



An
Bord
Pleanála

Inspector's Report PL07.JP0040

Development	Construction of an Integrated Constructed Wetland and Ancillary development for the purpose of treatment of leachate arising from the Pollboy Landfill.
Location	Pollboy Townland, Ballinasloe, County Galway.
Planning Authority	Galway County Council.
Planning Authority Reg. Ref.	N/A
Applicant	Galway County Council.
Type of Application	Application under the provisions of S.177AE.
Planning Authority Decision	N/A
Observers	(i) EPA, (ii) Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
Date of Site Inspection	22 nd November, 2016.
Inspector	Paul Caprani.

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1.0 Introduction

- 1.1. Galway County Council have applied to An Bord Pleanála under the provisions of Section 177AE of the Planning and Development Act, 2000 (as amended) to construct an Integrated Constructed Wetland system for the purpose of treating leachate from a licenced landfill which ceased operations at the end of 2005 at Pollboy, Ballinasloe. A Natura Impact Statement was submitted along with other documentation in support of the application. Two submissions in respect of the application were received from the EPA and the Development Applications Unit of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

2.0 Site Location and Description

- 2.1. The proposed integrated construction wetland is to be located within the confines of a landfill site at Pollboy approximately 1.5 kilometres south of the town of Ballinasloe in east County Galway. The 23-hectare site accommodates a mounded landfill facility, accommodating MSW, which has ceased operations (from 31st December, 2005) and has now been capped.
- 2.2. The site itself is irregularly shaped and is located to the immediate south of the M6 Motorway. The access road serving the site runs in a north-south direction to the immediate east of the landfill facility. An overpass traversing the M6 is located to the immediate north-east of the landfill. The reception building is located to the north of the capped landfill, a weighbridge and a car parking area adjacent to the entrance point. A collection of storage sheds are located further south adjacent to the eastern boundary. This area is currently used as a council depot. The capped landfill facility is located centrally within the site and comprises of a capped grassed mound up to c.10m in height above the surrounding ground levels. A leachate lagoon is located in the northern portion of the site. Leachate collected from the landfill facility is pumped to the lagoon and is then further pumped to the Ballinasloe Wastewater Treatment Facility approximately 1 kilometre to the north-east of the subject site. The municipal wastewater treatment plant discharges treated effluent into the River Suck.

2.3. The site is almost completely surrounded by woodland and there are no dwellings in the vicinity. A small stream, the Loughbrown Stream flows along the southern boundary of the site. It discharges into the River Suck c. 2km away.

3.0 Existing Operations on Site

3.1. The existing landfill comprises of both an unlined portion (c.7.1 hectares) and a lined portion (c.3.3 hectares). Leachate is collected from both portions of the landfill. In the case of the lined landfill leachate is collected from each of the lined cells and pumped to the leachate lagoon. In the case of the unlined section the underlying groundwater contaminated with the leachate flows in a north-easterly direction where it is captured by an interceptor drain system which runs along the southern boundary (to capture leachate run-off from the southern slopes of the landfill) and eastern boundary of the site. Leachate collected in the interceptor drain is likewise pumped to the leachate settlement lagoon. This lagoon has a capacity of 420 m³ and is located near the northern boundary of the site. The landfill leachate is currently pumped to the Ballinasloe Wastewater Treatment Plant which is located c.1.2 kilometres to the north of the subject site. Subsequent to treatment the effluent is discharged into the River Suck. Leachate volumes vary, but are currently c.250 m³ is produced per day. Because the majority of the landfill is unlined, groundwater intrusion will continue to play a significant role in contributing to leachate volumes. As a result, it is not anticipated that leachate volumes will reduce to any significant extent overtime as would be the case with a lined and engineered landfill. However, overtime contaminate concentrations will become more diluted.

4.0 Proposed Development

4.1. It is proposed to construct an integrated constructed wetland comprising of five separate cells which are to be located to the west and south of the existing landfill. The proposed size of each of the ponds are indicated in the table below.

Table 1: Pond Areas

Pond Number	Surface Area m²
Pond 1	2,650
Pond 2	13,000
Pond 3	12,400
Pond 4	9,700
Pond 5	20,600
Total Area	58,350

4.2. Leachate from the existing lagoon will be pumped to Pond No. 1 of the integrated constructed wetland. The effluent will flow through the pond and will be subsequently transferred to each of the subsequent ponds for treatment. Water will flow between the ponds via gravity-fed pipes. The treated discharge will be either:

- (a) Discharged to the Loughbrown Stream which runs along the southern boundary of the site and discharges to the River Suck approximately 2 kilometres away. It is planned to discharge into this stream where flows are 50% or above and ammonia levels are less than 1mg/l, or
- (b) Will be redirected to a connection to the existing rising main at the north-east corner of the site and will be pumped towards the Ballinasloe Wastewater Treatment Plant. However, at arriving at the wastewater treatment plant a new rising main will be constructed which will bypass the wastewater treatment plant and discharge the already treated effluent directly into the River Suck.

It is also proposed to construct the following elements as part of the development.

- The construction of a monitoring chamber on the discharge pipe to the River Suck for option (b).
- The construction of a rising main to recirculate water from Pond No. 4 of the ICW back to the inlet of the first pond if required (in the case that EQS's are not met).
- Access service roads around the integrated constructed wetland system.

- A SCADA control building for monitoring purposes.
- The construction of a monitoring control point at the outlet into the Loughbrown Stream.
- The installation of a hydrometric weir on the Loughbrown Stream.

4.3. *Leachate Composition and Volumes*

Leachate composition varies over time and the nature and volumes of leachate produced very much depend on the construction methods, including capping methods associated with the landfill, and also the nature of material being deposited at the landfill. Other exogenic factors in leachate production include precipitation and infiltration rates through the cap. Municipal and biodegradable waste will always have a significant and moisture content much greater than that associated with inert and non-biodegradable rates.

There are five basic stages of leachate production in a typical landfill. These are identified on in the EPA Landfill Manual (2002) and these are briefly set out below.

- Stage 1, *hydrolysis and aerobic degradation*, as the phase suggests this occurs during an anaerobic phase and generally results in high levels of chloride production.
- Stage 2, *hydrolysis and fermentation*, this stage involves anaerobic degradation of waste and gives rise to higher levels of organic acids as well as increases in ammonia production' BOD and heavy metal precipitation.
- Stage 3, *acetogenesis*, during this phase (also an anaerobic phase) the pH of the leachate continues to drop and the highest levels of heavy metal precipitation BOD/COD and volatile fatty acids occur. Ammonia levels continue to rise significantly during phase 3.
- Stage 4 *methanogenesis* anaerobic conditions continue during this phase and there is a significant decrease in concentrations of chloride, heavy metals and COD/BOD. The volatile fatty acids also begin to decrease. While ammonia levels decrease they still continue to be very high. The pH also recovers to a more neutral value as the name suggests large amounts of methane (CH₄) and CO₂ are produced.

- Stage 5 *oxidation* occurs in aerobic conditions and mainly comprises of the oxidation of the leachate. During this latter stage levels of chloride, heavy metals, COD/BOD and volatile fatty acids are negligible and ammonia concentrations in the leachate dissipates at a more rapid rate.

