

# Dixon.Brosnan

environmental consultants

Project			
<b>Natura Impact Statement for a constructed wetland system and discharge by PANDA Waste Service Beuparc, Navan, County Meath</b>			
Client		O Callaghan Moran/ PANDA Waste Service	
Project ref	Report no	Client ref	
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## 1. Introduction

PANDA Waste Service submitted an application to the Environmental Protection Agency (the Agency) to revise the Waste Licence at its existing Materials Recovery Facility at Beuparc, Navan, County Meath. The application relates to the development of a new building to accommodate a processing system comprising dry fermentation and composting and the manufacture of refuse derived fuel in an existing building.

The Agency requested that a Screening for Appropriate Assessment be completed in accordance with the European Communities (Birds and Natural Habitats Directive) Regulations 2011. The objective was to determine if the proposed changes are or are not likely to have any significant direct, indirect or cumulative significant effects on Natura 2000 sites. The screening report concluded the following:

*The screening exercise has established that the proposed changes to the current activities do not have the potential for significant effects and an Appropriate Assessment is not required.*

A screening report was subsequently prepared by O' Callaghan Moran in 2012 (Stage 1 Screening Exercise Proposed Development Beuparc, County Meath. O' Callaghan Moran, 2012). The screening report was based on the information on the proposed changes to waste activities presented in the Licence Review application. Subsequent to the submission of this report a Stage 2 assessment (NIS) was requested by the Environmental Protection Agency (EPA). This stage 2 NIS is presented below.

## 2. Regulatory Context and the Appropriate Assessment Procedure

### 2.1 Regulatory context

Article 6(3) of *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a designated site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. For the purposes of the application for permission in respect of the proposed Cork Waste to Energy Facility development, the requirements of Article 6(3) have been transposed into Irish law by Part XAB of the Planning and Development Act 2000, as amended.

The possibility of there being a significant effect on a designated or "European" site will generate the need for an appropriate assessment to be carried out by the competent authority for the purposes of Article 6(3). In this instance, the competent authority is An Bord Pleanála. As set out in Section 177U of the Planning and Development Act 2000 as amended, a screening for appropriate assessment of an application for consent for proposed development must be carried out by the competent authority (in this case, An Bord Pleanála) to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. A Stage Two Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) Stage for appropriate assessment operates merely to determine whether a (Stage Two) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

## 2.2 Appropriate Assessment Procedure

The assessment requirements of Article 6(3) establish a stage-by-stage approach. This assessment follows the stages outlined in the 2001 European Commission publication “*Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC*” (2001) and The stages are as follows:

*Stage One: Screening* — the process which identifies any appreciable impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

*Stage Two: Appropriate assessment* — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site’s structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

*Stage Three: Assessment of alternative solutions*

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site. It is confirmed that no reliance is placed by the developer on Stage Three in the context of this application for development consent;

*Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain* — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest). Again, for the avoidance of doubt, it is confirmed that no reliance is placed by the developer on Stage Four in the context of this application for development consent

Documentation/guidelines of relevance to this NIS include the following:

- European Commission, 2001. *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC*. Office for Official Publications of the European Communities, Brussels (EC, 2001);
- European Commission, 2000a. *Communication from the Commission on the Precautionary Principle*, Office for Official Publications of the European Communities, Luxembourg (EC, 2000a);
- *Managing Natura 2000 Sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (Draft)* Office for Official Publications of the European Communities, Luxembourg (EC, 2015);
- Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; (EC, 2007);
- *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010b);

- European Commission Staff Working Document 'Integrating biodiversity and nature protection into port development' (EC, 2011b);
- *Interpretation Manual of European Union Habitats. Version EUR 28.* European Commission (EC, 2013).

### 3. Methodology

#### 3.1 Study Area and Scope of Appraisal

In line with the precautionary principle, the study area for the preparation Natura Impact Statement extended to a radius of 15km from the applicant's site boundary. Thus any appreciable direct, indirect or cumulative impacts which could arise from the proposed development in relation to the designated sites within this zone were considered. No potential ecological risks to designated sites outside this 15km radius were identified.

This NIS was prepared by Carl Dixon MSc. (Ecological Monitoring) He has considerable experience in ecological assessment and the preparation of Natura Impact Statements for a range of large and small scale developments.

#### 3.2 Desktop Study

A desktop review facilitates the identification of the baseline ecological conditions and key ecological issues relating to Natura 2000 sites and facilitates an evaluation assessment of potential in-combination impacts. Sources of information used for this NIS include previous reports prepared for the site, information from statutory and non-statutory bodies. The sources of information and relevant documentation utilised are as follows:

##### 3.2.1 Information on the site

- Stage 1 Screening Exercise Proposed Development Beuparc, County Meath. (O' Callaghan Moran, 2012)
- Constructed Wetland design for Panda Waste Services. Site at Rathdrinagh, Navan, Co. Meath. (Alvin Morrow Reedbed Wastewater Treatment Systems, 2015)
- General Design Rationale for reed bed surface flow constructed wetlands (Alvin Morrow Reedbed Wastewater Treatment Systems, 2015)
- Environmental Impact Statement Panda Waste Services, Rathdrinagh, Beuparc, Navan, Co. Meath. (O' Callaghan Moran, 2014)

##### 3.2.2 Information from statutory and non-statutory bodies

- National Parks & Wildlife Service (NPWS) - [www.npws.ie](http://www.npws.ie) including qualifying interests and conservation objectives for Natura 2000 sites.
- Environmental Protection Agency (EPA) – [www.epa.ie](http://www.epa.ie)
- National Biodiversity Data Centre – [www.biodiversityireland.ie](http://www.biodiversityireland.ie)
- Meath County Development Plan 2013-2019
- Natura Impact Report Appropriate Assessment of Variation No. 2 to Meath County Development Plan 2013 – 2019
- Draft Navan Development Plan 2009-2015 Appropriate Screening Assessment Report

