move right up through Paddy's Dub and beyond to avail of food resources released by the effects of the flooding. At these times, the birds would come much closer to the route of the planned road. However, outside the SPA, the ducks will feed at the limits of the flooding wherever they may be. In recent years, this will be well below the route of the planned road. **Likely Significant Effects:** None, as the birds are usually associated with shoreline habitats, which is well away from the planned road scheme. Only during extreme flooding will the birds use areas outside of the SPA that are in close proximity to the planned road scheme. Landscaping proposals will act as a screen to these areas, minimising disturbance, while the birds can continue to feed [unaffected] at the limit of the flooding on the flooded debris material.
	Cormorant	*Phalacrocorax carbo*	No significant decrease in population against	Found mainly in open water areas.	**Occurrence:** Occurs throughout Lough Neagh / Beg. **Likely Significant Effects:** None. The birds are associated with open water areas that are at some distance from the scheme. The

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
			national trends, caused by on-site factors.		mitigation measures that are integral to the scheme means that there are no likely significant effects in relation to water quality
	Greylag goose	*Anser anser*	No significant decrease in population against national trends, caused by on-site factors.	Often found associated with swans and other geese.	**Occurrence:** Can be found throughout the lough, although probably occur most regularly in the Toome complex, especially at Mc Grogan's Hole. Occasionally occur in the Gortgill complex and fields 654, 655, 623, 625, 637 and occasionally 713 and 723. Overall a peak count is made in Feb/ Mar each year. Counts and observations during the Whooper Swan study of greylag goose appear to indicate a sedentary population of 60 – 70 geese, which are supplemented by further, presumably truly "wild" birds, which can more than double the population. This supposition is supported by the occasional recording of marked birds known to be from the Icelandic breeding population. These totals for the Toome complex are similar to, or, indeed, at times greater than the latest peak winter figures for the species counted during the Wetlands Bird Survey (WeBS), which is compiled by the British Trust for Ornithology (BTO). This records overall peaks for Lough Beg (including the Toome main complex) of 170 and 166 for 2010/2011 and 2011/2012 respectively. It therefore appears that the Toome main complex at times holds most of the birds counted around Lough Beg.
					In the latest published results of WeBS, Lough Neagh and Lough Beg figures are combined, and appear under Greylag Goose (British/Irish) as opposed to Greylag Goose (Icelandic). With a 5-year average up to the winter of 2010/2011 of 992, this combined figure indicates that the overall site of Lough Neagh / Beg is the most important in Northern Ireland. No all-Ireland threshold for importance has been set for the species. **Likely Significant Effects:** This species uses similar areas to the

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
					Whooper swans (see Section 2.2) and is often recorded close to the existing road. Greylag geese are a mobile species that readily utilise suitable habitats. As there is alternative suitable habitat available, and the birds appear to readily habituate to vehicles, no likely significant effects are anticipated.
	Teal	*Anas crecca*	No significant decrease in population against national trends, caused by on-site factors.	Found around shoreline habitats.	**Occurrence:** Regular on McGrogan's Hole (Field 707). Not on line of route or in close proximity. Can occur around the shorelines, especially in sheltered bays, in the south-western end of Lough Beg. In times of extreme flooding, dabbling ducks including teal move right up through Paddy's Dub and beyond to avail of food resources released by the effects of the flooding. At these times the birds would come much closer to the route of the planned road. However, outside the SPA, the ducks will feed at the limits of the flooding wherever they may be. In recent years, this will be well below the route of the planned road. **Likely Significant Effects:** None, as the birds are usually associated with shoreline habitats, which is well away from the planned road scheme. Only during extreme flooding will the birds use areas that are in close proximity to the planned road scheme. Landscaping proposals will act as a screen to these areas, minimising disturbance while the birds can continue to feed [unaffected] at the limit of the flooding on the flooded debris material.
	Mallard	*Anas platyrhynchos*	No significant decrease in population against national trends, caused by on-site factors.	Found around shoreline habitats.	**Occurrence:** Common and found everywhere around the loughs in large numbers. **Likely Significant Effects:** None, as the birds are usually associated with open water and shoreline habitats which are well away from the planned road scheme. Occasional records for mallard from the fields near the route have been made, but as mallard is a very mobile species and there is suitable habitat elsewhere in the vicinity, the loss of the fields in question is not considered a LSE.

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
	Wigeon	*Anas penelope*	No significant decrease in population against national trends, caused by on-site factors.	Found around shoreline habitats. Graze shoreline fields.	**Occurrence:** Regular on McGrogan's Hole (Field 707) and the immediate surrounding fields. In times of extreme flooding, dabbling ducks including Wigeon move right up through Paddy's Dub and beyond to avail of food resources released by the effects of the flooding. At these times the birds would come much closer to the route of the planned road. However, outside the SPA, the ducks will feed at the limits of the flooding wherever they may be. In recent years, this will be well below the route of the planned road. **Likely Significant Effects:** None, as the birds are usually associated with shoreline habitats, which is well away from the planned road scheme. Only during extreme flooding will the birds use areas that are closer to the planned road scheme. Landscaping proposals will act as a screen to these areas, minimising disturbance, while the birds can continue to feed [unaffected] at the limit of the flooding on the flooded debris material.
	Lapwing	*Vanellus vanellus*	No significant decrease in population against national trends, caused by on-site factors.	Short grazed wet grassland. Shoreline habitats.	**Occurrence:** In winter they occur throughout Loughs Neagh / Beg, foraging along shoreline habitats. Also, they occur in short grazed fields in the vicinity. A very mobile species and move to where food is located. **Likely Significant Effects:** None. Lapwing is a mobile species, which uses a wide variety of fields and habitats within the Toome complex. The main preferred fields are around McGrogan's Hole, which is located away from the planned route. Management activities for this species means that areas further north along the shore are becoming more suitable for lapwing use (as with Golden Plover).
	Mute Swan[3]	*Cygnus olor*	None available.	Occur around the shoreline of the complex and associated with the open fields of the	**Occurrence:** Often associate with the Whooper swans within the Toome Complex. Common species and occurs almost everywhere around the shoreline of the loughs throughout the winter. **Likely Significant Effects:** No predicted significant effects, as the birds are usually associated with open water and shoreline habitats,

Listing	Qualifying Interest		Conservation Objective	Preferred Habitat	Known / Typical Locations in L. Neagh / Beg and Likely Significant Effects
				Toome Complex.	well away from the planned road scheme. Mute swans are also a mobile species and so the loss of the fields in question would not significantly effect this species.
Article 4.2 of Birds Directive 2009/147/EC *Supporting a seabird assemblage of International importance during the breeding season*	Breeding seabird assemblage including[2]: Lesser Black-headed Gull	*Larus fuscus*	None available.	Islands, shallows to forage in.	**Occurrence:** Breed on various islands within Lough Neagh. Birds occur throughout the Lough Neagh / Beg complex during summer. **Likely Significant Effects:** None expected, as birds feed and congregate away from the planned route.
	Common Gull	*Larus canus*			
	Black-headed Gull	*Larus ridibundus*			
	Common Tern	*Sterna hirundo*			

5. ASSESSMENT METHODOLOGIES AND ASSUMPTIONS

5.1 Data and information sources

This Statement to Inform the Appropriate Assessment is based on information collected for the previously published Environmental Statement (Scott Wilson Scotland Ltd/Ferguson McIlveen LLP, 2007b) and previous Test of Likely Significance and Appropriate Assessment (Scott Wilson, 2008) in addition to new survey data concerning Whooper Swans, which has been collected on an annual basis (McElwaine & Spouncer, 2006; McElwaine, 2007 – 2016) since the production of the Environmental Statement. It also draws upon an updated review of other projects and plans that should be considered for "in-combination" effects.

5.2 Whooper Swans

Counts of Whooper Swans around Lough Neagh and Lough Beg are made as part of two long-term national survey projects: WeBS counts administered by the BTO; and counts made by the IWSSG. WeBS counts are organised monthly by the Northern Ireland Environment Agency (NIEA) at pre-defined sites and are undertaken by RSPB field staff at Lough Neagh and Lough Beg. The numbers of individual species of waterbirds are assessed. Further details about this scheme can be found on the BTO website (www.bto.org). The IWSSG has collected information on the distribution, productivity and movements of Whooper Swans since the late 1980s. Usage of feeding areas in the Toome area has been recorded to individual field level since 1996/97.

To supplement these existing data sources, a dedicated survey of Whooper Swan use of individual fields adjacent to the proposed scheme was undertaken in winters 2005/06 and 2006/07 to inform the Environmental Statement and Test of Significance. The survey included fields previously assessed by the IWSSG and additional fields to the north of the A6 near Aughrim Lane and to the east of B182 Deerpark Road. The study area is shown in Figure 2 of the Whooper Swan survey 2005/06 report (McElwaine & Spouncer, 2006). Fields were visited on a weekly basis between October 2005 and April 2006. Survey work was undertaken on a weekly basis, using two different survey techniques on alternate weeks.

One method, undertaken during daylight hours, involved collecting data on flock composition, distance of birds from the existing A6, presence of flooding, livestock numbers, presence of other bird species, presence of disturbance, presence of ringed birds and observations of flock movements. The alternative method, conducted from dawn to dusk, collected data concerning movements to and from roosts, and counts of birds. Details of habitat type and biomass in fields were also collected. Further details about the survey methods can be found in the Whooper Swan Survey 2005/2006 report (McElwaine & Spouncer, 2006).

Survey data were analysed to identify numbers of Whooper Swans using different fields, and how this related to habitat quality, presence of flooding, disturbance, proximity to the existing A6, size of field etc.

Repeat surveys have been undertaken in the subsequent ten winters (2006/07 to 2015/16). These have broadly followed the same survey method, although the extent of the fields surveyed has increased slightly, and there have been some amendments to the analysis of data. The methods and amendments are documented in the annual survey reports that have been produced (McElwaine, 2007 - 2016).

5.3 Alternative solutions

The development of the planned route for each section of the scheme (Randalstown to Toome, and Toome to Castledawson) has followed a sequential process, reviewing and refining a large number of route options within the wider area between Randalstown and Castledawson to determine the preferred scheme alignment, from an environmental, social, engineering, traffic and economic perspective.

5.3.1 Randalstown to Toome

Initially, eight different options were reviewed. These included both on-line widening proposals and new offline routes lying to both the north and south of the existing road. Following a public consultation event in February 2005, two additional route options (to the north and along the line of the existing road) were introduced and also reviewed. Following a further period of public consultation, four of these ten options were selected for further investigation. These comprised three routes lying to the south of the current road, and one route to the north of the current road, (Scott Wilson Ltd/Ferguson McIlveen LLP, October 2004a).

A preferred route was announced on 28th September 2005. This starts at the western end of the M22 motorway at Randalstown and continues offline to the south of the existing Moneynick Road to join the Toome Bypass at the Drumderg Roundabout.

Further details of the way in which the different options were appraised and how the preferred route was selected are set out in Section 1.3 of the Environmental Statement to accompany the scheme (Scott Wilson Scotland Ltd/Ferguson McIlveen LLP, 2007a).

5.3.2 Toome to Castledawson (including Annaghmore Road/ Bellshill Road Junction)

In the first phase, eleven different options were evaluated (including routes lying to the north and south of the existing A6) and three were selected for further study, as summarised in the Stage 1 Preferred Route Corridor (Scott Wilson Scotland Ltd./Ferguson McIlveen LLP, October 2004b).

The three approved options were taken through public exhibition during February 2005. All route options were part offline, though continued as online dualling from Brough Road to Castledawson Roundabout. One alignment option was part offline and lying north of the A6 from the new bridge over the Lower Bann to Brough Road. The other two alignment options were part offline to the south of the A6 (passing through The Creagh, and one passing to the immediate south of The Creagh), coming back online at Brough Road.

Following on from the public exhibition, additional options were considered and four alignment options – the original three and one additional option – were presented to the public in June 2005. The additional route option followed the existing Toome Bypass towards The Creagh Roundabout, before deviating north-westwards around Aughrim Hill, coming back online at Brough Road.

The environmental impacts of each route option were considered as part of identifying the preferred route option. One of the options would have impinged on the boundary of Lough Neagh and Lough Beg Ramsar site and would have resulted in the loss of a significant area of habitat for Whooper Swan, including severing the feeding grounds. Another option would have impinged on riparian habitat associated with the Moyola River and its floodplain. The various options assessed were presented in the Stage 2 Approved Route Options Report (Scott Wilson Scotland Ltd./Ferguson McIlveen LLP, November 2005b).

A preferred option was announced in September 2005. This followed the Toome Bypass towards the Creagh Roundabout and then passed to the north of the existing A6. It was selected as providing the best balance of limited environmental impacts and good value for money.

Further details of the way in which the different options were appraised and how the preferred route was selected are set out in Section 1.3 of the Environmental Statement to accompany the scheme (Scott Wilson Scotland Ltd/Ferguson McIlveen LLP, 2007b).

Following the November 2007 Public Inquiry, the layout of the Annaghmore Road/ Bellshill Road Junction at Castledawson has been reviewed. This has involved review of different junction layouts and consultation with Castledawson residents. A public inquiry on the proposed alternative junction layout was held in February 2012. Following this inquiry, the Inspector recommended that a further alternative be examined. A planning application for this latest alternative, accompanied by an Environmental Statement, was submitted to DoE – Planning in June 2013; planning approval on this latest alternative junction layout was granted in December 2014.

5.4 In-built mitigation

The scheme design includes a number of mitigation measures that are an integral part of the design (see Section 7). These include aspects relating to the design of the scheme, such as the routing of the line of the road, modification of the scheme footprint, placement of drainage ponds to avoid important areas, and incorporation of features to avoid or reduce light and noise effects. These features have been included as part of the environmental assessment work for the scheme and as examples of current best practice.

The revised design of the Annaghmore Road/ Bellshill Road Junction has also been developed to include mitigation measures to avoid the risks of unregulated discharges of sediment and pollutants during construction of the scheme. These measures form part of the Employer's Requirements within the contract documents.

As these measures are an integral part of the scheme and the effectiveness of such measures is understood, they have been considered during the screening phase of the assessment. This is in line with a High Court ruling, which concluded that if mitigation measures have been incorporated into a project, there is no reason why these should be ignored during the Screening stage[4]. Where the effectiveness of mitigation is poorly understood, or is not supported by relevant agencies, then it cannot be considered as a mechanism for screening out Likely Significant Effects and avoiding the need for Appropriate Assessment[5].

[4] *R (Hart DC) c SSCLG (2008) EWHC 1204*

[5] *Judicial Review of A5, Citation No. [2013] NIQB 30*

6. POTENTIAL EFFECTS ON LOUGH NEAGH AND LOUGH BEG SPA & RAMSAR SITE

Where aspects of a project or plan are identified as having a Likely Significant Effect upon a European site, the project can only be consented after having made an Appropriate Assessment that it will not adversely affect the integrity of the European Site (known as in view of that site's conservation objectives). Integrity of a site is defined by the EU as the "*coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*" and is further defined by the ability of the site to meet its conservation objectives.

6.1 LSE to be assessed

As identified in Sections 2.2 and 4.6, the planned new section of road between Toome and Castledawson has been identified as having Likely Significant Effects in relation to:

- Loss of grazing habitat used by qualifying interests (Whooper Swan);
- Disturbance of qualifying interests (Whooper Swan) using grazing habitat, during construction;
- Disturbance of qualifying interests (Whooper Swan) using grazing habitat, during operation of the scheme arising from vehicle movements on the new road;
- Disturbance of qualifying interests (Whooper Swan) using an important roosting site (McGrogan's Hole) as a result of nocturnal lighting of the scheme;
- Changes to feeding quality of fields arising from changes to hydrological regime caused by embankment construction and road run-off.

The following section considers the effect of these aspects upon the integrity of Lough Neagh and Lough Beg SPA with respect to the conservation objective in respect of Whooper Swan, which is "*No significant decrease in population against national trends, caused by on-site factors*".