The time period over which each of these stages take place obviously depend on a range of factors including the landfill design, the size, depth and composition of the landfill and the volume of leachate being produced.

It is difficult from the information contained on file to ascertain exactly what stage in the leachate production process the Pollboy Landfill is currently experiencing. Information contained on file indicates that approximately 250 cubic metres of leachate is being produced per day. This suggests that relatively high volumes of leachate are still being produced on site notwithstanding the fact that the landfill is closed 10 years. Having inspected the leachate collection lagoon, it is apparent, that the unlined area of the landfill is discharging considerably more volumes of leachate to the lagoon compared to the lined section. The information contained on file (see Section 2.3.1 of report submitted) indicates that the ammonia concentration is the primary contaminant of relevance. This suggests that leachate composition is most akin to stages 3 & 4 of leachate production.

5.0 The Design of the Integrated Constructed Wetland

- 5.1. The total area of the ICW is 5.8 hectares. Each of the five ponds will be c.200 millimetres in depth. Each of the ponds will be subject to appropriate planting of wetland species which will be the primary treatment agents. The leachate will be pumped to the first pond and will flow by gravity to each of the subsequent ponds where the treatment will take place. The treatment takes places within a densely planted wetland ecosystem. The treatment incorporates both aerobic and anaerobic processes which are primarily biological in nature. Pollutants are also removed through physical and chemical processes within each of the ponds. Retention time within the treatment process is important and thus the overall design seeks to incorporate suitable and shallow interconnected wetlands with low hydraulic gradients assisting slower flows.

5.2. According to the information contained on file, the key parameters requiring treatment from the leachate generated at the Pollboy Landfill are ammonia, suspended solids and heavy metals. The discharge subsequent to treatment aims to comply with the following range of water parameters.

Table 2: Proposed Water Quality Standards in the Final Discharge

Parameter	Concentrations mg/l
BOD	5-10
Ammonia	1-5
Ortho-phosphate	< 1mg/l
Suspended Solid	< 25 mg/l

5.3. In terms of construction, the ponds are excavated from the existing soils. It is not proposed to line the ponds however, there will be a requirement to compact the material at the base of the pond to a depth of approximately 1 metre with the upper 500 millimetres having a permeability of approximately 10^{-9} m/s (0.02 metres per year). Tests indicate that the in-situ soils have these inherent permeability characteristics. Sloping embankments will be placed around the pond so as to ensure that water is contained. These berms/embankments will be planted.

6.0 Application Submitted

6.1. The application for approval was submitted directly to the Board under the provisions of Section 177AE of the Planning and Development Act, 2000 (as amended). The application was lodged in 20th July, 2016. It was accompanied by the following information:

- A report including details of the project description, a Natura Impact Statement, an EIA Screening Report, a Flood Risk Assessment and a Cultural Heritage Report.
- Drawings of the scheme in A1 format.
- Copies of the public notices.

- A list of prescribed bodies to whom notice of the application have been forwarded. These bodies include the following:
 - An Taisce.
 - EPA.
 - Failte Ireland.
 - The Heritage Council.
 - The HSE.
 - Inland Fisheries Ireland.
 - Development Application Units of the DAHG.
 - The NPWS.
 - Waterways Ireland.

Notwithstanding the fact that the applicant had notified the EPA in respect of the proposed development, the Board requested further observations from the EPA in light of the fact that the proposed development will be the subject of an application for a separate waste licence.

7.0 Observations Received

7.1. Observations from the EPA

The EPA advises the Board that the Pollboy Landfill facility is authorised under Waste Licence Reg. No. W0027-02 and that an application for review of the Waste Licence has not been received at the time of the EPA submission (26th September, 2016).

It is also stated that the EPA will carry out an AA Screening Assessment in respect of the application. The EPA will also take account of any screening undertaken by another Authority in its assessment, insofar as the assessment by the other Authority relates to issues under the remit of the EPA. Subsequent to any assessment, the EPA shall only grant a revised licence where it is satisfied that the project will not adversely affect the integrity of a European site.

7.2. Observations from the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs

This submission is summarised below.

In respect of archaeology it is the Department's recommendation that mitigation measures detailed in Section 9 of the Report are carried out in full.

In relation to nature conservation objectives, it is noted that the site is located within a kilometre of the Suck River Callows SPA (Site Code: 004097) and the Suck River Callows NHA (Site Code: 000222). The new discharge point and monitoring chamber and pipework associated with the discharge at the Ballinasloe Wastewater Treatment Plant are located within the designated sites.

The Board should concern itself with the following in determining the application.

- Whether there is sufficient detail on file to assess the application, particularly in respect of construction works within the SPA and NHA.
- Whether there is sufficient detail in respect of the weir to be installed on the Loughbrown Stream.
- Is there sufficient detail in respect of species of plant to be used in the constructed wetlands and landscaping around the constructed wetlands.
- The extent of change or alteration which the Board may permit at construction stage.
- Whether the soils and peats in-situ are suitable for the construction of berms and that no surface material will be produced as a result of the proposal.
- Works to be undertaken which would require disposal off site.
- Whether there is sufficient information about the planned or proposed social and educational aspects of the integrated construction wetlands and any associated equipment is required in this regard.
- The Board should carry out a robust analysis in respect of whether or not the integrated constructed wetland is suitable to achieve the targets required to ensure no pollution will arise as a result of treating the leachate.

- There is no rationale to explain why ammonia is deemed to be the primary contaminant of relevance.
- How the assimilative capacity calculations for the Pollboy Landfill compare with those associated with the Dungarvan Landfill.
- Explore whether existing ponds are contaminated by leachate or pollutants.

Specifically, in relation to appropriate assessment issues the following are noted.

- The Board should assess in combination effects arising from the proposal with existing discharges from the landfill and discharges from the wastewater treatment plan and whether or not this will impact on European sites in question.
- The impact on the proposal on the conservation objectives associated with the European site.
- Whether the proposal complies with Section 177T of Part XAB of the Act.
- Is it clear as to the full extent of the proposed development and the mitigating measures that will apply within and adjacent to the SPA.
- The AA should reach clear, precise and definitive findings.

Other ecological issues raised include:

- There needs to be a clear and adequate description of the works to be undertaken on site and whether these works would affect wetlands of greater than 2 hectares (a threshold for which EIA is required).
- Are the proposed works likely to impact on the NHA.
- Whether the overall extent of habitats is likely to be affected by the proposal.

8.0 Planning History

- 8.1. There appears to be no planning history associated with the subject site. The EPA granted a waste licence for the subject landfill under W0027/02 on the 6th October, 2003. A wastewater discharge licence was granted for the Ballinasloe Wastewater Treatment Plan on 20th May, 2015.

