

6.0 FLORA AND FAUNA

6.1 ASSESSMENT METHODOLOGY

Section 39 (2)(b)(i) of the Transport (Railway Infrastructure) Act 2001, requires that proposed developments are examined in terms of their likely significant impacts on fauna and flora.

This Chapter assesses the potential impacts of the proposed Luas Line A1 upon flora and fauna existing within the proposed development area and in the immediate environs.

Qualitative baseline studies were carried out on the 12th March 2006 and 4th April 2006. During these site visits detailed accounts of the floral and faunal composition encountered during the surveys were recorded, taking into consideration any relevant seasonal constraints that affect identification of species and habitats. The site surveys were examined in the context of the scheme drawings and other information on the general area from a comprehensive desktop study.

The study area was surveyed using methodology outlined in the Heritage Council's Habitat Survey Guidelines (Draft, April 2005). The principal habitats present within the site were identified and classified using the Heritage Council's A Guide to Habitats in Ireland (Fossitt, 2000). The dominant species were noted and a species list compiled for each habitat represented is contained within Appendix 6A.

Floral nomenclature follows An Irish Flora (Webb, Parnell & Doogue, 1996) for Latin names and the Census Catalogue of the Flora of Ireland (Scannell & Synnott, 1987) for common names. Nomenclature for horticultural species follows the Royal Horticultural Society's Encyclopaedia of Garden Plants (Brickell, 1998).

Hedgerows were surveyed according to the Hedgerow Survey Handbook – a standard procedure for local surveys in the UK (UK Department for Environment, Food and Rural Affairs, 2002) which provides a standardised methodology for surveying hedgerows. Hedgerows have been evaluated according to ecological criteria set out in the National Roads Authority's Guidelines for Assessment of Ecological Impacts of National Road Schemes, details of which are contained in Appendix 6B. This assigns values of High Value Local Importance, Moderate Value Local Importance or Low Value Local Importance to hedgerows based on their ecological value with those of highest value being species-rich mature hedgerows and those of lowest value being severely degraded and species-poor.

Faunal identifications were confirmed using the following sources:

- The Macmillan Guide to Birds of Britain & Europe, Macmillan 1998,
- The Complete Guide to Ireland's Birds (2002), Dempsey E. & O'Cleary. M. Gill & Macmillan.
- Exploring Irish Mammals, Dúchas The Heritage Service 2001.

As opposed to floral investigations, the surveying of faunal usage of subject lands cannot be based upon direct sightings alone. The presence of fauna is substantiated through the detection of field signs such as tracks, habitats, markings, feeding signs and droppings, as well as by direct observation. Likewise, bird species present on site are recorded along with any notable avifauna habitats, droppings or tracks. The likely species were assessed in relation to the habitats present within the site.

The ecological significance of the study area has been evaluated according to criteria set out in the Heritage Council's Habitat Survey Guidelines (Draft, April 2005) and the Institute for Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2006).

The significance of potential impacts has been determined according to the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment in the UK (2006). According to this guidance the certainty of the impact predictions that have been made are defined as:

- "Certain / near-certain": probability estimated at 95% chance or higher.
- "Probable": probability estimated above 50% but below 95%.
- "Unlikely": probability estimated above 5% but less than 50%.
- "Extremely Unlikely": probability estimated at less than 5%.

Where confidence in the prediction is low and concerns a site that is of ecological value, the precautionary principle has been applied to address such uncertainties.

The reason for including a confidence level category of 'extremely unlikely' is that some effects may be very improbable, but extremely serious should they occur and hence merit contingency planning.

6.2 RECEIVING ENVIRONMENT

6.2.1 Environmental Designations

The proposed development site itself is not under any designation as per the European Communities (Natural Habitats) (Amendment) Regulations, 2005 (S.I. No. 378 of 2005) or the Wildlife (Amendment) Act 2000.