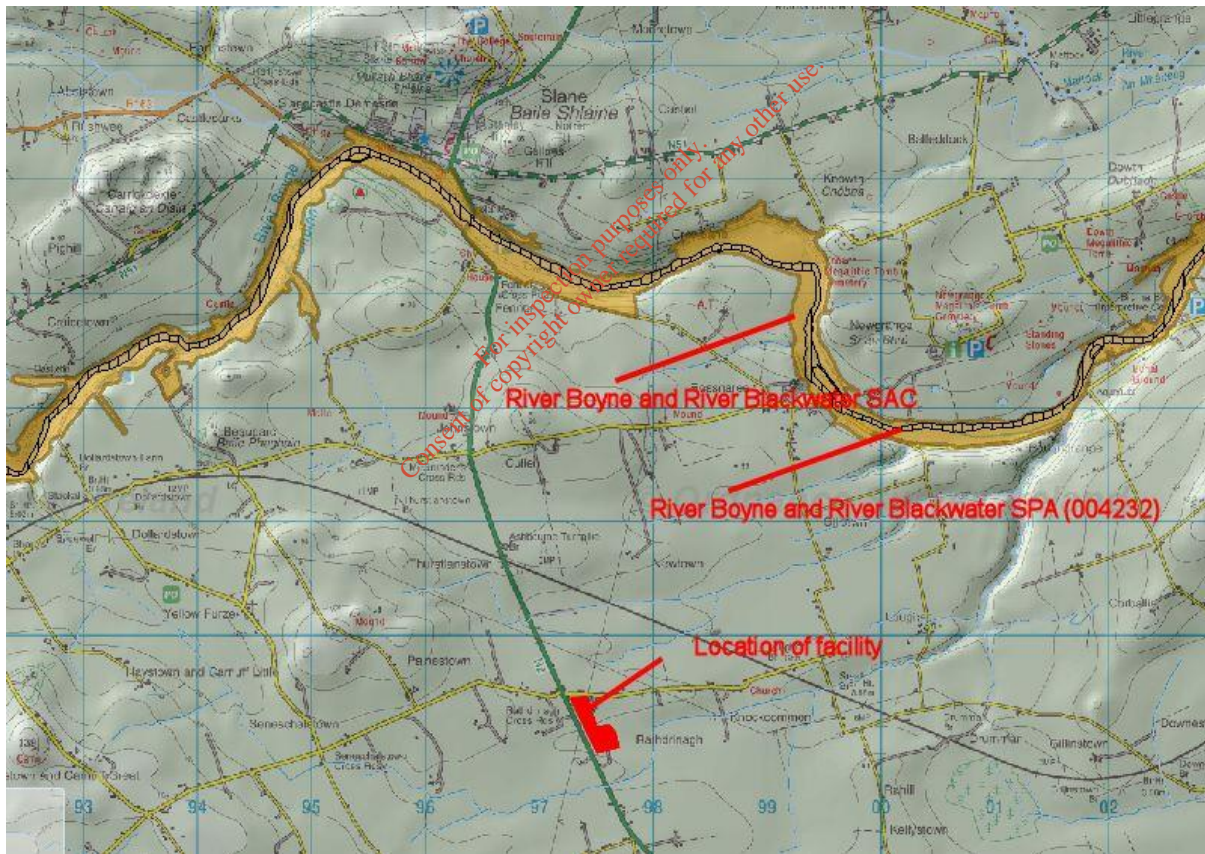
#### 4. Natura 2000 sites

##### 4.1 Designated sites within a 15km radius

Natura 2000 sites within a 15km radius of the proposed development site are listed below in **Table 1**. It is noted that use of a 15km radius is a precautionary measure, as impacts at this distance from the proposed development are highly unlikely. The Natura 2000 sites listed below are considered the only sites relevant to this report.

**Table 1. Designated sites within 15km**

Designated site	Distance from site of proposed development
<b>Candidate SAC sites</b>	
River Boyne and Blackwater cSAC (002165)	Approximately 3 km north east
<b>SPA sites</b>	
River Boyne and River Blackwater SPA (004232)	Approximately 3 km north east



**Figure 1. Location of facility in relation to designated sites.**

## 4.2 Qualifying interests and conservation objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The qualifying interests and specific conservation objectives for the River Boyne and River Blackwater cSAC are detailed in *NPWS (2015) Conservation objectives for River Boyne and River Blackwater SAC [002299]. Generic Version 4.0. Department of Arts, Heritage and the Gaeltacht. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.* The generic conservation objectives for this site are listed in **Table 2**.

**Table 2. River Boyne and River Blackwater cSAC- qualifying interests and specific conservation objectives.**

Habitat Code	Habitat	Conservation objective
[7230]	Alkaline fens	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected:
[91E0]	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*	
[1099]	<i>Lampetra fluviatilis</i> (River Lamprey)	
[1106]	<i>Salmo salar</i> (Salmon)	
[1355]	<i>Lutra lutra</i> (Otter)	

\* denotes priority habitat

The qualifying interests and specific conservation objectives for the River Boyne and River Blackwater SPA are detailed in *NPWS (2015) Conservation objectives for River Boyne and River Blackwater SPA [004232]. Generic Version 4.0. Department of Arts, Heritage and the Gaeltacht.* The generic conservation objectives for this site are listed in **Table 3**.