9.0 Development Plan Provision

- 9.1. The site is governed by the policies and provisions contained in the Galway County Development Plan 2015 – 2021.
- 9.2. Section 6.11 of the Development Plan specifically relates to wastewater. It states that the provision and maintenance of quality wastewater treatment infrastructure is essential for the sustainable development and protection of the environment and public health. The plan goes on to detail public wastewater schemes in County Galway and wastewater projects which are to be completed under the Water Services Investment Plan. It is noted that the upgrade of the Ballinasloe Sewage Scheme is currently at planning stage. The following policies and objectives are relevant.

Policy WW1 – To cooperate with Irish Water to increase the capacity to service settlements to jointly investigate proposals for future upgrades of treatment plants and to participate in the provision of long-term solution for wastewater treatment in the west region.

Objective WW2 seeks to support in conjunction with Irish Water during the lifetime of the Plan the provision, extension and upgrading of wastewater collection and treatment systems in all towns and villages of the county to serve existing and planned future populations including Clarinbridge, Corrofin and Lackagh.

Objective WW3 seeks to accelerate progress on the delivery on the East Galway Main Drainage Scheme in particular Phase 3 as a key piece of strategic infrastructure in conjunction with the Department of Environment, Heritage and Local Government, Irish Water and Galway County Council.

Objective WW6 seeks to promote the provision of safe and secure wastewater infrastructure to ensure that the public is protected and that permitted development is

within the environmental carrying capacity and does not negatively impact on habitat quality or species diversity.

9.3. Department of the Environment, Heritage and Local Government “Integrated Constructed Wetland: Guidance Document for Farmyard Soiled Water and Domestic Wastewater Applications”.

This document was produced in November, 2010 and sets out details on site assessment and designing an integrated constructed wetland.

Section 5.10 sets out details of integrated constructed wetland design recommendations.

- It notes in relation to the number of wetland cells that a minimum of 4 cells and less than 6 cells are recommended. Additional ponds are not mandatory but might be desirable.
- In terms of a length/width ratio a ratio of 2:1 is provided. Long narrow channels should be avoided as this increases velocity and can lead to low phosphorous retention and scouring/flushing during high flows.
- Cells should be of a similar size with the first cell ideally 20 to 25% of the overall area in order to ensure appropriate phosphorous capture.
- The depth should be between 100 and 300 millimetres. In terms of plant selection, a variety of species and planting density is proposed.
- In terms of soil depth below the wetland cells it is suggested that 0.5 metres is required with an infiltration rate of less than 1×10^{-8} m/s.
- A 10 metre minimum separation distance from other watercourses in the area is recommended.

9.4. Shannon River Basin Management Plan

The River Suck is located within the Shannon River Basin Management Plan 2009-2015¹. The River Suck is designated as an SPA (see section on appropriate assessment below). The River Suck is not designated as a

- drinking water source,
- a designated Shellfish Area,
- nor as a Nutrient Sensitive Area under the UWWT Regulations (SI 245 of 2001).

The major pressures on the River Suck in terms of diffuse and point source pollution are described in the Management Plan as agriculture, wastewater and industrial discharges. Pollution from landfills, quarries, mines and contaminated lands are also listed as drivers of river pollution in the management plan area. There are a number of trade discharge licences (both Local Authority and the EPA) discharging to the River Suck in the vicinity of Ballinasloe.

The River Suck has been assigned a water quality status of 'Poor' in the Plan. The groundwater status appears to be 'Good' in the southern part of the site and 'Bad' in the northern part of the site.

In terms of water quality within the River Suck, the EPA website assigns the following status to locations in the vicinity of Ballinasloe.

Table 3: Water Quality Status in the Vicinity of Ballinasloe

Location	Q-value	Status
1km NW of Ballinasloe Town	Q3-Q4	Moderate
Bridge 500m u/s of the WWTP	Q2-Q3	Poor
Bridge 2km d/s of the WWTP	Q3-Q4	Moderate

¹ The Second round of River Basin Management Plans are currently going through consultation.

It is clear from the improvement in water quality downstream of the WWTP, that the discharge from the WWTP appears not to be contributing to water quality degradation within the River.

10.0 Planning Assessment

10.1. Introduction

Section 177AE of the Act requires that where an appropriate assessment is required in respect of a development which is being carried out by or on behalf of a local authority that is the planning authority, the local authority shall prepare an NIS and shall apply to the Board for approval and the provisions of Part XAB shall apply.

The Board in making a decision in respect of the proposed development shall (inter alia) consider

- The contents of the NIS submitted,
- Any observations submitted
- The likely effects on the environment of the proposed development
- The likely consequences for the proper planning and sustainable development in the area, and
- The likely significant effects of the proposed development upon a European Site

In accordance with the provisions of S177AE(10)(a), where an application under the provisions of S177AE relates to a development which comprises or is for the purposes of an activity for which and integrated control licence or a waste licence is required, the Board shall not, where it decides to approve the proposed development, control emissions from the operation of the activity, or following the cessation of the activity.

Having regard to the legislation as worded, I consider that the current application before the Board can most appropriately assessed under the following headings:

- The likely effects on the environment of the proposed development
- The likely consequences for the proper planning and sustainable development in the area, and
- The likely significant effects of the proposed development upon a European Site

10.2. The likely effects on the environment of the proposed development

In assessing the likely environmental impacts arising from the development I consider it pertinent to assess the application under the following sub-headings:

- (i) The Suitability of the Integrated Constructed Wetland to treat the leachate discharge from the landfill.
- (ii) The Assimilative Capacity of Receiving Waters.
- (iii) Contamination of groundwater.
- (iv) Other Issues

The Suitability of the Integrated Constructed Wetland to treat the leachate discharge from the landfill.

The submission from the NPWS requests that the Board examine whether or not there is sufficient details as to the nature, scale, location, design and functioning of the proposed development to treat the leachate from the landfill site. As already referred to above, the nature and constitution of leachate changes over time depending on the degradation processes which occur over the lifetime of the landfill. Leachate is normally treated in a private or municipal wastewater treatment plant which undertakes a series of biological and chemical processes in order to breakdown the wastewater. The nature of the leachate produced, although particularly toxic, is by and large similar to the nature of domestic wastewater treatment in that high levels of BOD, COD, suspended solids and ammonia are created in the breakdown of the waste. The phosphorous attenuation appears to be a more important consideration in respect of domestic wastewater treatment than is the case in leachate. Average phosphate levels in leachate composition normally ranges from between 1 and 3 mg/l (EPA Landfill Manual: 2002). In the case of

untreated domestic wastewater phosphorous levels ranges between 5 and 20 mg/l (EPA Code of Practice for Single Houses in the Countryside).

Integrated constructed wetlands have to date primarily focussed on the treatment of domestic wastewater and farmyard soiled water. Notwithstanding this the fundamental principles are generic and are applicable to a large range of polluted waters including landfill leachate and this is acknowledged in the document prepared by the Department of the Environment referred to above. The use of constructed wetlands has been accepted and approved by the EPA as a viable and successful method of treating wastewater.