6.2 Loss of grazing habitat used by qualifying interests (Whooper Swan)

The area around Toome has long been known to be an important wintering site for Whooper Swans. Use of fields along the planned route and within the wider Toome complex has been assessed annually since winter 2005/06. Reports have been produced, which document use of each individual field by Whooper Swans by undertaking what is termed "weekly" (approximately every 8 days) and "monthly" counts (McElwaine & Spouncer, 2006; McElwaine, 2007 – 2016). The approach and scope of each survey type is outlined in Sections 4.2.4 – 4.2.6 of the July 2006 report. The following assessment draws together these data and analysis contained in those annual reports and interprets it within the context of the planned scheme.

Likely Significant Effects arise as a result of direct loss of habitat (i.e. within the vested footprint) to the planned road scheme, and also indirect loss as a result of severing / reducing the size of some fields, thus making them less attractive to the swans. Additional habitat may also become "unusable" if located close to the road e.g. owing to disturbance. Whilst the scheme does not involve the loss of habitat from within the SPA boundary, some of these fields provide grazing habitat for Whooper Swans, which roost within the SPA and are a qualifying interest of it.

6.2.1 Determination of importance of fields to Whooper swans

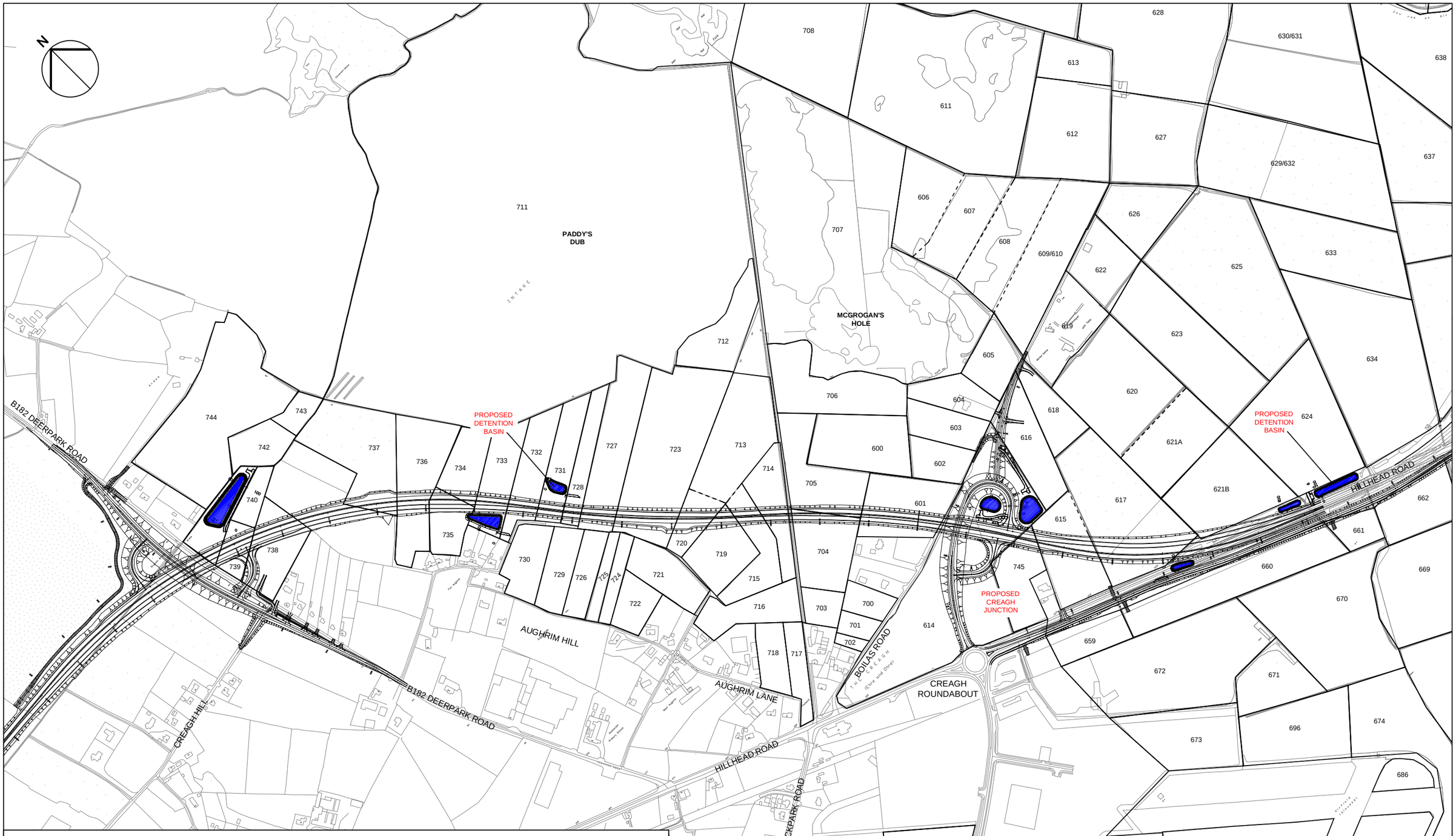
The relative importance of individual fields within the Toome complex to Whooper Swans has been assessed in a number of ways. The number of winters in which a particular field has been used can provide an indication of "faithfulness". **Peak counts** provide an indication of the maximum number of swans recorded using a particular field on a given date. They can be expressed as the single highest peak count recorded from a field during the season, or the peak counts in each field may be summed over a season to produce **Total Summed Peak Counts**. Peak counts only provide a "snapshot" and high numbers might be recorded as a single "one-off" event during the season. Consequently, a better measure of the annual importance of a field can be obtained by calculating "**swan-days**"[6]. This provides an estimate of the numbers of swans that have used a field over the whole wintering season and is based on actual count data and estimates of the numbers of swans that used the field between count dates. A further metric, "**Percentages of Total Summed Peak Counts 2005-2006 to 2015/2016**" has also been calculated to provide an indication of the overall importance of an individual field to swans (Table 6 of 2015/16 Whooper Report). This is calculated by summing the percentages recorded for a field over each season and averaging this over all of the count years. All figures for swan usage, and the approaches used to produce these figures are set out in the Whooper Swan Monitoring reports (e.g. page 4 and Table 6, McElwaine, 2016).

6.2.1.1 *Fields Affected*

Whooper Swans have been recorded in at least one of the last nine winters from 11 of the 44 fields that lie along or adjacent to the planned new route. This comprises 10 fields that will experience some direct habitat loss and/or fragmentation and 1 field (Field 713) that will lie adjacent to the scheme boundary, but which will not be subject to direct loss of habitat. The fields are listed in Table 6.1, together with details of the year(s) in which each field was used. Three of the fields (Fields 614, 615 and 720) have not been used during the last seven winters.

A full listing of all 39 fields directly traversed by the planned route is provided in Appendix C and the location of fields is shown on Figure 4.

[6] *A "swan-day" is counted each time a Whooper swan is recorded from a field. These can be summed between counts to produce total swan-days. Further explanation is provided in Section 3.1, page 4 of the 2016 Whooper Swan monitoring report (McElwaine, 2016).*



Notes:

SUDS Detention basin (indicative location only).

SCALE BAR

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Project Title

A6 RANDALSTOWN TO CASTLEDAWSON DUALLING

Client

transportni

Drawing Title

LOCATION OF SCHEME IN RELATION TO WHOOPER SWAN FIELDS

Purpose of issue

FOR INFORMATION

AECOM Internal Project No.

47062632

Scale @ A3

1:7,500

Drawing Number

FIGURE 4

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AECOM Infrastructure & Environment UK Limited Beechill House
Beechill Road, Belfast
BT8 7RP
T: +44 (0)28 9070 5111
F: +44 (0)28 9079 5651
www.ursglobal.com

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Table 6.1: Fields traversed by/adjacent to planned route that have been used by Whooper swan in at least one winter (2005/06 – 2013/14).

Fields that are shown in **bold** are those which will experience some direct habitat loss and/or fragmentation as a result of the scheme.

Field Number	Winter									Total No years
	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	
601								✓		**1**
614	✓	✓								**2**
615	✓									**1**
616	✓					✓	✓	✓		**4**
617	✓	✓	✓	✓	✓	✓	✓	✓	✓	**9**
618	✓				✓	✓			✓	**4**
621	✓	✓	✓	✓	✓	✓	✓	✓	✓	**9**
624	✓	✓	✓	✓	✓	✓	✓	✓	✓	**9**
713	✓	✓	✓		✓	✓		✓	✓	7
720	✓	✓								**2**
723	✓	✓	✓	✓	✓	✓	✓	✓	✓	**9**

The previous Test of Significance and Appropriate Assessment (Scott Wilson, 2008) was based on an earlier route alignment, which would have resulted in the direct loss of habitat within Field 713. The present scheme has been slightly realigned to avoid direct effects upon that field.

6.2.1.2 *Use of individual fields between winters (frequency of use)*

Four fields have been used in each of the last nine years for which there are data: Fields 617, 621, 624 and 723 (Table 6.1). All these fields will experience some habitat loss/fragmentation. The numbers of Whooper swans recorded from these fields is considered in the following sections. Three of the fields listed in Table 6.1 have not been used over at least the last seven years.

6.2.1.3 *Peak Counts*

Peak Winter Counts provide an indication of the maximum number of birds recorded from a single field at one time. Peak Counts averaged over a five-year period are often used as a basis for identifying those sites of highest conservation importance. Table 6.2 (which is a reproduction of Table 3 of the 2015 – 16 Whooper Swan monitoring Report (McElwaine, 2016)) shows those fields within the Toome Complex that have held peak numbers which, (if they held this average over a five-year period), would qualify them individually as being of national or international importance.

Two of the fields that lie along or adjacent to the planned new route have been recorded as having Peak Counts in at least one of the last nine winters (which, if sustained over a 5-year period, would lead to them individually being classified as of national importance) :

- Field 617, which has held peak counts in two winters; and
- Field 723, which has held peak counts in one winter.

These fields were also used in each of the past nine winters.

Based on Figure 5, it is evident that a further 16 fields (excluding Gortgill) not affected by the route have also supported nationally or internationally important peak counts of Whooper Swan in at least one winter.

6.2.1.4 *Swan-days*

Figure 5 also includes a representation of the number of swan-days estimated for individual fields. None of the fields along the planned new route receive a high-level of use (as defined by swan-days).

6.2.1.5 *Average percentage of Total Summed Peak Counts*

The 2015/16 Whooper Swan report (McElwaine, 2016) has considered the relative importance of each field, based on rankings by average percentage of Total Summed peak counts (Figure 6). The field within the Toome complex that has the highest average percentage of total summed peak counts over the last nine year period (winter 2005/06 – 2013/14) (Field 634) will not experience any direct habitat loss as a result of the scheme, although it is located adjacent to the boundary of the existing bypass.

6.2.2 Commentary

The Whooper Swan monitoring reports have concluded that whilst the swans at Toome use certain core fields during most winters, the pattern of use does vary widely between winters (Section 4.3, McElwaine, 2016).

Research has shown that factors such as field size and crop type[7] can influence a swan's choice of field. Whooper Swans generally prefer larger fields (Chisholm & Spray 2002). At Toome, larger flocks of Whooper Swans are usually associated with fields that are at least 3ha in size, although they have been recorded from several fields that are smaller than this ((Figure 21 of the 2006 Report) McElwaine & Spouncer, 2006). Investigations of the relative quality of grazing available at Toome in 2005/06 showed that there was a positive relationship between the numbers of swans counted and total biomass levels and in particular between swan numbers and the live component of the biomass. Swans also used fields that had a taller sward height.

The habitat and characteristics of each of the fields to be traversed by, or which lie adjacent to, the planned route is shown in Appendix C. This is based on information collected during winter 2005/06 (McElwaine & Spouncer, 2006). The bulk of the study area is managed as agricultural grassland, with many of the fields having been re-

[7] *Crop type was found to be the dominant factor in influencing the choice of fields by Whooper Swans in the Tweed Valley in Scotland (Chisholm & Spray, 2002).*

YEAR	FIELD NUMBER																				
	611	612	617	620	623	628	629/632	630/631	634	636	637	638	639	654/655	707	710	713	723	750	751	757
2005/2006																					
2006/2007																					
2007/2008																					
2008/2009																					
2009/2010																					
2010/2011																					
2011/2012																					
2012/2013																					
2013/2014																					

YEAR	FIELD NUMBER																				
	611	612	617	620	623	628	629/632	630/631	634	636	637	638	639	654/655	707	710	713	723	750	751	757
2006/2007																					
2007/2008																					
2008/2009																					
2009/2010																					
2010/2011																					
2011/2012																					
2012/2013																					
2013/2014																					

Notes: *2005/2006 is excluded from swan-day presentation as comparable figures are not available.*
Counts qualify for National or International importance if average counts are sustained at this number over a period of 5 years.

- Year when this individual field recorded a Nationally Important (130+) peak count of Whooper Swan
- Year when this individual field recorded an Internationally Important (210+) peak count of Whooper Swan
- Year when this individual field recorded usage of 5,000 - 7,499 swan-days
- Year when this individual field recorded usage of 7,500 - 9,999 swan-days
- Year when this individual field recorded usage of 10,000+ swan-days

A6 TOOME TO CASTLEDAWSON WHOOPER SWAN STUDY

INDIVIDUAL FIELD IMPORTANCE BY YEAR, 2005/2006 - 2013/2014

TABLE 3

URS
www.ursglobal.com

Graham McElwaine
in association with spouncer ECOLOGY
tel 028 42729746
mob 0772 5646333
email: celia@spouncer.com
www.spouncerecology.com
Principal: Celia Spouncer BSc MSc MLI
Registered Landscape Practice

Project Title: A6 TOOME TO CASTLEDAWSON DUALLING

Client: transportni

Drawing Title: INDIVIDUAL FIELD IMPORTANCE BY YEAR 2005 / 2006 - 2013 / 2014

Purpose of issue: FOR INFORMATION

AECOM Internal Project No.: 47062632

Scale @ A3: NOT TO SCALE

Drawing Number: FIGURE 5

Rev: 0

AECOM Infrastructure & Environment UK Limited Beechill House
Beechill Road, Belfast
BT8 7RP
T: +44 (0)28 9070 5111
F: +44 (0)28 9079 5651
www.ursglobal.com

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Sue Bell ECOLOGY

seeded. There are a small number of fields that are dominated by rushes (*Juncus* sp.). This is more common to the south of the existing A6.

The loss of areas of grazing habitat that has been shown to be used by Whooper Swans in at least one winter since 2005/06 are set out in Table 6.2. The table shows both direct and indirect loss of habitat. This includes the land that will be directly covered by the new road, plus an additional offset from the limit of the earthworks, upon which the permanent fenceline would be erected (typically in the region of 5 – 7 m from the completed road, but this may vary to include additional small/ irregular portions of fields that would remain post-construction). Fields are listed according to the average percentage of Total Summed Peak Counts (2005/2006 to 2015/2016) to highlight the relative importance of individual fields for swan use.

Based on Table 6.2, it can be seen that the scheme would result in a permanent anticipated reduction of approximately 15.33ha of habitat from which Whooper Swans have been recorded as grazing during at least one winter over the last nine years. This represents a "worst case" scenario. Over half of this area (8.54ha) comprises three fields (Fields 614, 615 & 720) from which Whooper Swans have not been recorded during the last seven winters.

It is worth noting that Field 634, which has the highest average percentage of Total Summed Peak Counts (winter 2005/06 – 2013/14), will not experience any direct loss of habitat as a result of the planned scheme.

Fields 617, 624, 621 and 723 have all been used in at least eight of the past nine winters, and held over 1000 average total swan days per year (winter 2006/07 – 2013/14). The total combined anticipated loss of habitat from these fields is estimated as 2.84 ha. The remaining portions of these fields are anticipated to remain attractive to swans.