**Table 3. List of special conservation interests under the EU Birds Directive for the River Boyne and River Blackwater SPA [004232]**

Annex of EU Birds Directive	Common Name	Scientific name	Conservation objectives
Annex 1	Klingfisher (A229)	<i>Alcedo atthis</i>	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

### 4.3 Site synopses

- **River Boyne and River Blackwater cSAC**

This site comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers. These riverine stretches drain a considerable area of Meath and Westmeath, and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part, with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. There are many large towns adjacent to but not within the site, including Slane, Navan, Kells, Trim, Athboy and Ballivor.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

[7230] Alkaline Fens

[91E0] Alluvial Forests\*

[1099] River Lamprey (*Lampetra fluviatilis*)

[1106] Atlantic Salmon (*Salmo salar*)

[1355] Otter (*Lutra lutra*)

The main areas of alkaline fen in this site are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. The hummocky nature of the local terrain produces frequent springs and seepages which are rich in lime. A series of base-rich marshes have developed in the poorly-drained hollows, generally linked with these three lakes. Open water is usually fringed by Bulrush (*Typha latifolia*), Common Club-rush (*Scirpus lacustris*) or Common Reed (*Phragmites australis*), and this last species also extends shorewards where a dense stand of Great Fen-sedge (*Cladium mariscus*) frequently occurs. This in turn grades into a sedge and grass community (*Carex* spp. and Purple Moor-grass, *Molinia caerulea*), or one dominated by Black Bog-rush (*Schoenus nigricans*). An alternative aquatic/terrestrial transition is a floating layer of vegetation. This is normally based on Bogbean (*Menyanthes trifoliata*) and Marsh Cinquefoil (*Potentilla palustris*). Other species gradually become established on this cover, especially plants tolerant of low nutrient status e.g. bog mosses (*Sphagnum* spp.). Diversity of plant and animal life is high in the fen and the flora includes many rarities. Plants of interest include Narrow-leaved Marsh-orchid (*Dactylorhiza traunsteineri*), Fen Bedstraw (*Galium uliginosum*), Cowbane (*Cicuta virosa*), Frogbit (*Hydrocharis morsus-ranae*) and Least Bur-reed (*Sparganium minimum*). These species tend to be restricted in their distribution in Ireland. Also notable is the abundance of aquatic stoneworts (*Chara* spp.) which are characteristic of calcareous wetlands.

The rare plant Round-leaved Wintergreen (*Pyrola rotundifolia*) occurs around Newtown Lough. This species is listed in the Red Data Book and this site represents its only occurrence in Co. Meath.

Wet woodland fringes many stretches of the Boyne. The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build-up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, willow (*Salix* spp.) woodland, with the following species occurring: Osier (*S. viminalis*), Crack Willow (*S. fragilis*), White Willow (*S. alba*), Purple Willow (*Salix purpurea*) and Rusty Willow (*S. cinerea* subsp. *oleifolia*). A small area of Alder (*Alnus glutinosa*) woodland is found on soft ground at the edge of the canal in the north-western section of the islands. Along other stretches of the rivers of the site Rusty Willow scrub and pockets of wet woodland dominated by Alder have become established, particularly at the river edge of mature deciduous woodland. Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*) are common in the latter, and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Yellow Iris (*Iris pseudacorus*), horsetails (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*).

The dominant habitat along the edges of the river is freshwater marsh, and the following plant species occur commonly in these areas: Yellow Iris, Creeping Bent (*Agrostis stolonifera*), Canary Reed-grass (*Phalaris arundinacea*), Marsh Bedstraw (*Galium palustre*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*). In the wetter areas Common Meadow-rue (*Thalictrum flavum*) is found. In the vicinity of Dowth, Fen Bedstraw (*Galium uliginosum*), a scarce species mainly confined to marshy areas in the midlands, is common in this vegetation. Swamp Meadow-grass (*Poa palustris*) is an introduced plant which has spread into the wild (naturalised) along the Boyne approximately 5 km south-west of Slane. It is a rare species which is listed in the Red Data Book and has been recorded among freshwater marsh vegetation on the banks of the Boyne in this site. The only other record for this species in the Republic of Ireland is from a site in Co. Monaghan.

The secondary habitat associated with the marsh is wet grassland and species such as Tall Fescue (*Festuca arundinacea*), Silverweed (*Potentilla anserina*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet and Meadow Vetchling (*Lathyrus pratensis*) are well represented. Strawberry Clover (*Trifolium fragiferum*), a plant generally restricted to coastal locations in Ireland, has been recorded from wet grassland vegetation at Trim. At Rosnaree river bank on the River Boyne, Round-Fruited Rush (*Juncus compressus*) is found in alluvial pasture, which is generally periodically flooded during the winter months. This rare plant is only found in three counties in Ireland.

Along much of the Boyne and along tributary stretches are found areas of mature deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. Many of these are planted in origin. However the steeper areas of King Williams Glen and Townley Hall wood have been left unmanaged and now have a more natural character. East of Curley Hole the woodland has a natural appearance with few conifers. Broadleaved species include oaks (*Quercus* spp.), Ash, willows, Hazel (*Corylus avellana*), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*), Horse-chestnut (*Aesculus hippocastanum*) and the shrubs Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Elder (*Sambucus nigra*). South-west of Slane and in Dowth, some more exotic tree species such as Beech (*Fagus sylvatica*), and occasionally Lime (*Tilia cordata*), are seen. The coniferous trees Larch (*Larix* sp.) and Scots Pine (*Pinus sylvestris*) also occur. The woodland ground flora includes Barren Strawberry (*Potentilla sterilis*), Enchanter's-nightshade (*Circaea lutetiana*) and Ground-ivy (*Glechoma hederacea*), along with a range of ferns. Variation occurs in the composition of the canopy - for example, in wet patches alongside the river, White Willow and Alder form the canopy.



Other habitats present along the Boyne and Blackwater include lowland dry grassland, improved grassland, reedswamp, weedy waste ground, scrub, hedge, drainage ditch and canal. In the vicinity of Lough Shesk, the dry slopes of the morainic hummocks support grassland vegetation which, in some places, is partially colonised by Gorse (*Ulex europaeus*) scrub. Those grasslands which remain unimproved for pasture are species-rich, with Common Knapweed (*Centaurea nigra*), Creeping Thistle (*Cirsium arvense*) and Ribwort Plantain (*Plantago lanceolata*) commonly present. Fringing the canal alongside the Boyne south-west of Slane are areas with Reed Sweet-grass (*Glyceria maxima*), Great Willowherb (*Epilobium hirsutum*) and Meadowsweet.

