

11. FLORA AND FAUNA

11.1 Introduction

This section assesses the potential impacts of the development on the flora and fauna of the proposed site and the surrounding area. A baseline ecological survey was carried out to determine the existing flora and fauna on the development site. The potential impacts of the construction and operational phases of the development are considered with respect to flora and fauna and mitigation measures are outlined to minimise any significant impacts identified.

11.2 Existing Environment

11.2.1 Introduction

Biosphere Environmental Services (BES) were commissioned by Project Management to carry out a baseline ecological survey of the proposed development site in order to assess whether the development would have an impact on any existing flora and fauna on the site.

To this end a site survey was carried out on 11th June 2000 which comprised a thorough examination of the entire site. The areas immediately surrounding the site were also examined, though in lesser detail. The survey methodology consisted of systematically walking the entire site and recording plant species and vegetation types present, with particular emphasis placed on the hedgerows within and around the site.

The birds and mammals observed on the site were recorded, as were any signs of activity or nesting. During the survey, particular attention was given to identifying the presence, or otherwise, of habitats or species which are legally protected under Irish and European legislation.

The listings and maps of sites of conservation importance (Natural Heritage Areas, Special Areas of Conservation, Special Protection Areas) maintained by Duchas, The Heritage Service as well as the standard literature were checked with reference to the site and surrounding area.

A fully copy of the BES report is included in Attachment 10.

11.2.2 Habitats and Flora

The site is in an area which has for a long period been intensively managed for agricultural purposes and comprises four agricultural fields with hedgerows and/or treelines forming the field boundaries. The habitats present are grassland, (both meadow and pasture), hedgerows and ditches. There are no natural or semi-natural habitats, such as woodlands, marshes, streams or rock outcrops, within the site. A map showing the location of the habitats on the site is included in the full report in Attachment 10.

Meadow grassland is the principal habitat type at the site as it occupies the largest area of the agricultural fields with grazed pasture occupying the remainder.

Hedgerows of varying quality form the field boundaries of the site. The hedgerows are comprised almost entirely of hawthorn, with ash occurring as the main tall tree species. Some of the hawthorn trees are very mature, up to 15m high and a few of older trees have a heavy ivy cover. Some of the hedgerows have very significant gaps and many of the hedgerows have poor structural development, with no noticeable understorey or ground layer. Where an understorey does occur it is usually dominated by brambles, nettles, thistles and hogweed.

The hedgerow which marks the townland boundary is accompanied by a wide ditch (ca. 2m width in places). At the time of the survey the ditch was damp in places and some typical shade species such as lords and ladies and hart's tongue fern were noted within the ditch. One of the internal hedgerows is also accompanied by a wide ditch which was dry at the time of the survey.

No rare, threatened or legally protected plant species, as listed in the Irish Red Data Book were found at the site or have been known to occur in the general area in the past.

The main ecological interest at this site lies in the hedgerows although they can be considered of limited ecological value due to the low species diversity and poor structure. However, the hedgerows do provide some value to local wildlife in what can generally be considered an intensive agricultural landscape.

No part of the site or its immediate surroundings is covered by a scientific or conservation designation as recognised by Duchas, The Heritage Service. The closest site of conservation importance is the Duleek Commons proposed Natural Heritage Area (pNHA) located over 2 km to the south west. Two other pNHA's, one of which is also a proposed Special Area of Conservation (pSAC) are located on the River Boyne, approx. 5 km to the north-west of the site.

11.2.3 Birds

A limited number of bird species were recorded due to the low diversity of habitats on the site. The species included woodpigeon, blackbird, chaffinch, robin, wren, blue tit, coal tit and chiffchaff all of which are typical species of agricultural areas with hedgerows. Most of these species would probably nest. A rookery (ie a colony of nesting rooks) was noted in an ash tree located in one of the hedgerows on the western boundary of the site and a further rookery was noted in some ash trees just west of the site. As the survey was carried out in June any winter migrant species which may occur were not recorded. While this is a survey limitation, it is considered unlikely that any rare or scarce bird species would occur in the survey area during winter due to the low diversity and intense management of the habitats present.

11.2.4 Mammals, amphibians and reptiles

The low habitat diversity within the site results in the mammalian fauna being represented by only a few common species. Rabbits were observed at the site and signs of foxes and brown rats were noted at several locations within the hedgerows and ditches. The hedgehog, pygmy shrew and long-tailed field mouse are all typical species of agricultural habitats and are likely to occur at the site. No signs of badgers were found during the survey although it is considered possible that badger setts could occur within the ditch system associated with two of the hedgerows. If evidence of badgers is found prior to construction, Duchas will be informed and appropriate provisions to relocate the badgers will be made in consultation with Duchas. The habitats at the site are not considered suitable for the common frog or the common lizard.