A localised loss of grazing habitat may result in a displacement of wintering birds into other fields. The total area of grazing habitat regularly used by Whooper Swan south of Lough Beg has been estimated as c. 163 ha (Scott Wilson, 2008). As noted above, whilst the swans have certain core fields that are used on a frequent basis, there is some annual variability in field preference. The annual Whooper Swan reports have concluded that any birds which are displaced from fields directly affected by the scheme can be accommodated within the Toome Complex, as the site has yet to reach its carrying capacity (Section 6.2 of winter 2006/07 Whooper Swan Report and Section 4.2 of winter 2015/16 Whooper Swan Report). As outlined in Section 5 of the winter 2015/16 Whooper Swan Report, it is considered probable that the Gortgill fields, east of the Lower Bann, is largely an extension of the main Toome complex. This is because over the various years of annual monitoring from winter 2008/2009, there have been various observations of Whooper Swan movement between Gortgill and the main complex, and *vice versa*, as outlined in the various annual reports (Section 4.5). If such a trend continues (currently excluded from the annual analyses in order to maintain the continuity and consistency of the datasets for comparison purposes), then this would further add to the site's overall carrying capacity.

As noted above, one of the main factors influencing use of a particular field is the quality of food available, with improved agricultural pasture being favoured. Changes in management by individual land owners are currently independent of the planned scheme, though it is understood some landowners operate under the Northern Ireland Countryside Management Scheme (NICMS) (2007-2013) for the management of winter feeding sites for swans and geese. The NICMS is closed to new applications, though a new voluntary scheme is being developed for the Rural Development Plan 2014-2020.

In terms of distribution within the complex, it is also worth noting that normal passing traffic on the existing A6 appears to have little effect on the swans, irrespective of traffic density (Section 4.5.8 of 2005/2006 Whooper Swan Report, and Section 3.9 of 2015/2016 Whooper Swan Report). Indeed, Figure 19 of the 2015/2016 Whooper Swan Report updates the trend of the percentage of swan-days in the fields adjacent to the existing Toome bypass, splitting between fields which front the realigned section of the route and those situated adjacent to the part of the previous A6 (Hillhead Road), which was merely widened. The general trend over the years is that the birds were observed coming to within 10m of the boundary fences of fields adjacent to the A6, and the swans are clearly utilising the grazing of those whole fields.

Table 6.2: Area of grazing habitat in fields from which Whooper Swans have been recorded in at least one of the nine winters since winter 2005/06.

Note : Fields are ordered by Average Percentage of Total Summed Peak Counts (taken from Table 6 of 2013/2014 Whooper Swan Report).

Field No.	Total area of Field (ha)	Direct Habitat loss (ha)	Number of years swans recorded (2005/06 – 2013/14)	Average Percentage of Total Summed Peak Counts (winter 2005/06 – 2013/14)	Effect of scheme / indirect habitat loss	Area of remaining portion(s) of field (ha)	Anticipated total loss of habitat (ha)
617[1]	4.53	1.25	9	4.05	The Field will be severed and there will be an indirect loss of habitat, with c. 3.06ha remaining available (i.e. area north of carriageway only).This remaining habitat is likely to remain suitable for swans. This field has been used in each of the last nine winters. Nationally important peak counts of swans have been recorded from this field in winter 2005/06 and 2013/14.	3.06	1.47
621A **621B**[1,2]	2.29 3.15	0 0.16	9	3.93	The Mainline passes along southern edge of field and will result in minimal habitat loss in the south-western corner. The remaining area is likely to remain suitable for swans. This field receives a reasonable level of use; it has been used in each of the last nine winters.	2.29 2.99	0 0.16
624[1]	4.50	0.16	9	3.33	There will be a small loss of habitat along the southern portion of the field to accommodate a SuDS pond. The remaining area is likely to remain suitable for swans. This field has been used in each of the past nine winters.	4.34	0.16
723[1]	4.96	1.05	9	2.02	This field has been used in each of the last 9 winters. A nationally important peak count was recorded in winter 2007/08. There will be some direct loss of habitat in south-western portion of field. Remaining area of intact habitat will be 3.91 ha, which is anticipated to remain attractive to swans.	3.91	1.05

Field No.	Total area of Field (ha)	Direct Habitat loss (ha)	Number of years swans recorded (2005/06 – 2013/14)	Average Percentage of Total Summed Peak Counts (winter 2005/06 – 2013/14)	Effect of scheme / indirect habitat loss	Area of remaining portion(s) of field (ha)	Anticipated total loss of habitat (ha)
713[1]	2.75	0	7	1.33	No direct or indirect habitat loss. Field will be situated on north-western fringe of mainline.	2.75	0
616[1]	1.79	0.59	4	0.16	Approx. 0.59 ha along the north-western boundary of this field will be lost. The remaining area, lying to the south of the realigned access road may be less attractive to swans. This field receives a low level of usage; Swans have been recorded in low numbers on a few occasions during four of the last nine winters.	1.2	1.79
720	0.77	0.43	2	0.03	This field has not been used over the past 7 winters. Field to be severed, but little habitat to remain.	0.34	0.77
618[1]	1.16	0.08	4	0.03	There will be a loss of a small amount of habitat along the northern boundary of the field. Swans have been recorded from this field in 4 of the last 9 winters, but in low numbers and on few occasions each winter.	1.08	0.08 ha
601[1]	2.08	1.13	1	0.00	The scheme will sever the field; land to the west of the scheme may become unusable; the main area of residual habitat will be to the east of the new road. This field is rarely used (only one swan has been recorded on a single occasion during winter 2012/13 in this field).	0.95	2.08
614	8.54	4.89	2	0.00	Field to be severed. Will be indirect loss of habitat to east, leaving c. 2.86 ha to west of junction. Supplementary record from this field in only 2 of the last 9 winters.	2.86 (Lying to west of junction)	5.68

Field No.	Total area of Field (ha)	Direct Habitat loss (ha)	Number of years swans recorded (2005/06 – 2013/14)	Average Percentage of Total Summed Peak Counts (winter 2005/06 – 2013/14)	Effect of scheme / indirect habitat loss	Area of remaining portion(s) of field (ha)	Anticipated total loss of habitat (ha)
615	2.09	0.73	1	0.00	Swans have not been recorded from this field over the past 8 winters. There was a single supplementary record of 8 birds using this field in winter 2005/06, This field will be severed, and the remaining areas of habitat may be too small to be attractive for Whooper Swans.	1.36 (Lying to south of carriageway).	2.09
Total							15.33ha

Key:
1 – Fields that have been used at least once over the last five winters.
2 – Figures are for 2006/07 – 2013/14, as Field 621 was not sub-divided in 2005/06.

6.2.3 Conclusions

Importance of fields along the route has been assessed in four ways; (1) Frequency of use, (2) Peak Counts, (3) Swan-Days, and (4) Average percentage of Total Summed Peak Counts (2005/06 – 2015/16). This has identified a total of four fields, considered important for Whooper Swans, which will experience habitat loss/fragmentation as a result of the route (Table 6.3).

Table 6.3: Summary of important fields affected along the planned route

Field	Frequency of use (winters used)	Peak Counts (>130)	Swan-Days (5,000+)	Average percentage of Total Summed Peak Counts
617	9	2	0	4.1
621	9	0	0	3.9
624	9	0	0	3.3
723	9	1	0	2.0

The anticipated total loss of habitat from these four fields is 2.84ha.

Field 634, which lies adjacent to the road, has been assessed as important in terms of regularity of use, Peak Counts, swan-days and average percentage of total summed peak counts (2005/06 – 2015/16). It will not experience any direct habitat loss.

As noted earlier, whilst the swans appear to use some core fields, there is a noticeable inter-year variation in field use. The Whooper Swan survey reports (McElwaine & Spouncer 2006 - 2016) state that the carrying capacity of the Toome complex has not yet been reached and hence the numbers of swans displaced from fields affected by the scheme can be accommodated elsewhere within the complex. Moreover, as mentioned previously, it is considered probable that the Gortgill fields, east of the Lower Bann, is largely an extension of the main Toome complex. If such a trend continues (currently excluded from the annual analyses in order to maintain the continuity and consistency of the datasets for comparison purposes), then this would further add to the site's overall carrying capacity.

On the basis of the foregoing, it is concluded that the loss of this habitat would not result in the site failing to meet its Conservation Objective of "*no significant decrease in population against national trends, caused by on-site factors*" and there would be no adverse effect upon the integrity of the adjacent Lough Neagh and Lough Beg SPA and Ramsar site.

6.3 Disturbance of qualifying interests (Whooper Swans) using grazing habitat, during construction

Construction activities will involve site clearance, topsoil stripping and importation of fill material. The resultant movement of people and vehicles around the site will act as a source of disturbance to Whooper Swans.

Based on the Figures illustrating counts of Whooper Swans presented in the annual Whooper Swan reports (McElwaine & Spouncer, 2006; McElwaine, 2007 – 2016), the planned alignment from Toome bypass to Deerpark Road skirts the southern and western fringes of the grazing habitat used by Whooper Swan.

The degree to which swans are disturbed varies with the type of disturbance (e.g. vehicle, pedestrian, helicopter) and the characteristics of the feeding field (e.g. its size), and the size of the flock (larger flocks appear less sensitive to disturbance). Observations at Toome have shown that Whooper Swans currently feed as little as 10m from the existing road, although a distance of 60m is more typical (McElwaine & Spouncer, 2006). Research in Scotland has also shown that Whooper Swans do not become habituated to disturbance, but do appear to become less sensitive to disturbance if they have already experienced a number of disturbance incidents in the same day (Rees *et al.,* 2005).

Disturbance can be minimised by timing the main earthworks outside the wintering period. In this regard, prescriptive contract requirements restrict certain construction activities in the area between the Toome bypass and Deerpark Road to a period between mid-March and late September, which includes a restriction of major earthworks and major drainage works.

As noted above, given the background of an overall increasing population of Whooper Swans around Lough Neagh and Lough Beg[8] (Boland *et al.*, 2010), and the observed variation in field use between winters, it appears that there is adequate alternative habitat within the Toome complex that can accommodate any birds that would be displaced during construction activities, due to both plant/personnel movements along the planned route, and the actual loss of habitat.

6.4 Disturbance of qualifying interests (Whooper Swan) using grazing habitat, during operation of the scheme arising from vehicle movements

Disturbance of Whooper Swans can arise from a variety of sources, including vehicles and pedestrians.

The effect of certain types of disturbance on the feeding activity of Whooper Swans has been investigated adjacent to a SPA in Scotland (Rees *et al.*, 2005), and data about disturbance to Whooper Swans using the Toome Complex has been collected as part of the annual monitoring surveys.

The 2005/06 Whooper Swan Report (McElwaine & Spouncer, 2006) compared use of fields before and after upgrades to existing roads in the area. It noted that there had been some changes to field use, including abandonment of one field, but concluded that these changes were also at least partly attributable to development of an adjoining

[8] *Numbers recorded from Lough Neagh & Beg as part of the Ireland-wide census of this species organised by the IWSSG showed a 19% increase in numbers of Whooper Swans between 2010 and 2005 (Boland et al., 2010),*

area as a business park. The report concluded that "*Whilst the historical data are not sufficient to be directly comparable, nevertheless the realignment and widening associated with the by-pass appear not to have markedly detrimental effect* [stet] *on the attraction of the adjacent fields within the main area*". (Section 5.4, p26, McElwaine & Spouncer 2006).

The Whooper Swan surveys conducted for this scheme suggest that Whooper Swans do not take flight as a result of road traffic on the current A6 (McElwaine & Spouncer, 2006; McElwaine, 2007 – 2016). There are no records as to whether the birds increase their "alertness" (e.g. reduced feeding time in favour of watching), as a result of traffic. Analysis of field use by swans and vehicle movements (and types of vehicle), suggest that neither the overall traffic volume nor the amount of heavy vehicles seem to have a strong effect on field usage (McElwaine & Spouncer, 2006). Indeed, Field 634, which, as noted above, is an important feeding site, lies adjacent to the existing by-pass. The upgraded road will not result in habitat loss within that field.

The observations at Toome are broadly in line with Scottish research, which found that swans appeared to become less sensitive to disturbance, if they had already experienced a number of disturbance incidents on the same day. However, there was no evidence for habituation to disturbance over longer periods (Rees *et al.*, 2005).

At Toome, Whooper Swans appear to be more sensitive to non-uniform vehicle movements, pedestrians and cyclists than constant passing traffic (McElwaine & Spouncer, 2006). This type of behaviour was also recorded in Scotland where birds took longer to recover from disturbance from pedestrians than from vehicles and aircraft (Rees *et al.*, 2005). A number of "one-off" and unpredictable events in the Toome Complex have been observed to cause disturbance effects on Whooper Swans, with wildfowling, drain clearing, and an unattended dog causing recordable disturbance effects, including flight of swans (McElwaine & Spouncer, 2006; McElwaine, 2007 – 2016). Similarly, the Scottish research showed that anglers and wildfowlers alerted the Whooper Swans at greater distances than other pedestrians (Rees *et al.*, 2005). In Scotland, the time taken for birds to resume undisturbed behaviour was influenced by the type of disturbance, although the size of the field, flock size and proportion of the flock affected were also factors. By contrast at Toome, birds were generally located a distance of greater than 60m from the fence bordering the existing bypass, but were recorded from as little as 10m from the fence on one occasion (McElwaine & Spouncer, 2006). The research in Scotland suggested that cars and bicycles were able to approach Whooper Swans to a closer distance than other vehicles.

Based on the observations at Toome, it appears that proximity of favoured fields to the road would not act as a barrier to their use as grazing habitat, providing that other factors (e.g. nutritional content and size) are maintained.

6.5 Disturbance of qualifying interests (Whooper Swans) using an important roosting site (McGrogan's Hole) as a result of nocturnal lighting of scheme

Survey work undertaken to inform the Appropriate Assessment of the scheme identified McGrogan's Hole (Field 707) as a roost site (McElwaine & Spouncer, 2006). Subsequent surveys have continued to monitor use of this location, and assess its importance for those swans that feed in the Toome area.

Based on survey work undertaken over the past eleven winters, it is considered that Whooper Swans grazing around Toome use three roost sites, namely:

- McGrogan's Hole (Field 707);

- South-west Lough Beg (H975932); and
- South Lough Beg – at an unknown location.

The surveys have shown that McGrogan's Hole is used on a regular, but intermittent basis by Whooper Swans. For example, at least 100 swans were observed landing on McGrogan's Hole after dusk on 15 January 2013, whereas few (if any) birds were thought to enter the site on 29 December 2012 (McElwaine, 2013). It is believed that spreading of grain in this area may be encouraging swans to use the site (McElwaine & Spouncer, 2006; McElwaine, 2009 & 2011). Consequently, for the purposes of the Appropriate Assessment, it is considered as an important roost site.

Sudden night time headlight glare on the McGrogan's Hole roost site, caused by vehicles using the planned Creagh Junction, could act to disturb roosting birds. Vehicle noise from the junction could also disturb roosting birds. At its nearest point, the A6 carriageway would be located 310 metres from McGrogan's Hole roost. The Authors of the 2005/6 survey concluded that this distance was sufficient for birds to not be disturbed by background noise and traffic. Also, based on the orientation of the mainline in this area, there will be no direct headlight glare on the roost site.

The planned grade-separated Creagh Junction has the potential to cause irregular, night-time disturbance to the roost site arising from vehicle noise, headlight glare and junction lighting. However, the roost site is located at over 300m from the scheme. Mitigation for this is discussed in Section 7.5.

6.6 Changes to quality of Lough Beg arising from pollution during construction

There is a risk of pollution incidents during construction activities. Possible locations and sources of pollutants during construction are summarised in Section 2.3 of the A6 Toome to Castledawson Environmental Statement (Scott Wilson Scotland Ltd/Ferguson McIlveen, 2007b).

Pollution incidents could comprise unregulated releases of sediments, accidental spillages of fuels, oils and concrete and litter and debris. These would affect qualifying interests if they resulted in direct harm to birds (e.g. oil spill), or indirect effects resulting from changes to the abundance of food.

None of the planned construction works occur in close proximity to Lough Beg, but works do cross four minor watercourses which discharge into Lough Beg. The distance between the planned works and Lough Beg means that any sediment that is released is likely to have been deposited in the minor watercourses prior to discharge to Lough Beg. Specific mitigation measures to avoid the unregulated discharges of contaminants will form part of the Employer's Requirements within the contract documents. Consequently, there are no predicted Likely Significant Effects on water quality of Lough Beg.