The closest designated sites to the study area are Lugmore Glen proposed Natural Heritage Area (pNHA 1212) and the Slade of Saggart and Crookslin Glen pNHA (pNHA 211) both of which are located at a distance of approximately 2 km south of the proposed route. Neither of these sites are located at a distance or orientation to the study area that would give rise to any potential negative impacts as a result of the proposed Luas Line A1 scheme.

6.2.2 Overview of the Study Area

The proposed Luas Line A1 route lies within a suburban / urban fringe setting characterised by residential, employment, amenity and other urban development along much of its length. A number of greenfield spaces also characterise the surrounding area which include a mixture of amenity parks and fields. These would once have been in agricultural use, however are now lying idle or are under development.

The route corridor itself is primarily comprised of grassland habitats which are disused or in occasional use for grazing and exercising horses. These are of extremely low ecological value. Additional habitats which fall within the route corridor include areas of built land which include buildings, roads and other paved surfaces and small areas of disturbed ground. There are few semi-natural features of ecological note within the study area. Watercourses, wet ditches, hedgerows and a section of immature woodland habitat lie within the site area.

Overall the entire site has been heavily influenced by human activities. There is a low diversity of habitats within the site as well as a low diversity of plant species. None of the habitats within the study area are of high ecological value and none are of national or international ecological importance.

6.2.3 Habitats

The habitat types identified during the survey fall under grassland, woodland, freshwater, built land and disturbed ground categories and these are described in detail below and illustrated on Figures 6.1 – 6.3.

Grassland

Grassland habitat takes up the vast majority of the study area and is represented by two grassland types as described below.

Improved Agricultural Grassland (GA1) - This habitat is represented across the length of the study area in the form of a number of fields which would once have been in agricultural use, as well as the Embankment Road reservation. This linear strip of grassland has few tall herbaceous species present due to grazing and trampling by horses associated with the Fettercairn Youth Horse Project. However some broadleaf herbaceous species typical of this type of habitat are present.

A number of fields which are no longer in use for agricultural purposes lie at the western end of the route corridor. As grazing pressure and agricultural management has ceased they have become dominated with tall growing grass and ruderal species dominating the sward. Tufts of soft and hard rush (*Juncus effusus* and *J. inflexus*) are present in wetter areas of these fields. Young goat willow (*Salix caprea*), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.) have started to appear throughout these fields and if left ungrazed these species would become more dominant.

Burnt cars, metal containers and other refuse are strewn about the areas taken up by Improved Agricultural Grassland (GA1).

Amenity Grassland (GA2) - A small area of this habitat type is located at the eastern end of the study area surrounding the roundabout at the Cookstown Way / Cookstown Road junction. This area is actively managed and the sward is kept low with regular mowing and contains commonly occurring grasses and broadleaf herbs.

Both of these grassland habitats are of extremely low ecological value and all species found within them are commonly occurring throughout the country. Flora species diversity is low and is represented by opportunistic and commonly occurring species.



Improved Agricultural Grassland



Amenity Grassland

Woodland

There is no woodland habitat within the study area as is commonly understood by this term however hedgerows, treelines and immature woodland all fall under this habitat category. Nineteen hedgerows were noted within the study area forming boundaries between fields along the length of the proposed route. A treeline is located at the western end of the study area and a strip of immature woodland runs along the centre portion of the study area for approximately 300 m.

Hedgerows (WL1) - The nineteen hedgerows within the study area vary in nature and for the purposes of describing their value and significance in ecological terms, they are ranked under the categories (High Value, Moderate Value and Low Value Local Importance) which are defined in Appendix 6B.

There are no hedgerows of High Value Local Importance within the study area and all are either of Moderate or Low Value Local Importance.

Thirteen of the hedgerows within the study area are considered to be of moderate local value due to the fact that they are at least 5 m in height, with reasonable growth and vigour, are dominated by several native species and are connected to other hedgerows or similar semi-natural habitats of value creating wildlife corridors.