The Boyne and its tributaries form one of Ireland's premier game fisheries and the area offers a wide range of angling, from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic Salmon (*Salmo salar*) use the tributaries and headwaters as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the Habitats Directive. Atlantic Salmon run the Boyne almost every month of the year. The Boyne is most important as it represents an eastern river which holds large three-sea-winter fish from 20-30 lb. These fish generally arrive in February, with smaller spring fish (10 lb) arriving in April/May. The grilse come in July, water permitting. The river gets a further run of fish in late August and this run would appear to last well after the fishing season. The salmon fishing season lasts from 1<sup>st</sup> March to 30<sup>th</sup> September.

The Blackwater is a medium sized limestone river which is still recovering from the effects of the arterial drainage scheme of the 1970s. Salmon stocks have not recovered to the numbers that existed pre-drainage. The Deel, Riverstown, Stoneyford and Tremblestown Rivers are all spring-fed, with a continuous high volume of water. They are difficult to fish because some areas are overgrown, while others have been affected by drainage with resultant high banks.

This site is also important for the populations of two other species listed on Annex II of the E.U. Habitats Directive which it supports, namely River Lamprey (*Lampetra fluviatilis*), which is present in the lower reaches of the Boyne River, and Otter (*Lutra lutra*), which can be found throughout the site. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. Common Frog, another Red Data Book species, also occurs within the site. All of these animals, with the addition of the Stoat and Red Squirrel, which also occur within the site, are protected under the Wildlife Act, 1976.

Whooper Swans winter regularly at several locations along the Boyne and Blackwater Rivers. Known sites are at Newgrange (approx. 20 in recent winters), near Slane (20+ in recent winters), Wilkinstown (several records of 100+) and River Blackwater from Kells to Navan (104 at Kells in winter 1996/97, 182 at Headfort in winter 1997/98, 200-300 in winter 1999/00). The available information indicates that there is a regular wintering population of Whooper Swans based along the Boyne and Blackwater River valleys. The birds use a range of feeding sites but roosting sites are not well known. The population is substantial, certainly of national, and at times international, importance. Numbers are probably in the low hundreds.

Intensive agriculture is the main land use along the site. Much of the grassland is in very large fields and is improved. Silage harvesting is carried out. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the lakes. In the more extensive agricultural areas sheep grazing is carried out.

Fishing is a main tourist attraction on the Boyne and Blackwater and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. The Eastern Regional Fishery Board have erected fencing along selected stretches of the river as part of their salmonid enhancement programme. Parts of the river system have been arterially dredged. In 1969 an arterial dredging scheme commenced and disrupted angling for 18 years. The dredging altered the character of the river completely and resulted in many areas in very high banks. The main channel from Drogheda upstream to

Navan was left untouched, as were a few stretches on the Blackwater. Ongoing maintenance dredging is carried out along stretches of the river system where the gradient is low. This is extremely destructive to salmonid habitat in the area. Drainage of the adjacent river systems also impacts on the many small wetland areas throughout the site. The River Boyne is a designated Salmonid Water under the E.U. Freshwater Fish Directive.

The site supports populations of several species listed on Annex II of the E.U. Habitats Directive, and habitats listed on Annex I of this Directive, as well as examples of other important habitat types. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country, particularly in the north-east. The semi-natural habitats, particularly the strips of woodland which extend along the river banks, and the marsh and wet grasslands, increase the overall habitat diversity and add to the ecological value of the site, as does the presence of a range of Red Data Book plant and animal species and the presence of nationally rare plant species.

- **Site synopsis -River Boyne and River Blackwater SPA [004232]**

The River Boyne and River Blackwater SPA is a long, linear site that comprises stretches of the River Boyne and several of its tributaries; most of the site is in Co. Meath, but it extends also into Cos Cavan, Louth and Westmeath. It includes the following river sections: the River Boyne from the M1 motorway bridge, west of Drogheda, to the junction with the Royal Canal, west of Longwood, Co Meath; the River Blackwater from its junction with the River Boyne in Navan to the junction with Lough Ramor in Co. Cavan; the Tremblestown River/Athboy River from the junction with the River Boyne at Kilnagross Bridge west of Trim to the bridge in Athboy, Co. Meath; the Stoneyford River from its junction with the River Boyne to Stonestown Bridge in Co. Westmeath; the River Deel from its junction with the River Boyne to Cummer Bridge, Co. Westmeath. The site includes the river channel and marginal vegetation.

Most of the site is underlain by Carboniferous limestone but Silurian quartzite also occurs in the vicinity of Kells and Carboniferous shales and sandstones close to Trim.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive of special conservation interest for the following species: Kingfisher.

A survey in 2010 recorded 19 pairs of Kingfisher (based on 15 probable and 4 possible territories) in the River Boyne and River Blackwater SPA. A survey conducted in 2008 recorded 20-22 Kingfisher territories within the SPA. Other species which occur within the site include Mute Swan (90), Teal (166), Mallard (219), Cormorant (36), Grey Heron (44), Moorhen (84), Snipe (32) and Sand Martin (553) – all figures are peak counts recorded during the 2010 survey.

The River Boyne and River Blackwater Special Protection Area is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive.

25.11.2010

## **5. Existing development**

PANDA has operated its waste recovery plant at Beauparc for over 20 years and currently employs 100 workers at the facility. The facility is located on the N2, approximately 4km south of the town of Slane. It is bordered to the west by the N2 and to the north by the Knockcommon Road. To the south and east are agricultural lands.

The site has planning permission from Meath County Council and a Waste Licence granted by the Environmental Protection Agency (EPA). The current planning permission and Waste Licence allow PANDA to take in and process up to 250,000 tonnes of non-hazardous waste annually.

The wastes are collected from households, businesses and construction sites and are processed in three main buildings. The processing includes sorting the wastes to pick out the clean paper, cardboard, plastics, wood, metals, organics, rubble, soil and stones that can either be recycled or used to manufacture refuse derived fuel. The remaining mixed materials, for example dirty paper and organic residues that are not suitable for recycling, can be treated in the compost tunnels before going to landfill.