It is also apparent that integrated constructed wetlands had been employed for the treatment of leachate by both Donegal County Council and Waterford County Council. I have visited the site in Donegal and initial results collated by Donegal County Council indicate that the integrated constructed wetland has been very successful in treating leachate. It should be borne in mind however that the integrated constructed wetland has only recently been completed and robust and comprehensive data over a longer period will need to be assessed in order to evaluate the overall effectiveness of the system. Notwithstanding this it appears from initial results that integrated constructed wetlands are an effective method of treating leachate. The landfill in Donegal is of a similar size (10.1 ha footprint), however the footprint of the constructed wetland area is considerable smaller, approximately one-third of the size of the wetland area proposed for the Ballinasloe landfill. The initial results in terms of ammonia treatment are particularly promising with concentrations in the discharge well below 1 mg/l. This landfill is of a similar size (c.10 ha) and accepted municipal waste like the Pollboy Landfill. It also discharges into the River Finn which has an 95%ile flow of 1.1 m³/s. However, I stress that these figures should be treated with caution as monitoring of results are very much in the initial phases and therefore should not be relied upon as proof that ICW are totally effective in adequately treating leachate. I have not visited the ICW in Dungarvan. In terms of the overall key design criteria, it appears that the proposed integrated constructed wetland in this instance complies with the ICW Design Recommendations set out in Section 5.10 of the Guidance Document prepared by the Department and referred to above.

Specifically, the overall design and layout complies with the following;

- The provision of 5 cells complies with the Departmental recommendations that a minimum of 4 cells and less than 6 cells are provided.
- Cells should be of a similar size with the first cell ideally 20 to 25% of the overall area in order to ensure appropriate phosphorous capture. The proposal is generally in compliance with this, although I note that cell no. 1 is considerably smaller than the other cells. The Board will note that phosphorous is not a critical issue in the case of leachate treatment. Therefore the size of cell no.1 may not be so critically important.
- The depth should be between 100 and 300 millimetres. The ponds are approximately 250 mm deep.
- In terms of plant selection, a variety of species and planting density is proposed. In this instance a variety of plants are proposed.
- In terms of soil depth below the wetland cells it is suggested that 0.5 metres is required with an infiltration rate of less than 1×10^{-8} m/s. The percolation characteristics of the soil and subsoil have been tested to be in excess of this standard c. 10^{-9} m/s.

Finally, in relation to this issue the Board will note that the development will be subject to a further waste licence and will obviously have to comply with the limits set out in any revised licence issue. I reiterate that under the provisions of Section 177AE(10)(a) that the Board is precluded, where it decides to approve a proposed development, to subject the approval to conditions which are for the purposes of controlling emissions from the operation of the activity including the prevention, limitation, elimination, abatement or reduction of those emissions. Therefore, any issues in respect of emission limits are a matter for the EPA and not the Board. It is sufficient for the purposes of this assessment, that the Board consider the principle of the proposed development to be acceptable in treating leachate, subject to a detailed evaluation of emission limits which will be carried out by the EPA.

and this is assessed in the section below.

10.3. *Assimilative Capacity of the Receiving Waters*

Another critical consideration in assessing whether or not the proposed development will adversely impact on the receiving environment relates to assessing the assimilative capacity of the receiving waters into which the effluent will be discharged. The Board must satisfy itself that any treated discharge into receiving waters (be it the Loughbrown River or the River Suck) does not result in the degradation of these waters. While it is not the Board's role to assess detailed emission limit values for any of the parameters involved in the discharge, it is necessary for the Board to undertake an evaluation of the assimilative capacity of the receiving waters so as to ensure that the waters in question do not become unduly polluted to the extent where they are likely to have an effect on the receiving environment. For this reason, an analysis of the assimilative capacity of the receiving waters is undertaken below.

In the case of the current application before the Board, it is proposed to discharge effluent into the Loughbrown Stream which runs along the southern boundary of the site during periods when it is considered that the stream in question has the appropriate capacity to cater for the discharge. Where it is determined that the Loughbrown Stream does not have sufficient capacity, there is an alternative option to permit the treated discharge into the River Suck in the vicinity of the Ballinasloe Wastewater Treatment Plant. The information contained on file does not specify under what conditions, or under what hydrological regime it is deemed appropriate to discharge into the alternative water body. It does suggest that discharges of ammonia should only take place when limits are below 1 mg/l and the maximum discharge is 80m³ per day.

The waste assimilative capacity for the Loughbrown Stream is assessed below.

The emission targets for the discharge from the integrated constructed wetlands are as follows:

Parameter	Concentrations mg/l
BOD	5-10
Ammonia	1-5
Ortho-phosphate	< 1mg/l
Suspended Solid	< 25 mg/l

The first three parameters are assessed in the context of S.I. 272 of 2009 (Surface Water Regulations) where limits in the receiving waters are set out in Schedule 5 of these Regulations.

Suspended Solids

The suspended solids parameter should be assessed in the context of the Urban Wastewater Treatment Regulations (SI 254 of 2001) as no limits are set out in the Surface Water Regulations. The Urban Wastewater Treatment Regulations apply a limit of 35 mg/l (with a 90% reduction) in respect of suspended solids in the discharge. The standard proposed in this instance is less than 25 mg/l which obviously complies with the above standard. Assuming therefore that the integrated constructed wetlands achieve the limits specified in the documentation submitted the proposed method of treatment is deemed to be acceptable in terms of attenuating suspended solids.

River Flows in the Lough Brown Stream

In terms of river flows the Loughbrown Stream the figures contained on file indicate the following:

- the mean flow is 0.046 cubic metres per second (46 litres per second)
- the 95 percentile flow is calculated at between 0.01 cubic metres per second and 0.007 cubic metres per second (i.e. between 7 litres per second and 10 litres per second).

Discharge into the stream from the integrated construction wetland under a worst case scenario is estimated to be 300 m³/d which equates to c.3.5 litres per second. The proposed discharge from the integrated construction wetland is therefore approximately 50% of the 95 percentile flow in the receiving waters under a worst case scenario. It should also be borne in mind when assessing the assimilative capacity that over time, the concentration of pollutants in the discharge to be treated is likely to decrease as leached contaminants in the groundwater become more diluted.

Assimilative Capacity of the Loughbrown Stream for BOD

Data submitted with the application for approval indicate that the background levels for BOD upstream of the discharge is very low, sampled at less than 0.1 mg/l in 2014 and in 2015. Under S.I. 272 of 2009 (Surface Water Regulations) a receiving water body, in order to remain at “good status”, must have BOD levels at less than 2.6 mg/l. A simple mass balance calculation based on the above information, and using a BOD concentration in the final effluent of 10mg/l indicates the following:

$$T = \frac{FC+fc}{F+f}$$

- Where
- T = The resultant concentration due to the discharge (mg/l).
 - F = 95%ile flow in receiving water (m³).
 - C = Mean background concentration of the receiving water (mg/l).
 - f = Maximum discharge flow (m³/s).
 - c = Maximum concentration in the discharge.

$$T = \frac{(1 \times 0.007) + (10 \times 0.0035)}{0.007 + 0.0035}$$

$$T = 4$$

It is clear that BOD levels are in excess of what is acceptable or permitted under the Surface Water Regulations. The assimilative capacity calculations in the Appendix of the documentation submitted, indicate that the maximum permitted concentration in the receiving waters is 4 mg/l. It is not altogether clear how as to how this figure is derived. I refer the Board to Schedule 5 of S.I. 272 of 2009 (Surface Water Regulations) clearly indicates that the permitted level of BOD in the receiving waters is 2.6 mg/l. the above figure is clearly in excess of that.