11.2.5 Summary

The site is located in an area which has for a long period been intensively managed for agricultural purposes. This has resulted in a limited number of habitats on the site and consequently a low diversity of flora and fauna. The types of flora and fauna encountered on the site are typical of the agricultural area in which the site is located. The main ecological interest at the site lies in the hedgerows which although of limited ecological value due to the low species diversity and poor structure do provide some value to local wildlife. No rare, threatened or legally protected plant species were encountered on the site and no part of the site or its immediate surroundings is covered by a scientific or conservation designation as recognised by Duchas, The Heritage Service.

11.3 Construction Impacts and Mitigation

Site clearance and construction on the site will involve the removal of some of the existing habitats. A large section of the land under meadow and pasture will be built upon. All of the hedgerows that mark the internal boundaries within the site will be removed and the hedgerow that borders the R152 road will be removed to accommodate a site entrance and road widening. During the construction phase it is possible that some of the remaining hedgerows and ditches could be damaged by earthworks or machinery on site.

The removal of the meadow and pasture grassland habitats is not considered significant as these habitats are of negligible scientific interest and have little conservation value and therefore no mitigation measures are required. The internal hedgerows to be removed have negligible to low ecological value based on the survey and therefore their removal is not predicted to have a significant impact. Therefore no mitigation measures are required. The planting of a new hedgerow along the north-west boundary of the site parallel to the railway line will partly compensate for the loss of these hedgerows.

Measures will be taken during the construction phase to prevent the remaining hedgerows from being damaged. Care will be taken while machinery is operating in the vicinity of the hedgerows and building materials will not be stored within 10 m of the hedgerows. Any sensitive areas will be protected with temporary fencing. Any accidental damage will be repaired using the same tree and shrub species that are already present (ash, hawthorn).

During landscaping of the site preference will be given to the planting of native tree and shrub species most of which will already be established in the general vicinity and it is proposed to enhance the wildlife value of the site by planting species which are useful to wildlife. Landscaping is discussed in greater detail in Section 6.

A wet drain in the field adjacent to the western boundary of the site feeds into a tributary of the River Nanny and it is possible that contaminated water could enter the wet drain during the construction phase. Silt traps will be used to prevent any suspended solids from entering the drain. Any potentially polluting substances such as oil, paints or other chemicals will be stored on site in properly bunded areas. These mitigation measures should prevent any contaminated water from entering the drain.

11.4 Operational Impacts and Mitigation

A problem with vermin is often associated with waste management facilities, particularly landfills. As the waste bunker and the waste sorting plant will be enclosed within the waste acceptance hall, the potential for vermin to be associated with these aspects of the facility will be minimised. To further mitigate potential impacts a comprehensive rodent control plan will be put in place.

The community recycling park will be maintained clean and well managed, and as no putrescible kitchen waste will be accepted, the problem of vermin does not arise.

Atmospheric emissions from waste to energy plant will consist of NO_x , SO_2 , metals and dioxins. Emissions of NO_x and SO_2 could contribute to acid rain which can cause acidification and degradation of ecosystems. These emissions can have local and transboundary effects. Emissions of dioxins and metals could also have a negative impact on flora and fauna as these chemicals can be toxic at certain concentrations.

Air dispersion modelling (see Section 4) has predicted a maximum annual average ground level concentration of $5.73 \mu\text{g}/\text{m}^3$ NO_x and $1.28 \mu\text{g}/\text{m}^3$ SO_2 . EU Directive 99/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air sets Ground Level Concentration limit values for the protection of human health and the environment. These limit values will begin to come into effect from July 2001 and onwards. The Directive specifies an annual limit value for the protection of vegetation of $30 \mu\text{g}/\text{m}^3$ NO_x and a limit value for the protection of ecosystems of $20 \mu\text{g}/\text{m}^3$ SO_2 . As the predicted concentrations of NO_x and SO_2 are well below the European limit values it is unlikely that atmospheric emissions from the proposed waste to energy plant will have any negative impacts on the surrounding habitats and ecosystems. Therefore, no further mitigation measures are required other than the design considerations described in Section 2.2 and Section 4.

The maximum hourly average ground level dioxin concentration is predicted to be $0.007 \text{ pg}/\text{m}^3$ and the maximum predicted annual average concentration is $0.00025 \text{ pg}/\text{m}^3$. These predicted concentrations are significantly less than typical background concentrations measured throughout Europe and those measured by the survey on site ($0.028 \text{ pg}/\text{m}^3$ to $0.046 \text{ pg}/\text{m}^3$). Given that the plant will not

significantly increase background concentrations of dioxins, there will not be any significant impact on dioxins in vegetation.

11.5 Conclusions

The site is located in an area which has for a long period been intensively managed for agricultural purposes. This has resulted in a limited number of habitats on the site and consequently a low diversity of flora and fauna. The types of flora and fauna encountered on the site are typical of the agricultural area in which the site is located. The construction and operation of the proposed development is not predicted to have a significant negative impact on flora and fauna and mitigation measures will be put in place to prevent any negative impacts occurring.

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