The proposed biological treatment is a combination of 'dry fermentation' anaerobic digestion and composting. The dry fermentation consists of a series of fully enclosed tanks, called digesters, in which the wastes are placed. The oxygen in the air in the digesters is used up by the microbes in the waste to produce anaerobic (no oxygen) conditions. The microbes break down the waste and, in the process, produce a number of different gases (biogas). The most common gas is methane, which is the 'natural gas' supplied by Bord Gais. The biogas is cleaned (scrubbed) to remove contamination and used as a fuel in new electricity generators, which connects to the national grid.

The digesters reduce the amount of organic matter in the wastes, and convert it to biogas. The waste is then moved to the composting area, where it is composted in fully enclosed containers called tunnels. When the composting process is complete, the material is pasteurised by raising and maintaining the temperature to a level that kill the microbes. The compost will be sold to farmers, market gardeners, landscape contractors and the general public. Pasteurisation is required in the composting process to meet the requirements of the Department of Agriculture Fisheries and Marine for the treatment of wastes containing residues of meat and fish (Animal By-Products)

The remaining mixed wastes that are not suitable for recycling are turned into a fuel, called refuse derived fuel RDF or Solid Recovered Fuel (SRF) which is used in industrial plants in Ireland and abroad, for example cement making plants.

### *Surface Water*

Rainwater falling on the existing concrete yards is currently collected in an underground tank and stored before being sent off-site for treatment at an Irish Water owned sewage treatment plant. Treatment is required because rainfall on concrete yards where vehicles travel and park can become contaminated with silt and small quantities of oil that may leak from vehicle oil sumps.

Rainwater from the roof of the new building will be collected in a tank and used for spraying the yards to keep dust down. The rainwater from the new yard will pass through silt traps and interceptors, which reduces the contamination to acceptable levels, before going to a new soakaway.

All waste processing will be carried out inside fully enclosed buildings and digesters. Percolate generated in AD process will be collected and stored in above ground storage tanks located in appropriately sized and constructed bunds that prevent any accidental spills and leaks from entering the surface water drainage system. The levels in the tanks will be monitored to ensure the liquid does not overflow the tanks, and escape from the building. Leachate from the composting bays will also be collected and recirculated.

The applicant has site specific procedures to deal with spills and any emergencies that may arise to ensure that the appropriate response actions are taken by trained staff to minimise any associated environmental impacts. Appropriate spill containment and clean-up equipment is provided at the facility, as required by Waste Licence conditions.

### *Wastewater*

Water from the canteen and the toilets is collected and initially treated in an on-site wastewater treatment plant before being sent to an Irish Water owned sewerage treatment plant. The water used clean the floors of the buildings and the water from truck wash is collected in an underground tank and also sent to a local authority owned sewage treatment.

The biological treatment process will produce wastewater and all of this will be collected in drains inside the new building and pumped to new storage tanks. The tanks will be fully enclosed by walls designed to trap any spills or leaks that may happen. The design and construction of the tanks and containing walls will be approved by the EPA. Much of the wastewater will be reused in the process, but any that cannot, will be sent to the local authority treatment plant.

### *Groundwater*

The only emission to ground will be rainwater run-off from the new concrete yards. The rainwater will pass through silt traps and an oil interceptor before it enters the soakaway.

### *Oil / Chemical Storage*

Diesel and gas oil are stored in above ground tanks (59,000 litres and 14,000 litres respectively) in dedicated structure at the eastern boundary, close to Building 1. The tanks are provided with individual bunds, each of which has a minimum capacity of 110% of the volume of the tank. The bunds are subject to routine integrity testing, as required by the Licence conditions and are structurally sound. AdBlue, a diesel additive, is stored in a 1,000 litre IBC which is bunded and located adjacent to the oil bunds.

### *Fire*

In the event of an incident or accident at the facility, including a fire that could give rise to the risk of surface water pollution, the shut-off valve on the outlet from the proposed integrated wetland system (as detailed below) will be closed to contain the contaminated surface water within the facility's drainage system. Following any such incident, the water that accumulates in the drainage system will be tested to identify the appropriate management option.

## **6. New system for disposal of wastewater via settlement tanks and a constructed wetland.**

Following commissioning, the surface water that is currently being collected in the storage tank will be directed to a three celled constructed reed bed (See **Photo 1**). The reed bed will remove contaminants that may have been picked up by the rainwater and the treated water will discharge into a drain along the southern site boundary. A land drain that runs along the southern boundary connects to the Roughgrange River. The Roughgrange is a tributary of the River Boyne, which it joins approximately 3km downstream from the site.



**Photo 1 showing newly constructed wetland.**

The design parameters for the constructed wetland are provided in the document *Constructed Wetland design for Panda Waste Services. Site at Rathdrinagh, Navan, Co. Meath.* (Alvin Morrow Reedbed Wastewater Treatment Systems, 2015) and *General Design Rationale for reed bed surface flow constructed wetlands* (Alvin Morrow Reedbed Wastewater Treatment Systems, 2015). These reports are included as **Appendix 1 and 2** respectively. Relevant information is summarised below:

- The site is underlain by Namurian Undifferentiated Bedrock (NU) and is located in a poor aquifer (PI) category area, whilst the area has a low vulnerability categorisation. The site is situated on subsoil categorised as (TNSSs) - shales and sandstone till-clayey texture. This suggested that the onsite soils/subsoils may lend itself to the suitably high clay contents required for the impervious protective layer required for the construction of the wetland system. This was confirmed by trial hole assessments and sampling to confirm % clay content and the method of construction for each cell was designed to take into account the properties of the underlying soils and subsoils. The trial hole assessment did not record any evidence of a water table (winter or otherwise).