If an ELV value of 5 mg/l was permitted in the discharge the mass balance calculation would indicate a final effluent in the receiving waters of 1.6 mg/l for BOD. This would be acceptable and in accordance with the Surface Water Regulations.

Assimilative Capacity of the Loughbrown Stream for Ammonia

The Surface Water Regulations (S.I. 272 of 2009) state that receiving waters must achieve a value of 0.14 mg/l or less in order to obtain “good status” on the 95%ile flows. The mass balance calculations based on the figures presented are as follows:

$$T = \frac{(0.026 \times 0.01) + (5 \times 0.0035)}{0.007 + 0.0035}$$

$$0.007 + 0.0035$$

$$T = 1.69 \text{ mg/l}$$

This indicates that under a worst case scenario (concentrations of 5 mg/l of ammonia in the discharge) the ammonia concentrations would be 1.69 mg/l. This would result in ammonia levels in the stream in excess of 10 times that permitted under the Surface Water Regulations. This would be totally unacceptable in my view and could have a significant damaging impact on aquatic life within the stream. I can only conclude therefore that the likely effects on the environment of the proposed development were it to discharge into the Loughbrown Stream under a worst case scenario would be unacceptable.

It is only in a scenario where ammonia levels during mean flow conditions on the Loughbrown Stream, and where the maximum concentration of ammonia in the treated effluent is 1mg/l, would ammonia concentrations in the receiving water comply with the Surface Water Regulations as the following calculations indicate.

$$T = \frac{(0.026 \times 0.046) + (1 \times 0.0035)}{0.046 + 0.0035}$$

$$0.046 + 0.0035$$

$$T = 0.09 \text{ mg/l}$$

Assimilative Capacity of the Loughbrown Stream for Ammonia

It is impossible to carry out assimilative capacity calculations in respect of orthophosphate as no details are provided in respect of baseline/background data on orthophosphate in the Loughbrown Stream. As already mentioned orthophosphate is not a particularly dominant constituent in leachate pollution. Nevertheless, it may be appropriate to carry out assimilative capacity calculations in respect of orthophosphate particularly having regard to the modest 95 percentile flows in the Loughbrown Stream and therefore its capacity to accommodate additional phosphorous loadings.

My conclusion is that the Loughbrown Stream does not have the sufficient assimilative capacity to cater for the increased levels of ammonia which would arise from the proposed discharge under a worst case scenario. The documentation submitted to the Board suggests discharging to the stream when ammonia levels in the final discharge is less than 1 mg/l and the volume of discharge per day is less than 80 m³/d. Having regard to the levels of groundwater intrusion in the leachate collection from the unlined section of the landfill, a discharge of less than 80 m³/d may not arise in many instances. The Board should in my view a ban on discharge into the stream altogether, on the grounds that the Board, under the provisions of 177AE (10), is precluded from attaching conditions relating to emission limits where applicants are also subject to an EPA Waste Licence. The discharge of ammonia would only be environmentally acceptable under certain scenarios which would necessitate limiting the emission concentrations in the discharge. As the Board are precluded in attaching such conditions, the Board should attach a condition prohibiting discharge to the Loughbrown Stream.

Assimilative Capacity of the River Suck

The development also proposes an alternative, to discharge treated effluent from the site to the River Suck by introducing a supplementary discharge point where effluent would be directed to a new constructed discharge pipe bypassing the wastewater treatment plant and discharging treated discharge directly to the River Suck.

The EPA figures indicate that the 95 percentile flow in the hydrometric station at Bellagill upstream of Ballinasloe (hydrometric station 26007) is 2.0 m³/s. OPW hydrometric data recorded a 95 percentile flow as slightly higher at 2.58 m³/s. In using the EPA figures the Board can be confident that calculations in respect of assimilative capacity are based on a worst case scenario.

Assimilative Capacity of the River Suck for BOD

Background levels of BOD and ammonia within the River Suck upstream of the Ballinasloe Wastewater Treatment Plant is 1.2 mg/l and 0.036 mg/l respectively.

In terms of BOD the mass balance calculations for BOD under a worst case scenario (10 mg/l) in the discharge would be as follows:

$$T = \frac{(1.2 \times 2.0) + (10 \times 0.0035)}{2.0035}$$

$$T = 1.21 \text{ mg/l}$$

The above figures indicate that BOD levels would experience a negligible increase (0.01 mg/l) as a result of the proposed discharges. Such levels would be acceptable and would be considerably below the standard of 2.6 mg/l set out in the Surface Water Regulations. The Board will further note that the increase arising from the integrated constructed wetland would have a negligible impact on the available headroom in the river in terms of accommodating additional BOD levels.

Assimilative Capacity of the River Suck for Ammonia

In terms of ammonia existing concentrations of 0.36 mg/l were recorded upstream of the discharge point. The mass balance calculations for this parameter are set out below.

$$T = \frac{(0.036 \times 2.0) + (5 \times 0.0035)}{2.0035}$$

$$T = 0.044 \text{ mg/l}$$

The proposal would only contribute 0.008 mg/l of additional ammonia to the background concentration. As in the case of BOD this will use up a negligible amount of headroom in the receiving waters and will comfortably comply with the limits set out in the Surface Water Regulations in order for waters to maintain 'good status'.

Assimilative Capacity of the River Suck for Ortho-phosphate

In relation to orthophosphate, again the Board will note that there are no background concentrations of phosphorous, MRP or orthophosphate contained on file. However, based on limits in the discharge together with the capacity of the receiving waters it is possible to assess the potential contribution that the treated leachate would contribute to background levels in the River Suck if one were to adopt the concept of "notionally clean waters" as employed by the Environmental Protection Agency. Under the notionally clean waters approach orthophosphate is assigned a concentration of 0.005 mg/l.

Ortho-phosphate

$$T = \frac{(0.005 \times 2.0) + (0.9 \times 0.0035)}{2.0035}$$

$$T = 0.00514 \text{ mg/l}$$

Therefore, if assimilative capacity calculations were carried out based on the notionally clean waters concept for background concentrations it is apparent that the treated leachate with an orthophosphate concentration of less than 1 mg/l would contribute approximately 0.00014 mg/l to the receiving waters of the River Suck. This is deemed to be negligible. I can only conclude therefore that were the integrated constructed wetland to achieve the limits set out in the documentation submitted that the treated effluent would have a negligible impact on the receiving waters of the River Suck.