Hedgerows of moderate local value

These hedgerows are generally dominated by hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*), elder (*Sambucus nigra*) and bramble (*Rubus fruticosus* agg.) with lesser abundance of gorse, elm (*Ulmus glabra*) and silver birch (*Betula pendula*). Most of them experience dense bramble and ivy (*Hedera helix*) growth at their bases. Some of these hedgerows, particularly those growing close to residences or roads have also been planted with non-native species such as eucalyptus (*Eucalyptus* spp.), cherry (*Prunus* spp.), cotoneaster (*Cotoneaster* spp.), and Leyland (*Cupressocyparis leylandii*) and Lawson's cypress (*Chamaecyparis lawsoniana*). The three growing in association with wet ditches additionally contain goat and crack willow (*Salix fragilis*) which enhance their value.

As low growing vegetation within these hedgerows is dense, ground flora is poorly represented but includes commonly occurring species.

Six of the hedgerows within the study area are regarded as being of low value due to their small size, lack of mature trees, low species diversity, weak structure, low density of vegetation and / or as they contain large gaps or breaks in their continuity. Some of them are defunct hedgerows and now only exist as remnants of original field boundaries. They are generally characterised by low growing scrubby growth of bramble but occasional hawthorn, blackthorn and gorse is also present in some.



Hedgerows of low local value

Treelines (WL2) - A small row of regularly spaced Leyland cypress has been planted along a boundary at the western end of the study area.

Immature Woodland (WS2) - An area of saplings have been planted within the area to the south of the City West Business Park. Immature alder (*Alnus glutinosa*), sessile oak (*Quercus robur*), willows (*Salix* spp.), poplars (*Populus* spp.) and Scots pine (*Pinus sylvestris*) have been evenly spaced over an approximate 300m stretch. Due to the open spacing and young age of these saplings there is no typical woodland ground flora present.

Although only of local ecological significance (as opposed to national or international), the thirteen moderate value hedgerows are amongst the few features of any ecological value within the study area. The treeline and immature woodland are of very low ecological value and offer more of a screening and visual function than an ecological one.



Immature Woodland

Freshwater

There are three small watercourses and three wet ditches within the study area. The three watercourses drain to the River Camac.

Lowland Stream (FW2) – three small watercourses traverse the study area as indicated on Figure 6.1 to 6.3. Two of these, Watercourses 1 and 3, have been significantly altered and degraded by human activity and now exist in a highly modified and unnatural state. They have steep sided banks devoid of any vegetation aside from some ruderal species. The depth of water at the time of survey was low with no observable flow. There was no in-stream aquatic vegetation present. There are large amounts of litter within these two watercourses and the water is discoloured. The remaining Watercourse 2 exists in a more natural state with hedgerows and instream vegetation, although also is clogged with large amounts of litter.



Drainage Ditch

Drainage ditches (FW4) - The three drainage ditches are small and have little water. It is most likely that the drainage ditches dry out at times.

They have hedgerows of low and moderate value growing in association with them. Small amounts of aquatic vegetation were present dominated by watercress (*Rorippa nasturtium-aquaticum*), water veronica (*Veronica anagallis-aquatica*) and rosebay willowherb (*Epilobium angustifolium*) growing in the water.

Water quality testing was carried out in all of these ditches the results of which are presented and discussed in Chapter 9.0 of this EIS. These results indicate that there is poor water quality in all of these ditches.

The three wet ditches and Watercourse 2 are of some local ecological value and enhance the value of the hedgerows which are growing in association with them. The other two watercourses are of extremely low ecological value as they are badly degraded, do not support riparian vegetation, are muddy and discoloured and are clogged with litter.

Built Land

Buildings and Artificial Surfaces (BL3) - A number of structures fall within the route corridor and these include 3 derelict houses, an ESB substation and the existing Belgard Luas Stop. In addition a number of paved surfaces which include roads, tarmac, gravelled and hardstanding areas also fall within the proposed route. These areas are generally devoid of any vegetation aside from some ruderal species which have managed to colonise cracks and crevices. These areas are of no floristic value; however some may have value for bats as is discussed further below.

Disturbed Ground Habitats

Spoil and bare ground (ED2) - A number of areas are represented by this habitat type, which are either under constant disturbance such as areas currently under construction, or which have experienced disturbance in the recent past, such as mounds or spoil associated with construction works. These areas are generally devoid of vegetation aside from a few ruderal species.