- Waste materials are processed indoors. Therefore the wastewaters collected are not considered to contain any leachates from the waste materials being processed. Therefore the wetland design rationale for the treatment of urban/highway runoff was adopted. At present roof and yard run-offs are sent to three settlement tanks (estimated capacity of 350m<sup>3</sup>) prior to subsequent removal off site. Waters are sent to the settlement tanks as usual, prior to being sent to a wetland system for treatment prior to discharging to the existing surface water drain/ditch passing adjacent to the proposed position of the wetland system. The wetland has been designed as a horizontal, surface flow design, divided into three stage/cell system. The intention is then to have an overflow to the ditch/stream. It is estimated that the effluent will be of an exceptional standard (beyond a <math>5/5</math> BOD/SS standard).
- The following design parameters were utilised: Site area 43,933.5m<sup>2</sup>. Total area to be excluded 3250m<sup>2</sup> -unused land, 9438m<sup>2</sup> roofed area. For design purposes roofed areas have been excluded. Using a site area of 31, 245.5m<sup>2</sup> and assuming a wetland area of 5% a total wetland area of 1563m<sup>2</sup> was deemed sufficient to provide a high level of treatment. It is noted that the wetland is preceded by settlement tanks prior to discharge which significantly aids the systems overall efficiency. The estimated retention time is 46-62 hours.
- The following performance levels are predicted: 96% of total extractable hydrocarbons, 50-75% total phosphorus, 60-80% nitrogen, 83% COD, 89% BOD<sub>5</sub>, 99.9% faecal coliforms and 70-90% suspended solids.
- The following limits for the emissions to water from the site were set by the EPA under licence reg. no. W0140-03 at point SW1 located on the southern drain; BOD 5mg/l, Suspended solids 25 mg/l, ammonia (as NH<sub>4</sub>) 1mg/l. Tests taken on samples obtained from the final settlement tank on the 26/9/13 and 5/12/13 indicated that the relevant parameters in the effluent from the final tank were generally below the relevant limits with the exception of on slightly elevated ammonia level. It was concluded that nutrient levels and suspended solid loadings will be relatively low and the effluent for all parameters, even throughout storm events, produced by the wetland will be polished to a high standard.

## 7. Appraisal of the Receiving Environment

A site inspection was carried out on 29 November, 2015. The site is dominated by buildings and yards with natural or semi-natural habitats absent from the site. The wetland system has been constructed as a series of cells which run roughly north south along the boundary of the site and parallel to the N2 road. The constructed wetland discharges to a land drain at the southwest corner of the site; although it is noted that it does not currently take any run-off from the facility. The land drain is of insufficient size to be of value for fish and no evidence of otter activity or potential nesting sites for kingfisher were recorded in proximity to the site. No invasive species were recorded within the site. **Figure 2** shows the location of the constructed wetland in relation to the facility.



**Figure 2 location of the constructed wetland and existing facility.**

## 8. Water quality data

A land drain that runs along the southern boundary connects to the Roughgrange River. The Roughgrange is a tributary of the River Boyne, which it joins approximately 3km downstream from the site (See **Figure 3**). The River Boyne is a designated Salmonid Water under the E.U. Freshwater Fish Directive.

### 8.1 Q values

The Q Value system which is used by the Environmental Protection Agency describes the relationship between water quality and the macro-invertebrate community in numerical terms. The presence of pollution causes changes in flora and fauna of rivers. Well documented changes occur in the macro-invertebrate community in the presence of organic pollution: sensitive species are progressively replaced by more tolerant forms as pollution increases. Q5 waters have high diversity of macro-invertebrates and good water quality, whilst Q1 have little or no macro-invertebrate diversity and bad water quality. Intermediate values, Q1-2, 2-3, 3-4 etc denote transitional conditions.

The Roughgrange River is not monitored as part of the EPA standard biological programme. The closest water quality monitoring station up-gradient of the discharge from the facility on the Boyne is Ford S of Broc H. This site is located approximately 1.7km upstream of the confluence of the Roughgrange and Boyne Rivers. The most recent Q-value was Q4 in 2012 which is indicative of satisfactory water quality.

The nearest downstream water quality monitoring station on the Boyne is located at Old Bridge (Obilesk Bridge). This site is located approximately 6.57km downstream of the confluence of the Roughgrange and Boyne Rivers. The Q-values for this location from 2012 was Q3-4. It is

noted that this site is a considerable distance from the Panda facility and there is no evidence to indicate the slight drop in Q value is related to activities at this facility.

## 8.2 Water frameworks Directive

The Water Framework Directive (WFD) is a key initiative aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, and coastal waters. The Directive requires an integrated approach to managing water quality on a river basin basis; with the aim of maintaining and improving water quality. The Directive requires that management plans be prepared on a river basin basis and specifies a structured approach to developing those plans. It requires that a programme of measures for improving water quality be brought into effect.

Specifically the WFD aims to protect/enhance all waters (surface, ground and coastal waters), achieve "good status" for all waters, manage water bodies based on river basins (or catchments), involve the public and streamline legislation

A) The Water Frameworks Directive assesses the water quality of rivers and ranks their status as follows: High, Good, Moderate, Poor, Bad and Yet to be determined. The Lower Boyne River status was determined to be Moderate. The Roughgrange status was classified as Unassigned.

B) The Water Frameworks Directive also determines the "Risk" level of the river as follows: 1a – At risk of not achieving Good Status, 1b – Probably at risk of not archiving Good Status, 2a – Expected to achieve Good Status and 2b – strongly expected to achieve Good Status. The Boyne River is considered 1a - At risk of not achieving Good Status. The Roughgrange River is considered 1b- Possibly at risk of not achieving good status.