6.7 Changes to feeding quality of fields arising from changes to hydrological regime caused by embankment construction & road runoff.

A number of fields near the planned route experience surface flooding after periods of heavy rainfall. The Whooper Swan Report 2005/2006 (Section 5.8) notes the importance of water to swans in aiding the digestive process.

The Whooper Swan Report 2005/2006 records that fields 612 and 627 are most likely to experience ponding after heavy rainfall. These are both located at some distance from the proposed scheme, and will not be directly affected by the scheme. Field 612

was one of the most frequently used by Whooper Swans over the winter 2005/2006 (McElwaine & Spouncer, 2006), and supported peak numbers in winter 2009/10 which, if maintained over a five-year period, would have been sufficient to rank the field as of national importance. However, peak counts have been fewer in recent winters (McElwaine, 2013). High peak numbers of Whooper Swans have not been recorded from Field 627.

The road embankment has the potential to restrict surface movement of water within fields. However, as flooding within fields results from surface ponding, rather than fluvial flow, effects are likely to be localised. Also, the fields that experience the greatest degree of flooding will not be affected by the embankment. Consequently, the embankment is not considered to create sufficient changes in availability of water to prevent the SPA from meeting its conservation objectives with respect to Whooper Swan.

6.8 In-combination Effects

It is a requirement of Appropriate Assessment that the effects of a scheme are considered both alone and "in-combination" with other projects and plans. This includes both the cumulative effects arising from the project and the combined effects of different projects and plans that may influence the same European site.

This element of the assessment focuses upon any effects which, on their own, would be considered to be minor residual effects. If other plans or projects give rise to Likely Significant Effects, then they will be subject to Appropriate Assessment in their own right; it is only the minor residual effects of these projects and plans that should be considered for "in-combination" effects (Tyldesley, 2012).

Other projects that should be considered for "in-combination" effects have been identified by reviewing live applications supplied directly by Planning NI to ensure comprehensive coverage around the entire Lough Neagh and Lough Beg SPA. Major road infrastructure projects and land use plans (e.g. revisions to local plans) have also been reviewed. Consideration has been given to:

- incomplete projects;
- projects that have been consented, but which have not yet been implemented;
- applications that have been lodged, but not yet determined;
- refusals subject to appeal; and
- known incomplete/ not started projects that did not require consent.

The following projects and plans have been identified, through the screening process, as having the potential for in-combination effects in relation to Likely Significant Effects upon the availability of grazing habitat for Whooper Swans, or disturbance to Whooper Swans:

- Development of the Creagh Business Park (partially developed at the time this assessment was undertaken);
- Construction of Toome bypass (already completed at the time this assessment was undertaken); and
- Magherafelt Area Plan 2015 (Adopted).

6.8.1 Creagh Business Park

The Whooper Swan Report 2005/2006 considered the effect of the Creagh Business Park upon usage of fields by Whooper Swans.

The development of the Creagh Business Park resulted in the removal of a number of feeding fields which had been utilised in the past. This resulted in the direct loss of feeding habitat, which was replaced by industrial land, and indirect loss of land resulting from increased disturbance in adjacent fields, and changes in land management. These losses were thought to have affected the distribution of the Whooper Swans, which are now found mainly to the north of the existing Hillhead Road/Toome Bypass.

Some records for swan usage of fields south of the alignment have been collected over the nine winters since 2005/06; these are all for fields set back by at least one field width from the planned route. Fields lying south of the planned alignment, and the winters in which Whooper Swans have been recorded, are set out in Table 6.4.

Table 6.4: Fields lying south of the planned route alignment from which Whooper Swans have been recorded in at least one winter since 2005/06

Field Number	Winters
669	2006/07 2008/09 2009/10 2010/11
670	2008/09 2012/13
672	2007/08
675	2005/06 2006/07 2012/13
692	2011/12
697	2011/12

There is no evidence that this change in distribution has had an adverse effect on the integrity of the SPA, as peak counts of Whooper Swans recorded from the Toome area increased over the numbers recorded in 2005/06 to reach their highest levels in winter 2009/10. The peak count dropped in winter 2005/06. This lowest count coincided with a particularly cold winter. Peak counts at sites in Southern Scotland and England over the same winter were elevated, which could suggest that birds moved east and south to avoid the extreme conditions (McElwaine, 2011). The peak counts have increased at the site in subsequent winters (to winter 2012/13).

The Whooper Swan Report 2005/2006 concluded that one positive effect of this redistribution of birds within the complex was the likely reduction in daily flights across the main power-line route, as birds now do not commute to this area from the main feeding area, thus reducing the risks of bird strike.

The Magharafelt Area Plan 2015 also makes allowance for a further expansion of the business park (see below).

6.8.2 Toome bypass

Construction of the Toome bypass in 2002 led to the fragmentation of a number of fields that were known to regularly attract large numbers of Whooper Swan. It is known that Whooper Swan require enough space for landing and take-off and prefer an open and larger area for security. Results show that whilst Whooper Swans have been displaced by loss of suitably sized fields for grazing, Whooper Swan numbers in the area remain strong suggesting that the A6 Toome bypass construction has not had a direct detrimental effect on the overall numbers of wintering Whooper Swans within the study area, only the distribution (McElwaine & Spouncer, 2006).

Given the length of time since the completion of the bypass, it is considered that any effects are adequately covered by the baseline conditions, and will not lead to further in-combination effects with the planned scheme.

6.8.3 Magherafelt Area Plan 2015

A Habitats Regulations Assessment and Appropriate Assessment Report to accompany the plan was published in November 2011 (NIEA, 2011).

The HRA considered Likely Significant Effects upon Lough Neagh and Lough Beg SPA arising from policies related to land zoned for industry (NIEA, 2011). These allow for the expansion of the existing Creagh Business Park. The Appropriate Assessment noted that a maximum of 5 swans had been recorded on four days during the winter 2010-2011 and concluded that based on these low numbers in the area, there would not be an adverse effect upon the integrity of the SPA. Nevertheless, mitigation was included within the plan, to ensure that there would not be future cumulative effects upon the SPA arising from development. A Buffer Consultation Zone for swan fields in the Magherafelt District Council area has been identified, which will trigger particular scrutiny for their effects upon the Whooper Swan population.

The potential for in-combination effects arising from residual effects of development arising as a result of the Magherafelt Local Plan and the proposed scheme has been considered. All development arising from the Local Plan will occur south of the proposed route. As noted above, the A6 broadly represents the southern limit for distribution of Whooper Swans.

The Appropriate Assessment for the Area Plan also considered possible cumulative effects on qualifying interests arising from water pollution linked to sewage discharges. These were mitigated through inclusion of policies to phase development until adequate sewerage capacity is in place. There are no in-combination effects with the planned A6 dualling scheme.

7. MITIGATION

Mitigation measures are aspects that are introduced to a scheme to avoid or reduce the scale of an adverse effect. Mitigation of effects on qualifying interests should be clearly defined, integral to the project and have proven efficacy.

7.1 Generic mitigation measures

The design of the scheme has been modified to reduce the location and scale of effects:

- The construction footprint of the road in the vicinity of the fields used by Whooper Swans has been minimised. This has included re-locating drainage detention ponds to fields that are not regularly used by swans. The proposed location of ponds has been discussed with a Whooper Swan expert (see Item 1c in Table 28 of winter 2005/06 Whooper Swan Report).
- The scheme has been designed to reduce the sources of human disturbance on qualifying interests using grazing fields, through design of the scheme, including position of access routes and soft landscaping (see Section 5).
- Sustainable drainage features have been incorporated into the scheme design to attenuate discharge rates from road runoff and filter runoff contaminants.

A Working Group has been established, facilitated by TransportNI and involves representatives from NIEA - NED, RSPB, DAERA – Countryside Management,, and a Whooper Swan expert as a minimum. This group is reviewing, commenting on and (where pragmatic) influencing the detailed design and the development of prescriptive contract requirements to implement mitigation. These include, but not necessarily limited to:

- timing of works, e.g. restricting certain engineering works to avoid the winter period;
- adherence to Pollution Prevention Guidelines (PPGs);
- landscape design, to avoid headlight glare;
- use of cut-off lanterns or other measures to avoid light spill at McGrogan's Hole roost site.

The list of areas where mitigation is required is included in Table 28 of the 2005/06 Whooper Swan report (McElwaine & Spouncer, 2006).

One of the functions of this Working Group is to promote and facilitate management of fields within the area bounded by the existing A6 and Deerpark Road (see Section 6.1, Point 1 in winter 2006/2007 Whooper Swan report). As TransportNI does not have a direct role in field management, this requires a co-ordinated approach between the parties mentioned in Table 29 of the winter 2005/06 Whooper Swan Report.

The objective of the management programme is to ensure that there are adequate foraging areas for Whooper Swans. This will address both the size of fields and the nature and quality of foraging habitat available (e.g. promotion of a reduction in intensive sheep grazing in those fields important to Whooper Swans). The quality of feeding habitat has been demonstrated to have an important effect on the distribution of Whooper Swans. In Scotland, the numbers of Swans using particular fields close to a

new access road increased as a result of a change in management measures (including removal of cattle grazing and fertilisation of the sward) (Rees *et al.,* 2000).

Improvement of habitat quality beyond the boundary of a European site is regarded as a mitigation measure rather than compensation where it addresses effects that are also experienced beyond the boundary of the European site (Pelling, 2011).

Additional mitigation measures for each of the specific sources of Likely Significant Effects considered in Section 6 have also been discussed and agreed with the scheme designers, a Whooper Swan expert and NIEA. These are highlighted below.

7.2 Loss of grazing habitat used by qualifying interests (Whooper Swan)

The scheme design has been modified to minimise the area of fields used for grazing that will be affected by the scheme. This has included careful consideration of the position of drainage detention ponds and accommodation bridges (see above). The planned layout, which minimises incursions into fields used by Whooper Swans, forms part of the overall road scheme contract.

The assessment has concluded that there is capacity within other fields within the complex to accommodate swans displaced from fields to be lost to the scheme. However, the attractiveness of these other fields is affected, in part, by the cropping regime. Consequently, as identified above, mitigation is proposed that will ensure that appropriate cropping regimes are maintained within the Toome Complex (see Section 7.1).

7.3 Disturbance of qualifying interests (Whooper Swans) using grazing habitat, during construction

Whooper Swans are only present within the Toome Complex over the winter period (approximately October – March, although there are some records from April). Birds are particularly vulnerable to disturbance during periods of prolonged harsh weather, when food can be harder to obtain, but energy requirements are higher.

Prescriptive contract requirements are included to ensure that construction activities are planned and carried out in a manner that would reduce direct disturbance to the whole Whooper Swan complex and in particular the area north of the Toome Bypass and the planned route west to Deerpark Road. Such activities include for example, the dumping, disposal or temporary stockpiling of materials and the use of the area for haul routes or site compounds.

As noted in Section 6.2, disturbance can be minimised by timing the main earthworks outside the wintering period. Prescriptive contract requirements to limit certain construction activities in the area between the Toome bypass and Deerpark Road between mid-March and late September, form part of the Employer's Requirements.

7.4 Disturbance of qualifying interests (Whooper Swan) using grazing habitat, during operation of the scheme

The scheme has been designed to reduce the sources of human disturbance on qualifying interests (Whooper Swans) using grazing fields. Design features incorporated to minimise disturbance are described below.

Pedestrian/cycle facilities have not been provided along the northern side of the road between Toome bypass and Deerpark Road. This will increase the distance between people and the swan grazing fields.

New access points to Fields 713 and 723 are required as part of the scheme. These have been designed to ensure that use of these areas avoids or minimises disturbance to any Whooper Swans using these fields. Features adopted as part of the design include:

- positioning the access points to ensure that there are adequate sight-lines for the Swans to enable them to see approaching vehicles and disturbance;
- the field access lane leading south-eastwards from over bridge at Field 732, through Fields 731, 728, 727 & 723 has been located as close to the mainline as possible;
- the soft landscaping plans will incorporate low growing vegetation along the northern side of this access lane, to leave it as 'open' as possible so swans can see any approaching vehicles/ people.

The scheme has also been designed to reduce possible "hemming-in" effects of elevated crossings. Accommodation overbridges to be used by local landowners, have been located as far as feasible from fields supporting Whooper Swans. One overbridge is located between Fields 714 and 704/705, and the next is located in Field 732. The bridges are approximately 530m apart, thus reducing the 'hemming-in' effect on any birds using Fields 713 & 723. The location of all such overbridges has been discussed with a Whooper Swan specialist. The road scheme design layout forms part of the overall road scheme contract.

The Design team has produced a specimen landscape design, to minimise bird disturbance/agitation, which has been discussed with a Whooper Swan specialist to agree its layout and submitted to the Working Group for approval (see Section 7.1). The agreed specimen landscape design layout forms part of the overall road scheme contract.

7.5 Disturbance of qualifying interests (Whooper Swans) using an important roosting site (McGrogan's Hole) as a result of nocturnal lighting of scheme

The Design team has incorporated landscape planting bund around the edge of the planned Creagh Junction in the design, to eliminate disturbance from headlight glare. The bund will be constructed by the contractor. The location of such a mitigation measure has been discussed with a Whooper Swan specialist. The road scheme design layout forms part of the overall road scheme contract.

In addition, the type of lighting to be used has been specified in the contract. The Design team will incorporate full cut-off lanterns around the edge of the planned Creagh Junction in the design, to reduce lighting glare disturbance. The lighting columns would then be incorporated in the works by the contractor. The incorporation of such a mitigation measure has been discussed with a Whooper Swan specialist. The road scheme design layout forms part of the overall road scheme contract.

7.6 Changes to feeding quality of fields arising from changes to hydrological regime caused by embankment construction and road runoff.

The scheme embankments and drainage will be designed to minimise and avoid changes to the hydrological regime of the grazing fields. The precise layout will be developed as part of the detailed design process, but is likely to require incorporation of drains across the embankment using pipes or a layer of drainage.

The embankment material's permeability would be checked to maintain the current groundwater flow regime.

The local loss of a number of fields outside the Natura 2000 site should not interfere with hydrological relationships of the SPA, if good working practice is adopted and the design embraces the need to protect the flow and integrity of all watercourses/ditchlines linked to the wetland system.

7.7 Changes to quality of Lough Beg arising from pollution during construction

As noted in Section 6, Likely Significant Effects on water quality during construction can be avoided with the inclusion of prescriptive mitigation measures. The contractor will be obliged to adhere to the Pollution Prevention Guidelines (PPGs), as documented in Section 2.3.4.9 of the A6 Toome to Castledawson Environmental Statement (Scott Wilson Scotland Ltd/Ferguson McIlveen, 2007b). Adherence to the PPGs will substantially reduce the risk of pollution events. The design team has included a range of prescriptive measures in the contract documentation to ensure the risk of pollution is minimised. These include, *inter alia*:

- compliance by the contractor, with the relevant PPG's (including PPG1 – General guide to the prevention of pollution; PPG5 – Works in, near or liable to affect watercourses; PPG6 – Working at construction and demolition sites).
- Storage of oils and diesel, along with the general maintenance and re-fuelling of construction plant, will be restricted to bunded areas away from watercourses and the wetland areas.

The Contractor will be required to maintain a tidy site as far as practicable and will be required to dispose of litter, debris and other materials in a controlled and responsible manner.

7.8 Mitigation measures for design and construction of the Annaghmore Road/ Bellshill Road Junction at Castledawson

The junction forms part of the overall scheme, and hence is subject to the same in-built mitigation measures that have been outlined above. As an additional measure, a temporary, impermeable stormwater runoff retention bund will be constructed to avoid the unregulated release of sediment to the Moyola River during creation of the Flood Compensation Area. Construction of this bund is included within the Employer's Requirements and contract documents.

8. PROPOSALS FOR MONITORING AND REPORTING

TransportNI has made a commitment to undertake monitoring of the distribution of the Whooper Swan population within the Toome Complex prior to, during construction and for three years after the road opens to traffic. This is being implemented, and information collected as part of these surveys has been used in this report. These annual monitoring reports will be submitted to the Working Group for information, although RSPB, NIEA and WWT already receive a copy of each winter's report annually.