Heavy metals:

There are no details contain on file in respect of heavy metal concentrations. This fact has been referred to in the submission by the NPWS. As part of this assessment I have consulted the latest Annual Environmental Report (2015) prepared for the EPA. It includes data on groundwater monitoring in and around the landfill site at Pollboy. Heavy metal concentrations in the groundwater are included in the report. Details are set out below:

Metal	Max Concentration Recorded in Groundwater Sample (µg/m)	EQS Limit Set out in Tables 11 &12 of SI 272 of 2009
Iron	3700	Not applicable
Manganese	92	Not applicable
Nickel	18	20
Copper	1	Not applicable
Zinc	2.8	Not applicable
Cadmium	0.02	0.08
Lead	<0.2	7.2
Mercury	< 0.02	0.02

A number of points become immediately clear from the information set out in the table above.

- Firstly, the figures present in the Table above represent the maximum concentrations recorded during the samples undertaken in 2015. They are not the average or mean values and as such they represent the worst case scenario in terms of concentrations sampled. In addition, in subsequent years' heavy metal concentrations will continue to dissipate as less and less metal will be leached from the landfill waste. So in every sense the concentrations listed above represent a worst case scenario in terms of heavy metal concentrations.

- Secondly, none of the values presented above breach the limits set out in SI 272 of 2009. Therefore prior to any treatment in the ICW, the concentrations in the groundwater fully comply with the statutory limits set out in the Regulations. It can be reasonably expected that the heavy metal concentrations in the groundwater beneath the landfill would be reduced as a result of treatment in ICW.
- Thirdly, heavy metal concentrations will be further diluted as a result of the assimilative capacity in the receiving waters of either the River Suck or the Loughbrown Stream.

Based on the evidence above, I can only conclude that heavy metal concentrations in the groundwater in and around the landfill, even prior to treatment and subsequent dilution, do not breach the EQS's set out in SI 272 of 2009. When both treatment and dilution are taken into account, concentrations will be reduced to a much greater extent, further ensuring that water quality is not compromised due to heavy metal contamination.

Conclusions in Respect of Assimilative Capacity

Arising from my assessment above, I consider that the Board in assessing the potential impact of the proposed development on the likely effects on the environment, should only permit discharges to the River Suck under a 95%ile flow regime. As the Board cannot attach conditions in respect of emissions, I would recommend that the Board attach a condition prohibiting all discharges to the Loughbrown Stream. Subject to this condition being attached, I consider the likely effects on the environment of the proposed development is acceptable.

10.4. Contamination of Groundwater

The proposed introduction of an integrated wetland system could theoretically result in seepage of contaminated discharge from the leachate lagoon to underlying groundwater. I refer the Board to Appendix D of the report submitted with the application for approval. Appendix D contains a site assessment form. It notes that based on the desk study the site is classified as "R1" which is deemed to be acceptable subject to normal good practice. A total of 11 trial holes were excavated

on site. It is noted that bedrock was not encountered and groundwater was approximately 2 metres below the surface level on site. The 11 trial holes all indicated very low percolation values. Permeability levels ranged from 3.68×10^{-10} m/s to 9.56×10^{-11} m/s.

Having inspected the site, I noted that soils and subsoils had a peaty/clayey texture consistent with low percolation characteristics. I further noted numerous examples of surface water ponding throughout the site which again is characteristic of low percolation/low permeability values. It appears therefore the site possesses inherent cohesive and non-permeable subsoil material. Furthermore, the laboratory analysis of the soil and subsoil permeability indicate that the in situ soil on site has a permeability exceeding the minimum required value of 1×10^{-9} m/s. Thus notwithstanding the comments contained in the NPWS submission, I am satisfied that the inherent soil and subsoil characteristics on site incorporate the necessary infiltration barriers to ensure that the integrated constructed wetlands will not pose a threat to underlying groundwater.

Overall therefore, I do not consider that the proposal to treat the leachate by way of an integrated constructed wetland would warrant a consideration to refuse approval in terms of the potential impact on the environment. If the Board agree with this conclusion, and subject to other considerations which are evaluated below, it could in my opinion consider granting planning permission for the proposed development. As the application would be the subject of a waste licence, and if the EPA consider it appropriate to grant such a licence, it will set the appropriate limit values to ensure that the proposal does not adversely impact on the receiving environment. Therefore, in granting any licence the applicant will be obliged to comply with the discharge limits set out by the EPA in issuing any such licence.

10.5. The Likely Consequences for the proper planning and sustainable development of the area.

Strategic Considerations

The development has been described previously in previous sections of my report. I consider that the likely effects on the environment arising from the proposed development would be acceptable subject to appropriate emission limits being adhered to in any revised waste licence issued by the EPA. The proposal will also have the added benefit of releasing additional capacity in the Ballinasloe Wastewater Treatment Plant to cater for the growing needs of the town in terms of wastewater treatment. This is an important strategic consideration in terms of utilising and maximising existing wastewater infrastructure and should be seen as a significant planning gain were the development to proceed

Visual Impact

I am also satisfied that the proposed development will not give rise to any significant adverse visual impact. The proposed constructed wetlands will not be readily visible from any vantage points from the public roadways surrounding the site. The vast majority of the integrated constructed wetlands will be screened by the presence of the existing mounded landfill to the north and north-east of the proposed ponds. Furthermore, the proposed constructed wetlands are surrounded to the east and south by dense conifer woodland which would also screen views. In fact, it could be reasonably argued in my view, that the presence of constructed wetlands on site provide a natural feature which would generally enhance the rural environment as opposed to detract from it.

Traffic Impact

In terms of traffic generation, the proposed development will not result in any appreciative increase in traffic volumes. While traffic volumes may increase during the construction period this increase will be temporary in nature. Furthermore, the site is located in close proximity to the M6 Motorway with a good road network surrounding the site. The road network therefore in my opinion is capable of accommodating any additional traffic increase arising from construction activities. It

is expected that traffic generation during the operation of the integrated construction wetland would be negligible.

Archaeology and Cultural Heritage

In terms of archaeological and cultural heritage impacts, Appendix E of the report submitted with the planning application specifically deals with this issue. It notes that there are no extant features or structures of historical, archaeological or architectural interest located within or in the immediate environs of the subject site. However, a number of mitigation measures are proposed to ensure that any archaeological remains unearthed during the construction works are appropriately dealt with. If the Board are minded to grant planning approval for the subject development, I consider that the mitigation measures proposed can appropriately be incorporated into a condition.

Flooding

In respect of flooding, Galway County Council have also carried out a site specific flood risk assessment which is attached as Appendix H of the report submitted with the application. The area of the proposed integrated constructed wetland has been screened, scoped and assessed for flood risk in accordance with the DoEHLG Flood Risk Management Guidelines. The report notes that the primary flood risk to the proposed integrated construction wetland site can be attributed to a fluvial flood event in the Loughbrown River. An analysis has been undertaken to estimate the predicted 100-year and 1,000-year flood volumes in the Loughbrown River. An analysis has also been undertaken on the existing bridge and culverts on the Loughbrown River. The analysis indicates that the structures have adequate hydraulic capacity to convey flood flows for both the 100-year and 1,000-year flood events. It does note however, that the Loughbrown River is impeded from draining freely during extreme events due to flooding in the downstream catchment where it joins the River Suck. The report concludes that the proposed ICW site would not result in an adverse impact to the hydrological regime of the area. Overall the flood risk is considered to be low. Having read the flood risk assessment, I will consider that the evaluation and analysis of flood risk is robust and comprehensive and I consider the conclusions are reasonable.