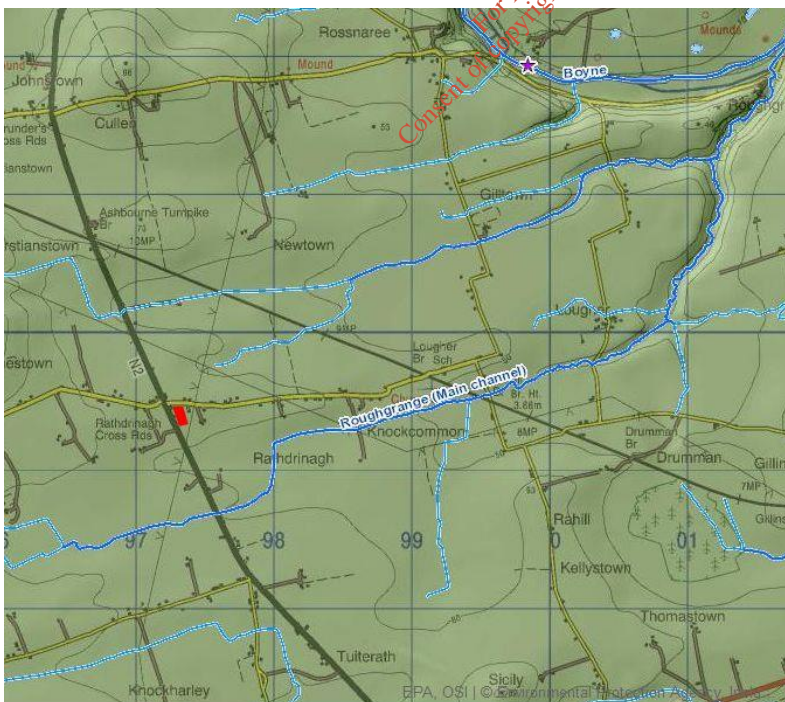


Figure 3. Surface water features



## 9. Identification of potential impacts on the River Boyne and River Blackwater cSAC and River Boyne and River Blackwater SPA.

Discharge of wastewater has the potential to cause deteriorations in water quality in the receiving watercourse. If of sufficient severity there could be impacts on freshwater species listed as qualifying interests for the River Boyne and River Blackwater cSAC which is located downstream of the discharge. Possible impacts are as follows:

- High silt levels could impact in particular on river lamprey and salmon spawning habitat. Excessive siltation can cause salmon and trout eggs and fry to be smothered. Spawning salmonids and lamprey are likely to avoid traditional spawning areas due to excessive silt deposits.
- Adult fish may also be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels. Increased turbidity in waters may negatively affect angling activity.
- Aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species.
- Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced.
- High nutrient levels can impact on aquatic ecology including impacts on flora, macro-invertebrate assemblages and fish.
- Significant impacts on fish stocks could impact on otter and kingfisher due to a reduction in prey availability

Based on the above, discharge via the constructed wetland system could theoretically impact on River Lamprey, Salmon and Otter (cSAC special conservation interest) and Kingfisher (SPA special conservation interest). No potential impact on the cSAC habitats Alkaline fens and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) have been identified due to lack of a significant pathway and the limited nature of the proposed development. No evidence of otter or kingfisher breeding habitat was recorded in proximity to the facility and thus no potential from disturbance has been identified.

## 10. Potential Cumulative impacts

The potential for in-combination impacts to occur needs to be taken into account. Impacts could arise in relation to impacts on water quality. Plans and projects which are considered relevant, for the purposes of assessing cumulative impacts, include the following:

### 10.1 Meath County Development Plan 2013-2019

**Volume 5** - Written Statements and Detailed Objectives notes the following in relation to the village of Slane which is the closest upstream settlement which discharges within the River Boyne and River Blackwater cSAC and River Boyne and River Blackwater SPA:

*Wastewater: There are currently two waste water treatment plants in Slane, the Council's own treatment plant and a privately owned treatment plant. There is limited spare capacity available in Slane to service new development. For all new developments, Meath County Council are requesting developers/ applicants to try and free up capacity in this waste water treatment plant to cater for their requirements. There are no planned upgrades to the public waste water treatment plant in Slane at present. All development proposals shall be considered in the*

context of the available waste water and water supply capacity. It is accepted that the future development of Slane and the realisation of the household allocation from the Core Strategy may not occur until the wastewater services constraints outlined above have been remedied.

**Water Services Policy 10** notes the following:

*To facilitate the provision of an adequate wastewater collection and treatment systems to all towns and villages in the County to serve existing and planned future populations in accordance with the Settlement and Core Strategies identified in this Plan, the Water Framework Directive 2000, the Water Services Investment Programme and as finances permit, thus improving the quality of Meath's surface, ground, transitional and coastal waters.*

**Water Services Policy 20** notes the following:

*To ensure through the implementation of the River Basin Management Plans and their associated programmes of measures, and any other associated legislation, the protection and improvement of all drinking water, surface water and ground waters throughout the county*

**Water Services Policy 27** notes the following:

*To ensure that proposed septic tanks and proprietary treatment systems, or other waste water treatment and storage systems, and associated percolation areas where required as part of a development, comply with the recommendations of the Environmental Protection Agency and that they are employed only where site conditions are appropriate.*

**Natural Heritage Objective 2** notes the following:

*To ensure an Appropriate Assessment in accordance with Article 6(3) and Article 6(4) of the Habitats Directive, and in accordance with the Department of Environment, Heritage and Local Government Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and relevant EPA and European Commission guidance documents, is carried out in respect of any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect on a Natura 2000 site(s), either individually or in combination with other plans or projects, in view of the site's conservation objectives.*

## **10.2 Natura Impact Report Appropriate Assessment of Variation No. 2 to Meath County Development Plan 2013 – 2019**

**Section 2.5. Reasons for designation, site sensitivities and threats** notes that the following settlements have the potential be a threat to the integrity of the River Boyne and River Blackwater cSAC and River Boyne and River Blackwater SPA:

Athboy - High risk. Disturbance of kingfisher breeding sites. Otters, impacts on water quality.

Baile Ghib/Gibbstown - Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via Yellow River.

Carlanstown- Moderate risk. Indirect impact on cSAC and SPA populations, impacts on water quality via Moyalty River.

Carnaross- Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via watercourses but no linkages found.

Clonard - Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via watercourses but no linkages found.

Crossakiel- Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via watercourses but no linkages found.

Donore - Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via watercourses but no linkages found.

Kildalkey- Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via local streams.