Monitoring during construction of the scheme will fall to the Employer's appointed site representative and the contractor. This may entail the raising of Non-Conformance Reports and the request for corrective action. Meetings will be held between the Contractor and the Working Group established for this project.

Information concerning use of the area by Whooper Swans, post scheme completion, will be used to inform the management proposals for the Toome area and to modify soft landscaping associated with the scheme.

TransportNI has also made a commitment to promote an academic study (MSc or PhD) to investigate the variability of field usage by swans (TransportNI, 2009).

9. CONSULTATIONS

Table 9.1 summarises the results of consultations with various nature conservation bodies that have taken place through the development of the preferred route option and preparation of the Environmental Statements. It also includes comments and the statutory consultation with NIEA concerning the previous version of the Article 6 Assessment incorporating Test of Likely Significance and Appropriate Assessment. Table 9.1 only includes comments relating specifically to Lough Neagh and Lough Beg SPA and Ramsar site of the qualifying interests of these sites; comments relating to other ecological receptors have not been included here.

A separate consultation exercise was undertaken for the HRA of the revised layout of the Annaghmore Road/Bellshill Road Junction, which is documented separately (URS, 2014).

Table 9.1: Summary of Consultations

Name of agency(ies) or body(ies)	Summary
EHS – Natural Heritage (Gregor Watson, Cathy Barker, Paul Byrne)	21/01/2005: Written response to different route options. Notes that the Red Route passes to the immediate south of the Lough Neagh & Lough Beg SPA and Ramsar site. Provides details of information available from EHS & data requirements for assessment of impacts. 31/01/2005: Meeting involving EHS, RSPB & Irish Whooper Swan Study Group. The issue of Whooper Swans in relation to the road route options were discussed. Points raised included the importance of Lough Neagh & Lough Beg SPA and Ramsar site for Whooper Swans; the importance of areas crossed by the Red Route for Whooper Swans. Details of additional information required by EHS were discussed. 12/04/2005: Letter stating that effects of Red Route on the Lough Neagh & Lough Beg SPA needed to be considered under Regulation 43 of *The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995.* Aspects to be included in the assessment were identified as "*consideration of the likely impacts on the areas of land and lough which would be disturbed during the construction works, the timing and duration of the works with particular attention paid to the SPA feature birds and the potential damage to water quality. The assessment should also consider how the post-construction usage of each route would impact upon the SPA features.*" EHS noted that further information was required before they could provide a comment on different route options.

Name of agency(ies) or body(ies)	Summary
EHS – Natural Heritage (Gregor Watson, Cathy Barker, Paul Byrne)	01/08/2005: Written acknowledgement of receipt of details of new route option. EHS notes that additional information requested on 21/01/2005 is required prior to being able to comment on options. 03/10/2005: Meeting involving EHS, RSPB & IWSSG & consultants: The purpose was to agree a methodology for undertaking Whooper Swan wintering surveys. 12/11/2005: Letter confirming that EHS has concerns about the impact of the proposed route option on qualifying interests of Lough Neagh & Lough Beg SPA and need to carry out an Article 6 assessment. 29/11/2005: Meeting involving EHS, RSPB, IWSSG & consultants. The purpose of the meeting was to report progress in monitoring the Whooper Swan wintering population. 19/12/2005: Letter from EHS to TransportNI raising concern about the choice of preferred route and request for meeting to discuss the issue. 12/04/2006: Meeting involving EHS, DARD, Lough Neagh & Lower Bann Advisory Committee, IWSSG and consultants to discuss results of winter Whooper Swan survey. Undated: Letter from EHS concerning Tests of Significance for each route option. EHS is satisfied that these have covered necessary points, and agrees with conclusions. It notes that if Roads Service wishes to progress the Red route then an Appropriate Assessment will be required, & offers advice concerning reference material to refer to ("Assessment of plans and projects significantly affecting NATURA 2000 sites." 06/09/2006: Letter from EHS querying outcome of ToS in relation to the preferred Red "variant" route. 21/09/2006: Meeting involving EHS & consultants to discuss ToS received for each route. It was agreed that the Stage 2 Blue and Brown Routes would not have a significant impact on the SPA or its candidate features. The original Red Route would have a significant effect and be subject to Appropriate Assessment, if pursued. Information provided for the Red Variant Route contained elements of a ToS and an Appropriate Assessment and should be reviewed. 06/04/2007: Letter from EHS concerning revised Article 6 Assessment for the preferred route. EHS states concerns that the conclusion does not fulfil the requirements of the Habitats Directive and that the measures proposed to offset impacts are compensation measures rather than mitigation. The letter also includes 14 specific points about the content of the AA and analysis that have been undertaken.

Name of agency(ies) or body(ies)	Summary
	30/04/2007: Meeting involving EHS, IWSSG and consultants to discuss the issues raised in letter of 06/04/2007. 12/11/07: Meeting involving EHS, IWSSG and consultants. Clarification of further work that has been undertaken and re-submitted Article 6 AA. 26/06/2008: Letter from EHS in response to further revised Article 6 AA. A supporting memo highlights that there is broad agreement with the findings of the AA, and includes details of conditions that should be applied to any consent.
EHS – Conservation Designations & Protection (Andrew McIntosh, David Chambers)	06/01/2005: Letter from EHS (Andrew McIntosh) confirming that "*Conservation, Designations and protection have no concerns about the impact of this discharge on Lough Neagh ASSI or Lough Neagh and Lough Beg SPA.*" 30/05/2013: Email from NIEA (David Chambers) confirming that an HRA for the A6 Annaghmore Road/Bellshill Road Junction proposal is required for one European site: Lough Neagh & Lough Beg SPA and Ramsar site. Issues to be considered are potential emissions to air and water during the construction and operational phase of the junction.
RSPB (James Robinson, Claire Ferry, Michelle Hill)	20/11/2003: Letter in response to request for information. Letter makes reference to issues relating to previous upgrade of Toome Bypass, and requests that these are considered as part of the Randalstown-Castledawson dualling. 31/01/2005: Meeting involving EHS, RSPB & Irish Whooper Swan Study Group. For summary see entry under EHS. 15/02/2005: Letter following meeting with EHS etc. on 31/01/2005. It sets out concerns about impact of the Red Route on qualifying interests of Lough Neagh & Lough Beg SPA and sets out options for the assessment of these, which are in line with the requirements of the Habitats Directive. 06/07/2005: Letter clarifying comments on revised Red Route and other route options. It notes that whilst the revised Red Route does avoid many fields used by Whooper Swan, the scheme would still be subject to provisions of Regulation 43(1) and 44 of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995. 29/07/2005: Email clarifying RSPB's knowledge of use of fields to the east of Toome by Whooper Swans. 03/10/2005: Meeting involving EHS, RSPB & IWSSG & consultants: The purpose was to agree a methodology for undertaking Whooper Swan wintering surveys. 29/03/2007: Email clarifying receipt of ES for Toome and requesting clarification as to how mitigation will be enforced and implemented.

Name of agency(ies) or body(ies)	Summary
RSPB (James Robinson, Claire Ferry, Michelle Hill)	19/04/2007: Email requesting clarification about availability of second year's monitoring of Whooper Swan usage of fields. 24/04/2007: Email request for copy of Article 6 Assessment. 14/06/2007: Letter from RSPB to TransportNI commenting on draft assessment of effects on Whooper Swans. The letter states RSPB's objection to the scheme owing to insufficient information, and sets out details of what additional information and analysis is required. This includes ranking the relative swan-days per area by field and determining whether adequate carrying capacity exists elsewhere to replace the areas that will be lost. 18/06/2007: Meeting between RSPB & consultants to discuss the contents of the RSPB's objection letter. There were different views on the value of ranking fields according to relative swan-days per area, and whether this would reflect carrying capacity or "attractiveness". This was to be discussed with other members of RSPB staff. Appropriate management measures and mechanisms for implementing these were discussed. It was noted that if mitigation can be clearly set out and implemented this may lead to RSPB removing its objection. 02/07/2007: Meeting between RSPB and consultants to discuss analytical requirements. Different options were discussed, for RSPB to provide written comment at a later stage. Mitigation was also discussed. 06/07/2007: Email from RSPB following up points raised at meeting on 02/07/2007. This clarifies (but differs from the letter of 14/06/2007) the additional analysis that should be included. This needs to demonstrate that the carrying capacity of the area has not be met and that changes to the management of the area would secure habitat for displaced swans, even if the carrying capacity has been reached. 17/09/2007: Email in response to informal consultation re scope of revised analysis likely to be included in revised ToS and AA. RSPB confirmed that scope of analysis likely to be acceptable to them. 30/10/2007: Formal letter response to Article 6 Assessment for the A6 Toome to Castledawson dualling scheme. RSPB is satisfied with the Article 6 Assessment, final report and analyses. "*Subject to the operational mitigation measures being undertaken*", RSPB withdraws its objection. 13/06/2013: Email from Michelle Hill questioning whether screening should also consider the Bann Estuary SAC.

Name of agency(ies) or body(ies)	Summary
RSPB (Michelle Hill, Seamus Burns, Kendrew Colhoun, Matthew Tickner), NIEA (Neill McCullough, Emer Campbell) IWSSG (Graham McElwaine)	03/07/2014: Meeting between RSPB, NIEA, IWSSG and the consultants to discuss findings of latest Whooper Swan annual monitoring and potential effects on other SPA Qualifying Interests. Concluded that there were not likely to be significant effects on any SPA selection features. Findings of this have been incorporated in Table 4.5 of this report.
CNCC (Dr. Lucinda Blakiston-Houston, Joe Furphy)	21/10/2005: Letter raising serious concerns about impacts of selected route on Lough Neagh & Lough Beg SPA. 24/10/2005: Meeting between CNCC and consultants to discuss concerns about the preferred Red Variant route. 24/11/2005: Meeting between CNCC and consultants to provide CNCC with overview of survey work proposed. 07/06/2006: Letter stating that CNCC would expect the significance of proposal on all the conservation objectives to be considered, not just Whooper Swans.
WWT (James Orr)	06/07/2005: Letter objecting to both Red and Red variant route owing to impacts on Whooper Swans. 01/10/2005: Email response to invitation to attend meeting to discuss draft methodology for Whooper Swan survey. This includes comments on the proposed methods.
DARD – Countryside Management Division (Joanna Dale)	DARD participation in meetings to discuss the project is highlighted above in the summary of consultations with EHS.

Name of agency(ies) or body(ies)	Summary
Lough Neagh & Lower Bann Advisory Committee (Seamus Burns)	06/01/2004: Letter commenting on different route options and raising concerns about impact of Red Route on Whooper Swans. 04/07/2005: Letter raising concerns about impacts of the Red Route Variant upon swan feeding sites and roosting site. 28/10/2005: Letter in response to selection of Red variant route, requesting that swan monitoring work be conducted over more than one year. 22/11/2005: Email providing comments on proposed whooper survey methodology. 02/06/2006: Letter highlighting concerns that change in management of fields could impact on their use by Whooper Swans, which could alter the importance of fields to be lost to the road. Suggests that TransportNI implement some form of financial management scheme to ensure that adequate feeding areas are maintained. --/04/2007: Written response to Environmental Statement for A6 Toome-Castledawson dual carriageway. Sets out support for establishment of group to co-ordinate better management of area for Whooper Swans. Also includes request for screening of roost site and provision of educational facilities.
IWSSG (Graham McElwaine)	31/01/2005: Meeting involving EHS, RSPB & Irish Whooper Swan Study Group. For summary see entry under EHS. 03/10/2005: Meeting involving EHS, RSPB & IWSSG & consultants: The purpose was to agree a methodology for undertaking Whooper Swan wintering surveys.
Ulster Wildlife Trust	27/04/2005: Written response (D. Hughes to G. Coughlin) to different route options. Notes that the “Red Route” would be unacceptable owing to it passing through a large area utilised by wintering Whooper Swans and wide range of wildfowl and waders & passes close to the Lough Neagh & Lough Beg SPA. The Trust states that the development would create an “unacceptable impact” on the SPA. It further notes that the Toome bypass has already brought traffic closer to the swans and Lough.

10. CONCLUSIONS

Proposals to upgrade the A6 between Randalstown and Castledawson were initially developed as two schemes (Randalstown to Toome, and Toome to Castledawson). The Toome to Castledawson section of the route was identified as having Likely Significant Effects upon Whooper Swans, which are a qualifying interest of Lough Neagh & Lough Beg SPA and were subject to a Habitats Regulations Appraisal (HRA) and shadow Appropriate Assessment, which was published in 2008 (Scott Wilson Ltd, 2008). Following publication of the Inspector's reports into Public Inquiries for each scheme, TransportNI has decided to progress both proposals in one contract. It has also revised proposals for the Annaghmore Road/Bellshill Road Junction at Castledawson, including undertaking screening for Appropriate Assessment (URS, 2014). The findings of the original HRA for the Toome to Castledawson section of the scheme have been reviewed and updated in light of the time that has elapsed since the previous assessment, changes in baseline conditions including data about use of fields by Whooper Swans, and developments in the implementation of HRA. The HRA has also been expanded to include a documentary record of the screening of the Randalstown to Toome section of the route, and the HRA screening for the revised junction layout at Annaghmore Road/Bellshill Road at Castledawson.

The planned scheme lies close to, but outside the boundary, of a single European site: Lough Neagh & Lough Beg SPA. The SPA has been identified for the presence of internationally important populations of wintering, breeding and passage bird species.

The scheme is not required for the conservation of the site, and hence an Appropriate Assessment of the implications of the scheme for the site in light of its conservation objectives was undertaken.

The scheme does not impinge the boundary of the SPA or Ramsar site. The screening exercise identified that part of the route (between Toome and Castledawson) would give rise to a number of Likely Significant Effects upon one of the qualifying interests of Lough Neagh & Lough Beg SPA (Whooper Swans). These effects were identified in respect to:

- loss of grazing habitat used by qualifying interests;
- disturbance during construction to qualifying interests using grazing habitat;
- disturbance during operation of the road to qualifying interests using grazing habitat;
- disturbance during operation of the road to qualifying interests using a roosting site; and
- changes to feeding quality of fields arising from changes to the hydrological regime.

These elements were then subject to an assessment of their effects upon the integrity of Lough Neagh & Lough Beg SPA in respect of the site's conservation objectives.

Effects on the water quality of Lough Beg during construction and operation of the scheme were initially identified, but following incorporation of mitigation in the scheme, were screened out. Proposals for treating drainage from the completed scheme represent an improvement on the current situation.

The planned scheme is located along the southern edge of the main area of grazing fields used regularly by Whooper Swans. Whilst it will pass through 39 fields, swans have only been recorded from ten of these fields in at least one of the past nine winters and three of the fields (totalling just over half of the area to be affected) have not been used over the past seven winters. The road will also pass close to an additional 14 fields, three of which have supported swans in at least one of the last nine winters.

The evidence of swan use of fields within the Toome complex shows that there is a noticeable difference in overall field use between years, although there is a distinct pattern that several fields are used on a more regular annual basis (Section 4.3 of the 2015/16 Whooper Swan Report).

The importance of individual fields to Whooper Swans has been assessed using a variety of measures including regularity of use (i.e. numbers of years used), Peak Counts and swan-days.

Three of the fields that will be directly crossed by the route are used regularly by Whooper Swans (Fields 617, 621B & 723) and two of them are also important in terms of Peak Counts (Fields 617 & 723). There will be an anticipated total loss of 2.68ha of habitat from these three fields. In addition, Field 634, situated adjacent to the existing bypass, is also important in terms of regularity of use, Peak Counts and swan-days. However, it will not experience any direct habitat loss.

Assessments of the availability of habitat within the Toome Complex have determined that there is spare carrying capacity within the remaining fields to accommodate any Swans that are displaced as part of the scheme (Section 4.2 of the 2015/16 Whooper Swan Report).

Disturbance of Swans during construction of the scheme can be avoided by careful timing of works.

Whooper Swans currently use fields adjacent to the existing A6. Research at the site suggests that the Swans are not disturbed by routine road traffic, although pedestrians and unexpected events do cause disturbance. This is supported by research in other areas. The scheme has been designed to direct pedestrian disturbance away from the fields used by Swans.