Noise and Odour Issues

In terms of noise and odour, the proposed development will not give rise to significant noise or odour issues. The constructed wetlands, other than the pumping of leachate from the lagoon to Pond 1, will not give rise to any noise issues during the treatment process as the treatment of the leachate is a natural process. In terms of odour I have visited the site, and inspected the open leachate lagoon, the most likely source of any odour generation which is likely to arise. However, I noted during my site inspection that the leachate within the lagoon generated no discernible odour. As the leachate will be progressively diluted during the integrated constructed wetland treatment process there is no scope for odour generation arising from the process. I also visited the constructed wetland site in Donegal, again no odour was apparent.

- 10.6. During the construction phase it is likely that the reshaping and contouring of the proposed ponds will give rise to increased noise generation. The information on file estimates that the work will take between four and five months which is short-term and acceptable in my view. I further note that the nearest residential dwelling to the subject site is located over 600 metres to the west and therefore I consider that noise levels arising from the construction phase are unlikely to give rise to any significant amenity impacts.

Conclusions on the Likely Consequences for the Proper Planning and Sustainable Development of the Area.

Arising from my assessment above therefore, I consider the likely consequences for the proper planning and sustainable development in the area will be on the whole positive in terms of releasing greater wastewater treatment capacity within the Ballinasloe Wastewater Treatment Plant. In terms of negative impacts, I consider the impacts arising from both the construction and operational phase will be negligible having regard to the nature of the works to be undertaken and the separation distance between the subject site and the nearest sensitive receptors.

10.7. Other Issues

A number of specific issues were raised by the NPWS which are commented upon below.

I consider that there are sufficient details in respect of the construction methods and mitigation methods which will be employed in the construction of the project. The proposal will involve typical construction and excavation methods involved in pond construction and these are adequately described in Section 2 of the report submitted with the application for approval.

The site in question does not accommodate 2 ha of wetland therefore comments in relation to EIA requirements are not relevant.

With regard to the type of plants to be used within the treatment system, the information on file indicates that helophyte vegetation will be used. The main wetland species include *Carex riparia*, *Glyceria maxima*, *Typha latifolia* detailed planting regimes will be determined and monitored during the initial phases of the process. It is not appropriate in my view to be overly prescriptive in respect of the wetland species to be planted. The layout, structure and composition of the planting will have to take account of the specific characteristics associated with the site. The level of detail provided in respect of the wetland planting is acceptable in my view.

With regard to the generation of any surplus material during the construction phase, the information contained on file indicates that no surplus material will be generated as a result of the proposed works to be undertaken. All material will be utilised within the confines of the site.

With regard to the construction of the hydraulic weir on the Loughbrown Stream I consider these works will comprise of relatively modest works within a stream which is not designated as environmentally sensitive. It would be sufficient in my view to include a condition that requires the construction of the weir to be carried out in accordance with best practice and IFI guidelines with regard to in-stream works. If the Board attach a condition precluding discharge to the Loughbrown Stream, this issue will become irrelevant.

With regard to the proposed supplementary discharge to the River Suck, the alignment of the discharge is clearly indicated in the drawings submitted. In this regard I refer the Board to drawing VE1588-05-02 contained on file. A section view showing the construction methodology involved in laying the outfall pipe to the River Suck is also indicated on this drawing.

10.8. The Likely Significant Effects of the Proposed Development on a European Site

NIS Submitted

A Natura Impact Statement has been submitted with the application and this is contained in Appendix F of the main report. The site is not located within a European site. The closest European site is the River Suck Callows SPA (Site Code: 004097) which at its closest point is located approximately 1.5 kilometres to the east of the subject site. The SPA comprises of a linear strip on either side of the River Suck which comprises of semi-natural lowland wet grasslands which flood extensively each year. The following species are a special conservation interest.

- *The Whooper Swan.*
- *The Greenland White Fronted Goose.*
- *The Widgeon.*
- *The Golden Plover.*
- *The Lapwing.*

The River Suck Callows SPA is of considerable ornithological importance with nationally important populations of these species.

The NIS also identifies two further European sites which could potentially be affected by the proposed development. These include the Middle Shannon Callows SPA (Site Code: 004096) which is located further downstream within the catchment area of the River Suck approximately 14 kilometres downstream of the subject site. The Middle Shannon Callows SPA has the following three species of interest.

- *The Corncrake.*
- *The Black Tailed Godwit.*
- *Black Headed Gull.*

Also located approximately 14 kilometres downstream and coinciding with the Middle Shannon Callows SPA is the River Shannon Callows SAC (Site Code: 000216).

The habitats associated with the River Shannon Callows SAC are:

- *Molinia meadows.*

- *Lowland hay meadows.*
- *Limestone pavement.*
- *Alluvial forests.*
- *Otter.*

In terms of potential impacts the proposed development will have no direct adverse impacts on the species of special conservation interest associated with each of the European sites referred to. The NIS states that proposed development will in no way result in the physical reduction or fragmentation of the habitat within the SPA's referred to which could adversely impact on the species concerned.

The proposed development however does have the potential to indirectly impact on the special protection areas through adversely impacting on the water quality of the River Suck which in turn could impact on the feeding grounds associated with the species referred to.

The NIS notes however that the Ballinasloe Wastewater Treatment Plant had a similar NIS completed and was the subject of an appropriate assessment by the EPA as part of the wastewater discharge authorisation assessment. The EPA concluded that the proposed development would not impact on the integrity of the River Suck Callows SPA on the grounds that the wastewater would be discharged from the wastewater treatment plant would be sufficiently treated and attenuated so as not to adversely affect the water status of the River Suck and therefore would not impact on the wintering water fowl which use the river.

Observations Submitted in Respect of AA

The application was referred to both the NPWS and the IFI for comment. The IFI did not comment on the applicant. The NPWS made a submission but did not comment specifically as to whether or not the proposed development would be likely to affect the Conservation Objectives of European Sites in the vicinity, but merely requested that the Board take the following into consideration in carrying out AA;

- The Board should assess in combination effects arising from the proposal with existing discharges from the landfill and discharges from the wastewater treatment plan and whether or not this will impact on European sites in question.
- The impact on the proposal on the conservation objectives associated with the European site.
- The AA should reach clear, precise and definitive findings.

Predicted Impacts

Works within the River Suck SPA

It is proposed to construct a new underground pipeline within the River Suck SPA. This pipeline will divert treated effluent away from the Ballinasloe WWTP directly to the River Suck. The diversion junction and 3-way valve pump are located outside the boundary of the SPA. Only approximately 100m of underground pipe will be constructed within the confines of the SPA. The photographs attached to my report indicate that lands to be disturbed by the laying of the pipe, comprise of a linear strip of improved agricultural grassland leading down to the River Suck. The field is currently used for livestock grazing. The works will include excavating a strip of ground for the placement of the pipeline and reinstating the excavated material over the pipe route. The strip of land will then be returned to its natural state. The temporary works to be undertaken in laying the pipeline will not result in any direct loss or fragmentation of the habitat which may be used by the bird species listed as features of interest of the SPA. There is no evidence to suggest that the works will have an adverse impact on breeding grounds or foraging areas for birds. As such I can only conclude that the temporary works will in no way impact on the SPA. As the pipe will be located at the bank of the river, no invasive works will be required within the river itself.