Disturbed Ground Habitat

Recolonising bare ground (ED3) - Sizable areas of recolonising bare ground are present which have experienced disturbance, generally from machinery or vehicles in the recent past but which have become recolonised by a range of opportunistic and ruderal species as activities causing disturbance have been discontinued or are infrequent. These disturbed ground habitats are of extremely low ecological value and all species found within them are commonly occurring in similar areas throughout the country.

6.2.4 Fauna

Mammals

A fox (*Vulpes vulpes*) was noted within the scrub just to the north of the route corridor just south of the quarry. No other direct sightings of mammals were made within the study area during the surveys although rabbit droppings were noted throughout. An outlier badger sett was noted within the hedgerow to the west of an electricity pylon in the western portion of the study area. Outlier setts are only used sporadically and when not in use by badgers they are often taken over by foxes or rabbits. This outlier sett was being used by rabbits at the time of survey with no evidence of usage by badgers at the time of survey. Under the Wildlife (Amendment) Act 2000, all badgers and their setts are protected.

No other evidence of mammals was noted within the areas inspected. However it is assumed that small mammals such as brown rat (*Rattus norvegicus*), wood mouse (*Apodemus sylvaticus*), hedgehog (*Erinaceus europaeus*) or pygmy shrew (*Sorex minutus*), all of which widely occur throughout the country, may also occur within the fields and hedgerows.

None of the trees within the hedgerows or the treelines have any significant cracks or crevices which would be suitable for roosting bats. However several buildings within the study area were deemed to have potential to be roost sites for bat species.

The 3 derelict buildings on Fortunestown Lane were visited on 12th March 2006 and visually assessed for their suitability as bat roosts. Access to some buildings was not possible due to their unsafe condition. Access restrictions did not limit the ability to determine suitability of the buildings for bats and no further measures to gain safe access were required.

All 3 buildings are in a derelict state with virtually no roofs in tact. None are suitable for large numbers of bats nor for maternity roosts due to the lack of suitable roof spaces or other suitable roosting areas (e.g. large cracks in masonry walls, basements etc.). As such none of the buildings was considered to have high significance for bats. If any are present, they would be making use of cracks and crevices in small numbers, possibly as transition or temporary night roost sites or for winter hibernation. Due to the low significance of these potential bat roosts no further survey work was deemed necessary. However as all bat species in Ireland and their roost sites are protected under Irish and European Law some pre-construction precautionary measures will be necessary as is detailed in Section 6.3.2.

Birds

Birds noted within the site include blackbird (*Turdus merula*), starling (*Sturnus vulgaris*), magpie (*Pica pica*), hooded crow (*Corvus corone*) and rook (*Corvus frugilegus*). It is probable that commonly-occurring song birds such as robin (*Erithacus rubecula*), wren (*Troglodytes troglodytes*), song thrush (*Turdus philomelos*) and blue tit (*Parus caeruleus*) may make use of the hedgerows within the study area.

Aquatic & Semi-Aquatic Fauna

No evidence of amphibians or fish was noted within the drainage ditches or watercourses. It is extremely unlikely that any of these would be of any value for fish species. However some of the wet ditches could support common frog (*Rana temporaria*) and smooth newt (*Triturus vulgaris*). Both species (and their breeding sites) are protected under the Wildlife (Amendment) Act 2000.

6.2.5 Evaluation of Habitats

The proposed development site itself is not under any conservation designation and there are no designated areas immediately adjacent to the study area or which could be impacted upon by it.

The majority of the proposed development site is characterised by highly modified habitats which are heavily anthropogenically influenced and of little or no ecological value. No rare or protected species of flora were recorded within the study area. Despite their moderate ecological value thirteen of the hedgerows may provide some level of refuge for small mammals and birds within an area predominantly taken up by built land of little value for these species. Hedgehog and pygmy shrew which could be present within these are protected species under the Wildlife (Amendment) Act 2000.