The scheme also includes design aspects to ensure that light and noise from night operation of the scheme will not disturb Swans using a roost site. This roost site is used on a regular, but intermittent basis, by varying numbers of swans. Use of the roost site appears to be linked, in part, to the provision of supplemental feed at the site.

The design of the road is such that it will not interfere with the hydrological regime of the remaining habitat.

The scheme includes a number of mitigation measures that will avoid or reduce any effects. A Working Group has been established which will oversee the detailed design of the road scheme; particularly the positioning of accommodation access routes in the vicinity of fields used by Swans, soft landscaping proposals, and noise and light attenuation methods. One of the main factors influencing use of the fields by Whooper Swans is the nature and quality of grazing habitat present. This is beyond the influence of the road scheme, however, the Working Group is seeking to improve management of the remaining fields to maximise their feeding value for Swans. This may include re-location/removal of field boundaries (within the same landownership) to ensure that fields are of the required minimum size.

There are commitments to monitor the Swan populations.

The minor residual effects of displacement of some Swans from fields along the proposed route have been considered in combination with the effects of other projects and plans for the area. Other plans and project considered include the Magherafelt Area Plan and Creagh Business Park.

In conclusion, having regard to the Environmental Statement, the SIAA, and the consultation responses to this assessment, the likely significant environmental effects of the proposed scheme have been assessed and have been sufficient to inform judgements to be reached with regard to the scheme. Accordingly, the construction and operation of the A6 Randalstown to Castledawson dualling scheme would not by itself, or in combination with other known plans or projects, adversely affect the integrity of Lough Neagh & Lough Beg SPA, or indeed any other Natura 2000 site.

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12. GLOSSARY OF TERMS

Term	Definition
Adverse effect	An effect on the qualifying interests of a European site that acts to prevent the achievement of the conservation objectives for the site.
Appropriate Assessment	Part of the Habitats Regulations Appraisal process. An Appropriate Assessment is required under the Habitats Regulations, when a project or plan, either alone or combination with other projects and plans, is considered to have a Likely Significant Effect upon a European site. The test is to assess the effect of the project or plan on the integrity of a European site in view of the site's conservation objectives.
Article 6	Article 6 of the Habitats Directive 92/43/EEC sets out the circumstances under which Appropriate Assessment is required. Consequently, consideration as to whether an Appropriate Assessment is required, and the Appropriate Assessment itself may sometimes be referred to as an Article 6 Assessment.
Birds Directive	Directive 2009/147/EC of the European Parliament and of the European Council of 30th November 2009 on the conservation of wild birds.
Competent Authority	Term used in the Habitats Directive and Habitats Regulations to describe the authority that is responsible for making a decision about a project application.
Conservation Objectives	Statement setting out the measures required to maintain at or restore to favourable conservation status the natural habitats and/or the populations of species of wild fauna and flora for which a European site has been selected.
Environmental Statement	A document that reports the findings of an Environmental Impact Assessment completed following the requirements of Council Directive 85/337/EEC ("the EIA Directive") on the assessment of the effects of certain public and private developments on the environment as amended by Council Directives 97/11/EC, 2003/35/EC and 2009/31/EC.
European Site	Term used to describe a site identified as a Natura 2000 site. It includes Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Sites of Community Importance (SCI).
Habitats Directive	EC Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora.
Habitats Regulations	The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 and subsequent amendments.

Term	Definition
Habitats Regulations Appraisal	The term “Habitats Regulations Appraisal” is used to define the whole process of considering whether a plan is likely to have significant effects upon a European site and the “Appropriate Assessment” of the effect upon the integrity of the site. Some Authors may use the term “Habitats Regulations Assessment” to describe the same process.
In combination	Consideration of the cumulative effects of different aspects of the same project and/or cumulative aspects of different projects/plans that act upon the qualifying interests of a European Site.
Integrity	Based on the purpose of the Directive, ‘integrity of the site’ relates to the site’s conservation objectives. For example, it is possible that a plan or project will adversely affect the integrity of a site only in a visual sense or only habitat types or species other than those listed in Annex I or Annex II. In such cases, the effects do not amount to an adverse effect for purposes of Article 6(3), provided that the coherence of the network is not affected. On the other hand, the expression ‘integrity of the site’ shows that focus is on the specific site. Thus, it is not allowed to destroy a site or part of it on the basis that the conservation status of the habitat types and species it hosts will anyway remain favourable within the European territory of the Member State. As regards the connotation or meaning of ‘integrity’, this can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation. The ‘integrity of the site’ has been usefully defined as *‘the coherence of the site’s ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified*’. A site can be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self-repair and self-renewal under dynamic conditions is maintained, and a minimum of external management support is required. When looking at the ‘integrity of the site’, it is therefore important to take into account a range of factors, including the possibility of effects manifesting themselves in the short, medium and long-term. The integrity of the site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site’s conservation objectives.

Term	Definition
Likely Significant Effect (LSE)	Likely effects are those that cannot be excluded on the basis of objective information. These are considered significant effects is they may prevent the conservation objectives of a site from being met. The identification of Likely Significant Effects acts as a trigger for an Appropriate Assessment.
Mitigation measures	Measures designed to reduce the likelihood of a project having an adverse effect on the integrity of a European site.
Natura 2000 Network	The network of European sites comprising SACs and SPAs.
Peak Counts	The maximum number of a species of bird recorded from a single field at one time. The Peak Counts achieved each winter may be averaged over a five-year period.
Qualifying Interests	The habitats or species of a site that have contributed to its selection as a European site. This may also be termed selection features.
Ramsar site	A site identified as a wetland of international importance under the provisions of the Ramsar Convention of 1971.
Screening	A term widely used to describe the initial process of reviewing aspects of a project to identify whether it will give rise to Likely Significant Effects and hence be subject to an Appropriate Assessment.
Site Condition	A description of the conservation status of a designated site, with reference to its qualifying interest features. Sites are usually monitored (Site Condition Monitoring) on a six-yearly rolling cycle.
Special Protection Area	European site identified on the basis of its bird species or populations under Article 4 of the Birds Directive.
Stage 2 Assessment	This term may be used to describe the Appropriate Assessment of the effects of the project upon the integrity of the Natura site.
Statement to Inform the Appropriate Assessment (SIAA)	The Appropriate Assessment of the effect of a project upon a Natura site has to be completed by the Competent Authority. Information to inform that assessment may be produced by the competent authority, their consultants, or the project proponent. This information may be contained in a document entitled a Statement to Inform the Appropriate Assessment.
Swan-Days	A swan-day equates to each time a Whooper Swan is counted during a visit.

Term	Definition
Test of Significance ToS	Also sometimes known as a Test of Likely Significance (ToLS) or as Stage 1 Assessment. This refers to the first stage of considering whether a project requires an appropriate assessment under the Habitats Regulations. It equates to the screening of a project to determine whether an Appropriate Assessment is necessary.
Total Swan-Days	This provides a method for estimating total usage of fields, including days when counts were not undertaken. The numbers of swans counted on adjacent visits are averaged and this figure is applied to the spacing in days between visits to build a total over the winter. Further details of the calculation are contained in the 2014 Whooper Swan report (McElwaine, 2014).
WeBS	Wetland Bird Survey scheme, organised by the British Trust for Ornithology (BTO). This is a UK-wide programme of monthly counts of birds found around the coastline and along certain inland waterbodies.

APPENDIX A QUALIFYING INTERESTS

NATURA 2000

STANDARD DATA FORM

FOR SPECIAL PROTECTION AREAS (SPA)
FOR SITES ELIGIBLE FOR IDENTIFICATION AS SITES OF COMMUNITY IMPORTANCE (SCI)
AND
FOR SPECIAL AREAS OF CONSERVATION (SAC)

1. Site identification:

1.1 Type F

1.2 Site code UK9020091

1.3 Compilation date 199604

1.4 Update 199902

1.5 Relationship with other Natura 2000 sites

U	K	0	0	3	0	2	4	4

1.6 Respondent(s) International Designations, JNCC, Peterborough

1.7 Site name **Lough Neagh and Lough Beg**

1.8 Site indication and designation classification dates

date site proposed as eligible as SCI	
date confirmed as SCI	
date site classified as SPA	199604
date site designated as SAC	

2. Site location:

2.1 Site centre location

longitude	**latitude**
06 24 34 W	54 34 11 N

2.2 Site area (ha) 40835.53

2.3 Site length (km)

2.5 Administrative region

NUTS code	Region name	% cover
UKB	Northern Ireland	100.00%

2.6 Biogeographic region

Alpine	Atlantic	Boreal	Continental	Macaronesia	Mediterranean
	X				

3. Ecological information:

3.1 Annex I habitats

Habitat types present on the site and the site assessment for them:

Annex I habitat	% cover	Representativity	Relative surface	Conservation status	Global assessment

3.2 Annex I birds and regularly occurring migratory birds not listed on Annex I

		Population				Site assessment			
		Resident	Migratory						
Code	Species name		Breed	Winter	Stage	Population	Conservation	Isolation	Global
A059	*Aythya ferina*			26341 I		A		C	
A061	*Aythya fuligula*			22372 I		A		C	
A067	*Bucephala clangula*			10776 I		A		C	
A037	*Cygnus columbianus bewickii*			136 I		B		B	
A038	*Cygnus cygnus*			1031 I		B		C	
A193	*Sterna hirundo*		185 P			B		C	

4. Site description:

4.1 General site character

Habitat classes	% cover
Marine areas. Sea inlets	
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	
Salt marshes. Salt pastures. Salt steppes	
Coastal sand dunes. Sand beaches. Machair	
Shingle. Sea cliffs. Islets	
Inland water bodies (standing water, running water)	95.0
Bogs. Marshes. Water fringed vegetation. Fens	2.2
Heath. Scrub. Maquis and garrigue. Phygrana	2.4
Dry grassland. Steppes	
Humid grassland. Mesophile grassland	
Alpine and sub-alpine grassland	
Improved grassland	
Other arable land	
Broad-leaved deciduous woodland	
Coniferous woodland	
Evergreen woodland	
Mixed woodland	0.4
Non-forest areas cultivated with woody plants (including orchards, groves, vineyards, dehesas)	
Inland rocks. Screes. Sands. Permanent snow and ice	
Other land (including towns, villages, roads, waste places, mines, industrial sites)	
Total habitat cover	**100%**

4.1 Other site characteristics

Soil & geology:

Basalt, Clay, Igneous, Peat, Sand

Geomorphology & landscape:

Floodplain, Island, Lowland

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:

Sterna hirundo	6% of the all-Ireland breeding population
(Northern/Eastern Europe - breeding)	Count, as at 1995

Over winter the area regularly supports:

Cygnus columbianus bewickii (Western Siberia/North-eastern & North-western Europe)	5.4% of the all-Ireland population 5 year peak mean 1991/92-1995/96
Cygnus cygnus (Iceland/UK/Ireland)	10% of the all-Ireland population 5 year peak mean 1991/92-1995/96

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:

Aythya ferina (North-western/North-eastern Europe)	7.5% of the population 5 year peak mean 1991/92-1995/96
Aythya fuligula (North-western Europe)	2.2% of the population 5 year peak mean 1991/92-1995/96
Bucephala clangula (North-western/Central Europe)	3.6% of the population 5 year peak mean 1991/92-1995/96

ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS

Over winter the area regularly supports:

99262 waterfowl (5 year peak mean 01/04/1998)

Including:

Cygnus columbianus bewickii , Cygnus cygnus , Aythya ferina , Aythya fuligula , Bucephala clangula .

4.3 Vulnerability

The Lough drains some 40% of Northern Ireland and has been subject to severe eutrophication as a result of increased nutrient inputs from agricultural run-off and general domestic sewage from catchment housing and other developments.
Historically, increased eutrophication may have enhanced wildfowl populations but the effect of eutrophication on such populations is little understood although it may have had a positive impact on wintering diving duck.
Although some spcies e.g. swans, use improved fields, recent changes in agricultural land-use i.e. agricultural intensification (land improvements/high grazing levels) and, in some cases, insufficient grazing and tree/scrub management resulting in vegetation succession, may adversely affect feeding/roosting areas for overwintering and breeding waterfowl.
Introduction of/invasion by non-native species such as Roach and potentially Zebra Mussels could have a deleterious effect on some species e.g. diving duck, but may be beneficial to others e.g. Great-crested Grebe.
Sand dredging is widespread throughout the Lough but the impact is largely unknown.
An existing Conservation Plan for Lough Neagh and Lough Beg is currently under review. This review will up-date existing management prescriptions and refine existing conservation objectives.
A total of 15 management agreements (NNR/ASSI) mainly for agricultural issues, are established on the site.
Phosphate stripping at appropriate STW has begun to address the issue of eutrophication. Other measures such agric-improvement schemes and Water Quality Management Plans to further address this issue are being considered.

5. Site protection status and relation with CORINE biotopes:

5.1 Designation types at national and regional level

Code	% cover
UK01 (NNR)	3.0
UK04 (SSSI/ASSI)	100.0

APPENDIX B CONSERVATION OBJECTIVES

CONSERVATION OBJECTIVES

LOUGH NEAGH SPA

(See also Reas Wood and Farrs Bay SAC conservation objectives)

1. POLICY STATEMENT

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any appropriate assessment that may be needed. It should be noted that appropriate assessments are a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

2.1 GENERAL INFORMATION

COUNTY: Antrim, Down, Armagh, Tyrone and Londonderry

G.R. J030 700 AREA: 41188 ha.

2.2 SUMMARY SITE DESCRIPTION

Lough Neagh is a large, shallow, eutrophic lake contained within Counties Antrim, Down, Londonderry and Tyrone. Lough Neagh is the largest freshwater lake in the UK and is one of the top ten sites in the UK for wintering waterfowl (based on annual mean numbers). The SPA also includes the smaller lakes, Lough Beg and Portmore Lough. The main habitats within the SPA are open water with beds of submerged aquatic vegetation, species-rich wet grassland, reedbed, islands, swamp, fen and carr woodland. The SPA supports internationally important numbers of wintering waterfowl and is internationally important for a number of wildfowl species including Whooper Swan, Bewick's Swan, Pochard, Tufted Duck, Scaup and Goldeneye. It is also internationally important for breeding Common Tern.

2.3 BOUNDARY RATIONALE

The boundary takes in the main waterbodies, including Portmore Lough and Lough Beg, together with all adjoining natural and semi-natural habitat of conservation significance. All islands within Lough Neagh are also included. Adjoining agriculturally improved areas utilised by swans have not been included but their importance must not be underestimated.

3.1 SPA SELECTION FEATURES

Feature Type (i.e. habitat or species)	**Feature**	**Population[1]**	**Population at time of designation (ASSI)**	**Population at time of designation (SPA)**	**SPA Review population**	**CSM Baseline**
Species	Common Tern breeding population	137 individuals (Seabird 2000 data)		200 pairs	185	118
Species	Great Crested Grebe	500 pairs		New	500	

	breeding population	(Data source unknown)		feature		
Species	Great Crested Grebe passage population	2440 (1995 max count)		New feature	2440	438
Species	Whooper Swan wintering population	1031	1152	923	1031	283
Species	Bewick's Swan wintering population	136	314	251	136	23
Species	Golden Plover wintering population	5334	3625	Not listed	5298	1626
Species	Great Crested Grebe wintering population	1431	1173	741	1821	110
Species	Pochard wintering population	26441	31508	32165	26341	19588
Species	Tufted Duck wintering population	22454	19372	23476	22372	17972
Species	Scaup wintering population	3698	1584	2557	3798	1215
Species	Goldeneye wintering population	10781	11521	12479	10776	6700
Assemblage species	Little Grebe wintering population	465	395	390	465	290
Assemblage species	Cormorant wintering population	718	815	781	728	445
Assemblage species	Greylag Goose wintering population	156	120	129	176	7
Assemblage species	Shelduck wintering population	180	142	165	159	107
Assemblage species	Wigeon wintering population	3117	2607	3447	3117	2607
Assemblage species	Gadwall wintering population	166	120	114	166	88
Assemblage species	Teal wintering population	1597	2288	1868	1596	1154
Assemblage species	Mallard wintering population	5422	5330	4982	5256	3591
Assemblage species	Shoveler wintering population	163	169	173	148	43
Assemblage species	Coot wintering population	7018	5979	6676	6993	3062
Assemblage species	Lapwing wintering population	6946	3042	Not listed	6899	2822
Waterfowl assemblage	Waterfowl Assemblage wintering population (Component species: Whooper Swan, Bewick's Swan, Golden Plover, Great Crested Grebe (wintering) Pochard, Tufted Duck, Scaup, Goldeneye, Little Grebe, Cormorant, Greylag Goose, Shelduck, Wigeon, Gadwall, Teal, Mallard, Shoveler,	81827	87049	79915	99221	62352

	Coot, Lapwing)					
Habitat[2]	Habitat extent					
Habitat[2]	Roost site locations					

Table 1. List of SPA selection features.