Kilmessan- Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via Skane River.

Moynalty- Moderate risk. Indirect impact on cSAC and SPA populations, impacts on water quality via Moynalty River.

Rathcairn- Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via local streams.

Slane- High risk. Disturbance of Kingfisher breeding sites, Otters, impacts on water quality.

Dunshaughlin- Low risk. Indirect impact on cSAC and SPA populations, impacts on water quality via local streams.

In conclusion the following was noted:

**Section 3.10. Conclusion of Stage 2 : Appropriate Assessment This Natura Impact Report** records the decisions that were taken during the preparation of Variation No. 2 to the Meath County Development Plan 2013-2019. It determines that, assuming the successful implementation of the Policies and Objectives, there will be no likely significant effects on the European sites in isolation or in combination with other Plans and Projects acting in the same area.

### **10.3. Navan Development Plan 2009-2015 Appropriate Screening Assessment Report and Appropriate Assessment Screening Report of the Proposed Amendments to the Draft Navan Development Plan 2009-2015.**

The plan recognizes the unique qualities of the River Boyne and Blackwater cSAC and contains robust and thorough policy provisions to ensure that the integrity of the site is not compromised but where possible enhanced. The Plan contains the following policies in this regard.

**HER POL 15:** To maintain, protect and where possible enhance, the conservation value of the cSAC in Navan and any additional sites that may be proposed for designation during the lifetime of this Plan.

**HER POL 16:** To have regard to the views and guidance of the National Parks and Wildlife Service of the DoEHLG in respect of proposed development where there is a possibility that such development may have an impact on the River Boyne and River Blackwater candidate Special Area of Conservation.

**HER POL17:** To require any planning application that proposes development within or adjacent to the area designated as a cSAC to be accompanied by an ecological impact assessment carried out by appropriate professionals. The Ecological Impact Assessment will be forwarded to the National Parks & Wildlife Service of the Department of the Environment, Heritage & Local Government for their comments prior to the making of a decision by the appropriate planning authority.

**HER POL 18:** To permit development in a designated SAC or those proposed to be designated over the period of this plan, only where an assessment carried out to the satisfaction of the Planning Authority and National Parks & Wildlife Service of DoEHLG,

indicates that it will have no significant adverse effect (such as disturbance, pollution or deterioration of habitat quality) on the protected area.

**HER POL 19:** To prohibit any development that would be harmful or that would result in a significant deterioration of habitats and/or disturbance of species.

**HER POL 20:** To ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on plant, animal or bird species protected by law.”

The report concluded the following:

*The policy provisions included in the Plan ensure that no projects giving rise to significant adverse direct, indirect or secondary impacts on the integrity of the River Boyne and River Blackwater candidate Special Area of Conservation or any other Natura 2000 sites, having regard to their conservation objectives, shall be permitted on the basis of this Plan (either individually or in combination with other plans or projects).*

### **10.3 South Eastern River Basin Management Plan (2009-2015)**

This report notes that the suspected causes of less than satisfactory water in the state are discharges, principally of nutrients, from agricultural activities and from municipal wastewater treatment works. Industrial discharges, wastewater from unsewered properties and discharges from several other activities have also been identified as contributing. Action should concentrate in the first instance on these issues which pose the greatest threat to the water environment, but it is also important to address other possible sources of water pollution and impact, including issues such as water abstraction and physical modification and issues specific to the South Eastern RBD. This plan identifies a programme of measures to protect and restore water status by addressing the main pressures including

- Control of urban waste water discharges;
- Control of agricultural sources of pollution;
- Control of unsewered waste water discharges;
- Water pricing policy;
- Control of environmental impacts from forestry.

Effective implementation of these measures is expected to have a net, positive long-term impact on river water quality.

## **11. Mitigation Measures**

The likely success of the proposed mitigation measures is high, either in their current form or as they will be adapted on-site to achieve the desired result. The mitigation measures have been drawn up in line with current best practice. It is clear that the mitigation measures are designed to lower the risk of impact to acceptable levels. Whilst the proposed methods of mitigation may be amended and supplemented the risk that the mitigation measures will not function effectively in preventing significant impacts on designated sites is low.

- Pipework at the inlet has been designed to be adjustable to distribute the effluent evenly across the beds width.
- The pipe work at the outlet is adjustable to allow for control of water depth within the bed.

- De-sludging of the settled sediment from the tanks will be monitored once a month and de-sludged every 6 months-1 year as appropriate.
- To ensure the wetland has a minimum of 0.15m deep and ideally no more than 0.25m deep, the pipework at the outlet will be adjusted so as to control the water depth within the bed.
- The pipework at the inlet and outlet will be rodded periodically to ensure the even distribution of the effluent evenly across each bed width.
- A final commissioning report on the constructed wetland was requested by the EPA to ensure that it is structurally intact. This report will include an analysis of water quality. This report will be submitted and assessed by the EPA before any discharge from the constructed wetland occurs.

## 12. Conclusions of the Natura Impact Statement

Impacts which were considered to have the potential to impact on the River Boyne and River Blackwater SPA and River Boyne and River Blackwater cSAC relate to the potential for impacts on water quality which can impact on other aquatic species and predators higher up the food chain such as otter and kingfisher. No direct loss of Natura 2000 habitats will occur and there is no potential for disturbance of qualifying interests for the River Boyne and River Blackwater SPA and River Boyne and River Blackwater cSAC. No significant in-combination impacts have been identified.

Precautionary measures have been incorporated into the project design, and other mitigation measures have been developed and proposed, with the purpose of avoiding or minimising impacts on water quality. The likely success of these measures was also considered and no particular difficulties in their effective implementation were identified.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or population of species for which the site is or will be classified'.

Following a comprehensive evaluation of the potential direct, indirect and cumulative impacts on the qualifying interests and conservation objectives for the River Boyne and River Blackwater SPA and River Boyne and River Blackwater cSAC, it has been concluded that the proposed development will not have an adverse effect on the integrity of these Natura 2000 sites.