The site may also potentially support badgers and bats which are protected mammal species and of ecological significance.

6.3 CONSTRUCTION IMPACTS AND MITIGATION

6.3.1 Construction Impacts

The loss of most of the habitats within the route corridor will have an imperceptible impact due to the low ecological value of the majority of the habitats within the study area.

The removal of thirteen moderate value hedgerows, three moderate value drainage ditches and Watercourse 2 will lead to a moderate negative impact. This moderate negative impact is not considered to be significant due to the small lengths of hedgerow and ditches in question and the availability of similar habitat elsewhere nearby to which birds and mammals would re-locate.

There would be potential for negative impacts on bats and badgers if construction works are not carefully controlled and if appropriate mitigation measures, as described below, are not employed. Implementation of the appropriate mitigation measures will mean potential impacts are reduced to a neutral impact on these species.

There would be potential disturbance caused to frogs and newts during the construction phase if they were present in drainage ditches. However if the mitigation measures set out below are implemented then any such impacts on these protected species will be negligible.

There is potential for impacts on drainage ditches, watercourses and to the downstream Camac River as a result of construction works and accidental spillages. This potential impact can be avoided by adhering to the mitigation measures recommended below in the relevant sections of the EIS.

6.3.2 Mitigation Measures

Exclusion of Badgers from Sett

In the event that badgers are found to be present in the sett prior to construction works commencing, exclusion will be carried out under a licence to be applied for from the National Parks and Wildlife Service (NPWS) and in accordance with the National Roads Authority's Guidelines for the Treatment of Badgers prior to the construction of National Road Schemes (2005). If the sett cannot be fully evacuated prior to construction works commencing then the sett should be fenced off with a minimum 30 metre radius with access to adjacent feeding grounds retained and no heavy machinery or vehicles will be allowed to operate within this 30 metre zone until the evacuation process is complete.

Surveys of Structures for Bats

A pre-demolition dusk and dawn survey will be carried out at each structure to be demolished on the night immediately prior to demolition. Should no bats be found within any of these structures then they will be demolished the day immediately following the survey.

If bats are found to be using any of these structures then demolition will not proceed before a licence is sought from the NPWS and suitable mitigation measures proposed. However based on the preliminary survey and inspection of the buildings it is considered extremely unlikely that bats could be using these structures due to their unlikely suitability for bats. The pre-demolition surveys are recommended as per best practice guidelines set out in Guidelines for the Treatment of Bats During the Construction of National Road Schemes (National Roads Authority, 2005).

It is recommended that demolitions do not take place between November and February (or during cold snaps either side of this period) as bats may be hibernating during this period and a pre-demolition survey would not be expected to detect bats if present. If the construction schedule will not allow for this timing, then the NPWS will be consulted and an appropriate strategy for the demolition works will be agreed.

Protected Amphibians

Any drainage ditches or watercourses which are to be filled in, culverted or re-directed will be examined by an ecologist prior to works commencing. If any protected amphibian species are noted within these they will be re-located under licence from the NPWS to a suitable alternative location.

Removal of Hedgerows

It is recommended that where possible hedgerows are not removed or cut between the beginning of March through to the end of September in order to avoid negative impacts on nesting bird species and breeding mammals.

Control of Construction Works

Mitigation measures in respect of soil, water, air and waste are detailed in the respective Chapters of this EIS.

6.4 OPERATIONAL IMPACTS AND MITIGATION

6.4.1 Operational Impacts

The loss of hedgerows will not give rise to any barrier effects for mammals or habitat fragmentation as the route corridor runs parallel to an existing barrier formed by residential development to the south of the proposed route.

There will be no negative impacts arising from the disposal of surface water run-off from the Park & Ride facility and other hard standing areas as this will be attenuated and passed through silt and petrol interceptors prior to discharge to the existing surface water system.

6.4.2 Mitigation Measures

Mitigation measures regarding water pollution are dealt with in Chapter 9.0. No other mitigation measures are necessary.

Figure 6.3: Habitat Map - Garter Lane to N82