[1] Designation population given as 1995/96 five year running mean of maximum annual WeBS counts (except where stated). Note that for some of the selection features these differ from the figures given in the SPA citation, but have been used as they are considered to be more relevant to future monitoring

[2] Habitat is not a selection feature but is a factor and is more easily treated as if it were a feature. Habitat extent is also used for breeding birds reported as an area. Extent of swamp/tall fen will be used for breeding waterfowl

3.2. ADDITIONAL ASSI SELECTION FEATURES

Feature Type (i.e. habitat, species or earth science)	**Feature**	**Size/ extent/ pop[.]**
Habitat	Purple Moor-grass and rush pastures (Lough Beg and Lough Neagh ASSI)	
Habitat	Wet woodlands (Lough Neagh ASSI)	
Habitat	Reed beds and swamps (Lough Neagh ASSI)	
Habitat	Fens (Lough Neagh ASSI)	
Species	Higher Plant Assemblage (Lough Beg and Lough Neagh ASSI)	
Species	Breeding Birds (Lough Beg and Lough Neagh ASSI)	
Species	Freshwater and Estuarine fish (Lough Neagh ASSI)	
Species	Invertebrate assemblage (Lough Neagh ASSI)	
Earth Science	Coastal processes - refers to near-shore sand complexes (Lough Neagh ASSI)	

Table 2. List of ASSI features, additional to those that form all or part of SPA selection features. These will be referred to in ANNEX II.

4. MANAGEMENT CONSIDERATIONS

Owner/Occupier's – As of October 1995 there were 463 individual landowners within Lough Neagh SPA. These include the Shaftesbury Estate of Lough Neagh, the National Trust, Craigavon Borough Council and the Department of Agriculture for Northern Ireland (DANI). There are five National Nature Reserves (NNRs) within the SPA; Lough Neagh Islands, Rea's Wood, Farr's Bay, Oxford Island and Randalstown Forest with a proposed sixth at Blacker's Rock. There are also an additional four management agreements in place for four small landholdings within the SPA.

MAIN IMPACTS ON THE SITE OR SITE FEATURES

Notifiable Operations **-** Carrying out <u>any</u> of the Notifiable Operations listed in the schedule could affect the site. The list below is not exhaustive, but deals with the most <u>likely</u> factors that are either affecting Lough Neagh SPA, or could affect it in the future. Although, features 1, 2, 3, 4 etc, are the qualifying SPA features, factors affecting ASSI features are also considered.

Site/feature management issues

No	Issue	Threat/comments	Local considerations	Action
1	Adjoining habitat	Particularly important for swans and geese as well as providing high tide roost locations. Significant changes in land management and disturbance are key considerations. Such areas lie without the site making effective management of developments other than those for which planning permission is required, difficult.	Imminent road development through Toome swanfields the effects of which will require monitoring.	Assess planning applications. Identify key areas and promote site management schemes. Review use of Wildfowl Refuges. Consider the collective impact.
6	Boating activity – commercial	Disturbance and potential for impact from high-speed liners.	Limited to sand dredging barges. Not a significant issue on Lough Neagh.	Formal consultation likely relating to new schemes. Consider the collective impact.
7	Boating activity – recreational	Disturbance and potential for impact especially from jet skies. Generally relevant to particularly sensitive areas within site.	A major concern during the breeding season, particularly around the Torpedo platform at Six Mile Water.	Liaise with appropriate authority with codes of good practice, zoning and use of by-laws as necessary. Consider the collective impact.
8	Coastal (shoreline) protection schemes	Where there is no history of this, it impacts on natural beach systems with loss of habitat.	There is ad hoc dumping around the shoreline, in places this is in response to erosion.	Liaise with Planning Service and other parties with an involvement in coastal management.
9	Cull of fledglings/ young	Licensed selective culling of species impacting on 'more desirable' species. Licensed by EHS.	Culling of larger gull species is undertaken to reduce impact on breeding wildfowl and terns.	EHS to review all licenses. Consider the collective impact.
11	Drainage	Potential impact on water flooding regime. Potentially significant in relation to adjoining habitat if it leads to reduction in traditional areas of flooding.	Routine watercourse maintenance programme by Rivers Agency is referred to EHS for comment.	Identify key areas and promote site management schemes to protect and enhance site features. Consider the collective impact.
13	Enhanced bird competition	Activities onsite or offsite that influences or results in a shift in balance of species utilising a site.	General issue of gulls during breeding season. Historical high numbers of Black-headed Gull may have been related to access to feeding on a dump site (Denny's), now closed.	Liaise with Planning Service. Review wider countryside changes.
14	Fishing – commercial or recreational	Minimal disturbance consideration but may represent 'competition' for piscivorous birds. Represents a net loss to the system in terms of biomass.	Important long-established commercial eel, coarse fish and salmonid fishery. Concern regarding diving duck taken as by-catch in nets either accidentally or	Liaise with DARD and fishing authorities as required. Liaise with commercial fishing interests and angling clubs as required. Netting of diving duck as a Wildlife Order offence – action is dependant on

No	Issue	Threat/comments	Local considerations	Action
			deliberately.	evidence.
16	Habitat extent – open water	Loss likely to be limited but expansion of commercial port facilities can impact on key localities.	Not a concern.	Assess planning applications. Consider the collective impact.
18	Habitat quality – open water	Alteration of habitat quality through diminution of water quality or invasive species.	Water quality is a concern with progressive eutrophication. Longer term improvement in water quality will reduce productivity and may affect waterfowl populations.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection as required with regard to water quality issues and pollution incidents. Consider the collective impact.
19	Habitat extent and quality-breeding	Alteration of habitat area or quality through inappropriate use or absence of site management.	Terns mainly breed on Torpedo Platform, Six Mile Water, but also on some islands.	Assess needs of breeding species. Liaise with owner or appropriate authority to adjust or introduce site management.
21	Introduced species	Range of threats from loss of habitat, feeding competition, disease, hosting species presenting a threat outside of the site.	Roach and Ruddy Duck are present, Zebra Mussel must be considered a real threat.	Liaise with appropriate authority. Consider feasibility of elimination. Participate in national/international initiatives.
22	Power cables	Specifically a problem in relation to swans and geese. Threat is through impact. Need to consider flight lines, as well as feeding and loafing areas, which ideally should be avoided.	Generally lines in the area are well marked. Assess all new proposals and existing network in relation to swan usage..	Liaise with NIE. Minimum need is for line marking based on best current practice. Consider the collective impact.
23	Predation.	Mainly of concern on bird breeding sites.	Impact from large gulls is deemed to be a problem. Care to be taken as breeding Lesser Black-backed Gull are notable.	Must be dealt with as part of wider countryside management considerations. Carry out appropriate site management.
25	Research activities.	Census and ringing activities especially have the potential to impact on bird populations, particularly at breeding sites.	Routine winter WEBS counts.	Census and ringing activities to be undertaken by competent individuals, appropriately trained. In case of ringers, appropriate license must be held.
26	Sand dredging - commercial	Issue presently limited to Lough Neagh. Possible future impact from marine aggregates.	Restricted in area but possibly impacting the more diverse invertebrate assemblages. Possibly a limited disturbance issue.	Liaise with commercial operators, Planning Service and other regulatory authorities.
28	System dynamics	Cuts across many other issues. Dynamic systems, especially coastal, can be affected by many factors especially engineered structures and significant	Historical lowering of the lough level reduced considerably the area subject to flooding but also would have had implications for shore	Human induced change should be minimised. Assess planning applications and liaise with other relevant authorities. Ad hoc dumping and removal of natural

No	Issue	Threat/comments	Local considerations	Action
		changes in dominant wind direction or storm frequency. Many systems may indeed still be undergoing responses to historical developments e.g. partial reclamation, seawall construction. Changes may include alteration in sediment grade, shifts in patterns of erosion and deposition etc. Consequences for habitat and species utilisation of the site can be profound.	and nearshore morphology particularly the dynamics of sand bar and river mouth shoal complexes. Ongoing sand exploitation could alter lough bed substrate and influence near shore sediment mobility.	materials should be managed. Major natural shifts in system behaviour may be identified through analysis of aerial photographs and site monitoring. Major and consistent changes to patterns of habitat distribution and bird utilisation of the site should be noted.
29	Water abstraction	Potential impact on water flooding regime. Potentially significant in relation to adjoining habitat if it leads to reduction in traditional areas of flooding.	Lough Neagh is a major source of drinking water with ongoing abstraction together with proposals for increased volumes taken.	Liaise with Water Service and Rivers Agency.
30	Water level control	Impacts on natural fluctuation of water body. Potentially significant in relation to adjoining habitat if it leads to reduction in traditional areas of flooding.	Lough water level essentially controlled by sluice gates at Toome.	Liaise with Rivers Agency.
31	Wildfowling	Has direct effect through bag sizes/bag species and wider disturbance issue. Issue of regulated (through recognised shooting clubs) and ad hoc shooters. Lead shot on grazing lands.	Generally a good relationship with main gun clubs. Overall perception is that lough is heavily shot.	Liaise with relevant shooting bodies to define areas for wildfowling, the development of Wildfowlers Codes of Good Practice and encourage bag returns. Support pressure to stop use of lead shot. Review use of Wildfowl Refuges. Consider the collective impact.

Table 3. List of site/feature management issues

5. FEATURE OBJECTIVES

The Conservation Objectives for this site are:

To maintain each feature in favourable condition.

For each feature there are a number of component objectives which are outlined in the tables below. Component objectives for Additional ASSI Selection Features are not yet complete. For each feature there are a series of attributes and measures which form the basis of Condition Assessment. The results of this will determine whether a feature is in favourable condition, or not. The feature attributes and measures are found in the attached annexes. Those for Additional ASSI Selection Features (Annex II) are not yet completed.

5.1 SPA SELECTION FEATURE OBJECTIVES

Feature	Component Objective

Feature	Component Objective
Common Tern breeding population	No significant decrease in population against national trends, caused by on-site factors
Common Tern breeding population	Fledging success
Great Crested Grebe breeding population	No significant decrease in population against national trends, caused by on-site factors
Great Crested Grebe breeding population	Fledging success
Great Crested Grebe passage population	No significant decrease in population against national trends, caused by on-site factors
Whooper Swan wintering population	No significant decrease in population against national trends, caused by on-site factors
Bewick's Swan wintering population	No significant decrease in population against national trends, caused by on-site factors
Golden Plover wintering population	No significant decrease in population against national trends, caused by on-site factors
Great Crested Grebe wintering population	No significant decrease in population against national trends, caused by on-site factors
Pochard wintering population	No significant decrease in population against national trends, caused by on-site factors
Tufted Duck wintering population	No significant decrease in population against national trends, caused by on-site factors
Scaup wintering population	No significant decrease in population against national trends, caused by on-site factors
Goldeneye wintering population	No significant decrease in population against national trends, caused by on-site factors
Little Grebe wintering population	No significant decrease in population against national trends, caused by on-site factors
Cormorant wintering population	No significant decrease in population against national trends, caused by on-site factors
Greylag Goose wintering population	No significant decrease in population against national trends, caused by on-site factors
Shelduck wintering population	No significant decrease in population against national trends, caused by on-site factors
Wigeon wintering population	No significant decrease in population against national trends, caused by on-site factors
Gadwall wintering population	No significant decrease in population against national trends, caused by on-site factors
Teal wintering population	No significant decrease in population against national trends, caused by on-site factors
Mallard wintering population	No significant decrease in population against national trends, caused by on-site factors
Shoveler wintering population	No significant decrease in population against national trends, caused by on-site factors
Coot wintering population	No significant decrease in population against national trends, caused by on-site factors
Lapwing wintering population	No significant decrease in population against national trends, caused by on-site factors
Waterfowl Assemblage wintering population	No significant decrease in population against national trends, caused by on-site factors
Waterfowl Assemblage wintering population	Maintain species diversity contributing to the Waterfowl Assemblage
Habitat	To maintain or enhance the area of natural and semi-natural habitats potentially usable by Feature bird species subject to natural processes
Habitat	Maintain the extent of main habitat components subject to natural processes
Habitat	Maintain or enhance sites utilised as roosts

Table 4. List of SPA Selection Feature Component Objectives

Tern nesting localities current and historical (TO BE FINALISED)

Torpedo platform, Antrim Bay

Table 5. Tern nesting locations within the SPA

5.2 ADDITIONAL ASSI SELECTION FEATURE OBJECTIVES

Feature	Component Objective
Purple Moor-grass and rush pastures	
Wet woodlands	
Reed beds and swamps	
Fens	
Higher Plant Assemblage	
Breeding Birds	
Freshwater and Estuarine fish	
Invertebrate assemblage	
Coastal processes – refers to near-shore sand complexes	

Table 5. List of Additional ASSI Selection Feature Objectives

6. MONITORING

Monitoring of our Special Protection Areas takes place at a number of levels, using a variety of methods. Methods for both Site Integrity Monitoring and Condition Assessment can be found in the Monitoring Handbook (To be written).

In addition, detailed quality monitoring or verification monitoring may be carried out from time to time to check whether condition assessment is adequate to detect long-term changes that could affect the site. This type of quality monitoring may involve assessment of aerial photographs to determine site morphological changes. Methodology for this is being developed.

6.1 MONITORING SUMMARY

1. Monitor the integrity of the site (Site Integrity Monitoring or SIM) – to ensure compliance with the SPA/ASSI schedule and identify likely processes of change (e.g. dumping, infilling, gross pollution). This SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment) - Monitor the key attributes for each selection feature (species, assemblage, habitat, etc). This will detect if the features are in favourable condition or not. See Annexes I and II for SPA and Additional ASSI Features respectively.

7. ADDITIONAL MONITORING ACTIONS UNDERTAKEN FOR SITES IN UNFAVOURABLE CONDITION

Monitoring actions set out in section 6 and Annex 1 will use, amongst other attributes, bird population data to determine site condition. In the event of a significant population decline being detected, a series of

subsequent actions will be initiated. The following list is not exhaustive, actions will be site dependant, but the order of these points IS hierarchical i.e. consider point 1, then 2, etc.

1. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, world. Refer to BTO ALERT limits etc. Liaise with other competent bodies to meaningfully assess wider pattern. No site action if site decline mirrors regional pattern the cause of which is not related to the site. Action may be required at regional or larger scale. If the cause of the regional population decline (e.g. eutrophication) is found at the site then action may be necessary, but this may need to form part of a network of strategic species action. Further research may be required.
2. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, Europe, world. Determine if site losses are balanced by gains elsewhere e.g. breeding terns. Review site condition to determine if losses are due to site deterioration. Determine if possible whether population has relocated within SPA series (national, biogeographical, European). Note that the reasons for such locational changes may not be readily identifiable. Further research may be required.
3. For passage/wintering species assess breeding information. No site action if site decline is due to breeding ground failure, unless breeding ground failure is related to poor adult condition resulting from factors affecting wintering / passage birds.
4. Determine whether a major incident has affected the site e.g. toxic impact on prey items, predation event or geographical shift in available prey. Ability to respond to impacts may be limited.
5. Assess condition of principal site habitats e.g. vegetational composition and structure, change in habitat balance e.g. mudflats reduced by encroaching mussel beds.
6. Assess prey availability. Issues to consider are both within site e.g. water quality, broad site management, and without site e.g. climatically driven factors.
7. Assess whether there have been any changes in any other site features or management practices (see Table 3) that may have affected populations of site selection features.
8. Long-term site value must be considered even when it is found to be in unfavourable condition for a number of reporting cycles. This is particularly important for breeding seabird and wader sites where ongoing appropriate management may ultimately encourage re-establishment of a favourable population.

8. SELECTION FEATURE POPULATION TRENDS

A summary statement of site population trends, together with wider geographical trends. Date of completion is given as well as information sources used. Site trends are reported as % increase/decline from designation population (1995/96) using running 5 year means of annual maximum count (WEBS data). For breeding populations the best available data is used. Other trends are generally limited to terms such as 'consistent increase/decline', 'variable with overall increase/decline', 'no discernable trend'.

SPECIES	SITE TREND	NI TREND	IRISH TREND	UK TREND	COMMENTS
Common Tern (breeding)	insufficient data	Data unavailable	34% decline between surveys in 1969-70 and 1985-87 (per SPA review)	11% increase between surveys in 1969-70 and 1985-87 (per SPA review)	
Great Crested Grebe (breeding)	insufficient data	Data unavailable	I-WeBS data unavailable	No discernible trend (1994-99 Breeding Bird Survey)	
Great Crested Grebe (passage)	insufficient data	Data unavailable	I-WeBS data unavailable	Data unavailable	
Whooper Swan (wintering)	-10% (1999/2000)	Variable with overall decline 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Variable with overall increase 1990/91-1999/2000 (WeBS)	
Bewick's	-41%	Consistent	I-WeBS data	No discernible trend	

SPECIES	SITE TREND	NI TREND	IRISH TREND	UK TREND	COMMENTS
Swan (wintering)	(1999/2000)	Decline 1990/91-1999/2000 (WeBS)	unavailable	1990/91-1999/2000 (WeBS)	
Golden Plover (wintering)	+6% (1999/2000)	Data unavailable	I-WeBS data unavailable	Data unavailable	
Great Crested Grebe (wintering)	-11% (1999-2000)	Variable with overall increase 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	No discernible trend 1990/91-1999/2000 (WeBS)	
Pochard (wintering)	-5% (1999-2000)	Variable with overall decline 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	No discernible trend 1990/91-1999/2000 (WeBS)	
Tufted Duck (wintering)	Stable (1999-2000)	No discernible trend 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	No discernible trend 1990/91-1999/2000 (WeBS)	
Scaup (wintering)	+9% (1999-2000)	Data unavailable	I-WeBS data unavailable	Data unavailable	
Goldeneye (wintering)	-29% (1999-2000)	Consistent decline 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	No discernible trend 1990/91-1999/2000 (WeBS)	
Little Grebe (wintering)	-10% (1999-2000)	No discernible trend 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Consistent increase 1990/91-1999/2000 (WeBS)	
Cormorant (wintering)	+89% (1999-2000)	Consistent increase 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Variable with overall increase 1990/91-1999/2000 (WeBS)	
Greylag Goose (wintering)	+114% (1999-2000)	Data unavailable	I-WeBS data unavailable	Data unavailable	
Shelduck (wintering)	+15% (1999-2000)	Consistent increase 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Variable with overall decline 1990/91-1999/2000 (WeBS)	
Wigeon (wintering)	+8% (1999-2000)	No discernible trend 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Variable with overall increase 1990/91-1999/2000 (WeBS)	
Gadwall (wintering)	-21% (1999-2000)	Variable with overall decline 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Consistent increase 1990/91-1999/2000 (WeBS)	
Teal (wintering)	+6% (1999-2000)	No discernible trend 1990/91-	I-WeBS data unavailable	Variable with overall increase 1990/91-1999/2000	

SPECIES	SITE TREND	NI TREND	IRISH TREND	UK TREND	COMMENTS
		1999/2000 (WeBS)		(WeBS)	
Mallard (wintering)	+1% (1999-2000)	No discernible trend 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Consistent decline 1990/91-1999/2000 (WeBS)	
Shoveler (wintering)	-31% (1999-2000)	No discernible trend 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Variable with overall increase 1990/91-1999/2000 (WeBS)	
Coot (wintering)	+1% (1999-2000)	Variable with overall increase 1990/91-1999/2000 (WeBS)	I-WeBS data unavailable	Variable with overall increase 1990/91-1999/2000 (WeBS)	
Lapwing (wintering)	+11% (1999-2000)	Data unavailable	I-WeBS data unavailable	Data unavailable	
Wintering Waterfowl Assemblage (Component species: Little Grebe, Great Crested Grebe, Bewick's Swan, Whooper Swan, Greylag Goose, Shelduck, Wigeon, Gadwall, Teal, Mallard, Shoveler, Pochard, Tufted Duck, Scaup, Goldeneye, Coot, Golden Plover, Lapwing)	-3% (1999-2000)	N/a	I-WeBS data unavailable	N/a	

ANNEX I

Feature (SPA) – Breeding seabirds

* = primary attribute. One failure among primary attribute = unfavourable condition
# = Optional factors – these can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
*Common Tern breeding population	Apparently occupied nests	No significant decrease in Common Tern breeding population against national trends, caused by on-site factors	Requirement that annual data is collected , then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Common Tern fledging success	Annual survey (as per Gilbert *et al*. 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined
*Great Crested Grebe breeding population	Annual count of breeding pairs Calculate new five year running mean. Plot running five-year means.	No significant decrease in Great Crested Grebe breeding population against national trends, caused by on-site factors	Requirement that annual data is collected , then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population.
# Great Crested Grebe fledging success	Annual survey (as per Gilbert *et al*. 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined

Non-avian factors

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	Maintain the extent of main habitat components subject to natural processes	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures or breeding sites, where this would lead to different usage by notified species.

Feature (SPA) – Passage and Wintering waterfowl

Attribute	Measure	Targets	Comments
* Great Crested Grebe passage population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Whooper Swan wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Bewick's Swan wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Golden Plover wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Attribute	Measure	Targets	Comments
* Great Crested Grebe wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Pochard wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Tufted Duck wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Scaup wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Goldeneye wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Little Grebe wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Cormorant wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Greylag Goose wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Attribute	Measure	Targets	Comments
# Shelduck wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Wigeon wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Gadwall wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Teal wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Mallard wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Shoveler wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Coot wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Golden Plover wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Attribute	Measure	Targets	Comments
# Lapwing wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Waterfowl assemblage wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Waterfowl assemblage wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Non-avian factors

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	Maintain the extent of main habitat components subject to natural processes	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures where this would lead to different usage by notified species.
# Roost sites	Location of roost sites	Maintain all locations of roost sites.	Map roost site locations. Visit once every reporting cycle to ensure sites are available.

ANNEX II

Feature (ASSI)

Attribute	Measure	Targets	Comments
Purple Moor-grass and rush pastures (Lough Beg and Lough Neagh ASSI)			
Wet woodlands (Lough Neagh ASSI)			
Reed beds and swamps (Lough Neagh ASSI)			
Fens (Lough Neagh ASSI)			
Higher Plant Assemblage (Lough Beg and Lough Neagh ASSI)			
Breeding Birds (Lough Beg and Lough Neagh ASSI)			
Freshwater and Estuarine fish (Lough Neagh ASSI)			
Invertebrate assemblage (Lough Neagh ASSI)			
Coastal processes - refers to near-shore sand complexes (Lough Neagh ASSI)			

APPENDIX C HABITAT AND CHARACTERISTICS OF EACH FIELD TRAVERSED BY THE PLANNED ROUTE

The following table lists all fields traversed by the planned route and which will be subject to some direct habitat loss. Only 10 of these fields have held Whooper Swans at least once during the past nine winters. The three fields that lie within the draft Vesting Order scheme boundary, but which will not be subject to habitat loss (Fields 602, 603 & 605) are NOT included in the table.

Habitat and Field Boundary data have been extracted from Figure 20 of the 2005/06 survey report (McElwaine & Spouncer, 2006) – no new surveys have been undertaken.

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
601	2.08	1.13	The scheme will sever the field; land to the west of the scheme may become unusable; the main area of residual habitat will be to the east of the new road. This field is rarely used (only one swan has been recorded on a single occasion during winter 2012/13 in this field). No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	2.08	0.00	Improved pasture	Managed hedgeline and fence.

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
614	8.54	4.89	Field to be severed. Will be indirect loss of habitat to east, leaving c. 2.86 ha to west of junction. Supplementary record from this field swan in only 2 of the past 9 winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	5.68	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
615	2.09	0.73	This field will be severed, and the remaining areas of habitat may be too small to be attractive for Whooper Swans. Swans have not been recorded from this field over the past eight winters. There was a single supplementary record of 8 birds using this field in winter 2005/06. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	2.09	0.00	Improved pasture	Fenceline (1.3m) and mature trees (4-6m).

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
616	1.79	0.59	Approx. 0.59 ha along the north-western boundary of this field will be lost. The remaining area, lying to the south of the realigned access road may be less attractive to swans. This field receives a low level of usage; Swans have been recorded in low numbers on a few occasions during four of the last nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.79	0.16	Improved pasture with managed hedge and fence.	Fenceline
617	4.53	1.25	The field will be severed and there will be an indirect loss of habitat, with c. 3.06ha remaining available (i.e. area north of carriageway only). This remaining habitat is likely to remain suitable for swans. This field has been used in each of the last nine winters. Nationally important peak counts of swans have been recorded from this field in winter 2005/06 and 2013/14. As much of the field will remain suitable, there will be no adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.47	4.05	Reseeded improved pasture.	Combination of mature trees, fenceline and gappy hedge.

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
618	1.16	0.08	There will be a loss of a small amount of habitat along the northern boundary of the field. Swans have been recorded from this field in 4 of the last 9 winters, but in low numbers and on few occasions each winter. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.08	0.03	Improved pasture.	Hedgerow with trees and fenceline.
621A 621B	2.29 3.15	0 0.16	The Mainline passes along southern edge of Field 621B and will result in minimal habitat loss in the south-western corner. The remaining area is likely to remain suitable for swans. This field receives a reasonable level of use; Field 621 (in its entirety) has been used in each of the last nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0 0.16	3.93	Improved pasture with managed hedge and fence.	Hedgerow with trees and fenceline. Ditch also present.

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
624	4.50	0.16	There will be a small loss of habitat along the southern portion of the field to accommodate a SuDS pond. The remaining area is likely to remain suitable for swans. This field has been used in each of the past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.16	3.33	Unimproved pasture.	Hedgerow with trees and fenceline. Ditch also present
660	2.76	0.14	There will be a small amount of habitat lost along the northern fringe of the field. There is no recorded swan usage over the past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.14	0.00	Improved pasture.	Hedgerow
661	0.62	0.08	There will be a small amount of habitat lost along the northern fringe of the field. There is no recorded swan usage over the past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.08	0.00	Improved pasture.	Hedgerow and fenceline

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
662	1.64	0.11	There will be a small amount of habitat lost along the northern fringe of the field. There is no recorded swan usage over the past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.11	0.00	Improved pasture.	Hedgerow and fenceline
663	2.77	0.05	There will be a small amount of habitat lost along the northern fringe of the field. There is no recorded swan usage over the past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.05	0.00	Improved pasture.	Hedgerow and fenceline
704	1.78	0.51	Direct loss of 0.51ha along north-eastern and north-western boundaries. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.51	0.00	Improved pasture	Managed hedgeline and fence

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
705	2.12	0.51	Direct loss of 0.51ha along south-western boundary. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.51	0.00	Improved pasture	Managed hedgeline and fence
714	1.32	0.50	Field to be severed and loss of habitat along eastern boundary totalling 0.50ha. Remaining field likely to be too small to be attractive to swans. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.32	0.00	Improved pasture	Managed hedgeline and fence
715	1.37	0.28	Field to be severed. Direct loss of 0.28ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.28	0.00	Improved pasture	Managed hedgeline, maturing trees and fence.

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
719	1.48	0.22	Loss of habitat along north-eastern corner totalling 0.22 ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.22	0.00	Inundated with *Juncus*	Fenceline, managed hedgeline, gappy hedge and maturing trees.
720	0.77	0.43	Field to be severed and remaining habitat is likely to be unattractive to swans. This field has not been used over the past 7 winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.77	0.03	Improved pasture	Managed hedgeline and fence
721	1.28	0.06	Loss of small area of habitat along north-eastern strip of field. Majority of field will remain unaffected. No recorded swan usage in last nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.06	0.00	Improved pasture	Hedgerow, hedgerow with trees and fenceline

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
723	4.96	1.05	There will be some direct loss of habitat in south-western portion of field. Remaining area of intact habitat will be 3.91 ha, which is anticipated to remain attractive to swans. This field has been used in each of the last 9 winters. A nationally important peak count was recorded in winter 2007/08. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.05	2.02	Improved, reseeded pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
724	0.51	0.03	Loss of small area of habitat along eastern strip of field. Majority of field will remain unaffected. No recorded swan usage in last nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.03	0.00	Improved pasture	Fenceline
725	0.45	0.02	Loss of small area of habitat along eastern strip of field. Majority of field will remain unaffected. No recorded swan usage in last nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.02	0.00	Improved pasture	Fenceline

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
726	0.87	0.05	Loss of small area of habitat along eastern strip of field. Majority of field will remain unaffected. No recorded swan usage in last nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.05	0.00	Improved pasture	Fenceline & hedge.
727	2.54	0.54	Direct loss of habitat along south-western edge totalling 0.54ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.54	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
728	1.04	0.31	Direct loss of habitat along south-western edge totalling 0.31ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.04	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
729	1.04	0.16	Direct loss of habitat along north-eastern edge of field. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.16	0.00	Improved pasture	Hedgerow and fenceline.
730	1.14	0.33	Direct loss of habitat along north-eastern site of field. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.33	0.00	Improved pasture	Fenceline
731	1.31	0.50	Direct loss of habitat along south-western edge totalling 0.50ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.31	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
732	1.45	0.75	Direct habitat loss of western portion of field totalling 0.75ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.45	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
733	1.46	0.89	Direct habitat loss of western portion of field totalling 0.89ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.46	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
734	1.09	0.43	Direct loss of habitat along western edge totalling 0.43ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.09	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
735	0.91	0.47	Direct loss of habitat along north-eastern edge totalling 0.47ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.91	0.00	Improved pasture	Fenceline, managed hedgeline

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
736	2.46	0.61	Field to be severed leading to direct loss of 0.61ha of habitat. Small portion remaining to west likely to be unattractive. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.15	0.00	Improved pasture	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
737	2.91	0.59	Direct loss of habitat along south-western edge totalling 0.59ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.59	0.00	Disturbed ground and dumped topsoil.	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
738	1.60	1.03	Field to be severed leading to direct loss of 1.03ha of habitat. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.60	0.00	Improved pasture	Fenceline *Salix* and fragments of managed hedgeline.

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
739	0.58	0.58	Direct loss of entire field totalling 0.58ha habitat. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.58	0.00	Semi-improved grassland with areas of *Juncus* inundation.	Fenceline *Salix* and fragments of managed hedgeline.
740	0.52	0.07	Direct loss of habitat along south-western edge totalling 0.07ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.52	0.00	Inundated grassland	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
741	1.06	1.06	Direct loss of entire field totalling 1.06ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	1.06	0.00	Inundated grassland	Managed hedgerow (c. 3m), fenceline (1.3m) and mature trees (4-6m).
745	1.41	0.36	Direct loss of northern portion of field totalling 0.36ha. No recorded swan usage in past nine winters. No adverse effects upon the integrity of Lough Neagh and Lough Beg SPA and Ramsar site.	0.36	0.00	Improved pasture	Fenceline (1.3m) and mature trees (4-6m).

Field No.	Total Area of field (ha)	Direct Habitat Loss (ha)	Effect of scheme/ indirect habitat loss & Area Remaining	Anticipated total loss of habitat (direct & indirect) ha	Average percentage of Total Summed Peak Counts (winter 2005/06 to 2013/14)	Habitat	Field Boundaries
TOTAL		21.71					