Impact on Water Quality

I am satisfied based on my assessment above that the integrated constructed wetland can sufficiently treat and attenuate the leachate from the Pollboy Landfill to a similar or indeed better standard than the wastewater treatment plant at Ballinasloe and therefore the impact on the River Suck would not adversely affect the water

quality status within the river having particular regard to the large assimilative capacity of the river. I consider that it has been demonstrated above, specifically through the assimilative capacity calculations, that any discharge subsequent to treatment in the integrated constructed wetland will have a negligible impact on the water quality parameters in the River Suck alone or in-combination with the WWTP for Ballinasloe. As such it will not adversely affect any of the bird species which are of Special Conservation Interest within the River Suck Callows SPA.

Furthermore, having regard to the fact that the River Suck Callows SPA discharges into the Middle Shannon Callows SPA it is reasonable to conclude that if the proposed discharge does not impact on the special conservation interests of the River Suck Callow SPAs, the continued dilution which would occur along the passage of the watercourse before reaching the Middle Callows will ensure that the qualifying interests associated with the latter SPA will not be affected by the proposed development. With regard to the SAC it is also reasonable to conclude that the proposed development which is c.14.5 kilometres from the SAC will in no way impact on the habitats associated with the SAC having regard to the separation distances between the site and the habitats in question.

In-Combination Effects

As Competent Authority for carrying out AA, the Board are required to consider whether the proposed development, individually and in combination with other plans and projects, would adversely affect the integrity of the European site in view of the site's conservation objectives. The major in-combination effects that might occur relates to the cumulative impact arising from the presence of other discharges up-stream. It is apparent however that discharges up stream while contributing to nutrient enrichment and pollution to some extent, Background BOD levels and Ammonia levels are below the required levels to achieve good status under the Surface Water Regulations (1.2 mg/l and 0.036mg/l respectively). It has also been adequately demonstrated through the assimilative capacity calculations that discharge from the ICW, will contribute negligible additional pollutants to the River Suck and will certainly not pose a threat in terms of breaching limits set out in the Surface Water Regulations for 'Good Status'. Furthermore, the concentration of pollutants in the treated discharge will at least meet the standards, set out in the Discharge Authorisation Licence for the Ballinasloe WWTP (D0032-01), as such it

will not contribute any additional concentrations of pollutants over and above that currently operating. It should be borne in mind that the proposal in this instance is not resulting in an additional discharge to the River Suck, but is merely diverting an existing effluent stream through an alternative treatment process prior to discharging into the River Suck. I am satisfied therefore that no in-combination effects will occur.

In-Direct Effects.

The proposed development will not result in the loss, fragmentation or diminution of any habitat associated with European Sites in the vicinity. Notwithstanding this, there is a possibility that any impact on water quality could adversely impact on feeding sources for birds both within the rivers and the surrounding callows area associated with the rivers which are the subject of designation. I reiterate that I consider that I have adequately demonstrated that the proposal will in no way result in the deterioration of water quality within the rivers in question and consequentially will have no impact on the feeding grounds of any species of bird which is a Feature of Interest of the European Site. I can only conclude therefore that no in-direct effects will occur.

Impact on the Suck Callows NHA

Finally, in relation to the issue of Appropriate Assessment I note that the NPWS, in its submission, made reference to the Suck River Callows NHA (Site Code: 000222). This Natural Heritage Area falls under the provisions of the Wildlife Act 1976 (as amended) as opposed to the Habitats Directive or the Birds Directive. As such the Natural Heritage Area is not designated as a European site and therefore is not subject to the provisions of Appropriate Assessment.

Notwithstanding this point the NPWS website indicates that the features of interest associated with the Natural Heritage Area are peatlands and birds. I have already argued above that the attenuated and treated discharge from the integrated constructed wetlands will not adversely impact on the water quality of the River Suck SPA, and as a consequence therefore, will not impact on bird populations in the area. Furthermore, the integrated constructed wetland due to the separation distance between the proposed development and the boundary of the NHA will not result in any physical destruction of, fragmentation of or deterioration of peatland associated

with this Natural Heritage Area. I can only conclude therefore that the proposed works to be undertaken will in no way impact on the features of interest associated with the NHA.

On the basis of the information provided within the application and appeal, including the Natura Impact Statement, I consider it reasonable to conclude on the basis of the information on file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the River Suck Callows SPA (Site Code: 004097) or any other European site in view of the site's conservation objectives.

11.0 Overall Conclusions and Recommendation

I consider that the proposed construction of the integrated constructed wetland at the Pollboy Landfill will not have adverse effects on the environment, will not have adverse consequences for the proper planning and sustainable development of the area and will not adversely affect the integrity of European sites in the vicinity. The proposed development would therefore be in accordance with the proper planning and sustainable development of the area. I recommend that the Board grant approval in accordance with the provisions of S177AE of the Act.

12.0 Decision

Grant planning approval for the proposed development based on the reasons and considerations set out below.

13.0 Reasons and Considerations

In coming to its decision the Board had regard to the following:

- (a) The nature and extent of the proposed works including the redirection of the treated leachate away from the Ballinasloe Wastewater Treatment Plant and the consequential freeing up of treatment capacity within the said wastewater treatment plant,

- (b) the EU Habitats Directive (92/43/EEC),
- (c) the European Communities (Birds and Natural Habitats) Regulations 2011,
- (d) the EU Water Framework Directive 2000 (2000/60/EEC),
- (e) the European Communities Environmental Objectives (Surface Water Regulations) 2009 (S.I. 272 of 2009).
- (f) the Document entitled “Appropriate Assessment of Plans and Projects in Ireland: Guidelines for Planning Authorities” issued by the Department of the Environment, Heritage and Local Government 2010,
- (g) the Galway County Development Plan 2013 – 2019,
- (h) the Shannon River Basin Management Plan,
- (i) Integrated Constructed Wetlands: Guidance Document for Farmyard Soiled Water and Domestic Wastewater Applications issued by the Department of the Environment, Heritage and Local Government (November, 2010),
- (j) the likely consequences for the environment and the proper planning and sustainable development of the area which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on a European site, and
- (k) the submissions and observations received in relation to the likely effects on the environment,

The Board agreed with the screening assessment and conclusion carried out in the Inspector’s report that the River Suck Callows SPA (site code: 004097), the River Shannon Callows SAC, the River Shannon Callows SAC (Site Code: 00216) and the Middle Shannon Callows SPA are the only European Sites in respect of which the proposed development has the potential to have a significant effect.

The Board considered the Natura impact statement and associated documentation submitted with the application for approval, the mitigation measures contained therein, the submissions and observations on file, and the

Inspector's assessment. The Board completed an appropriate assessment of the implications of the proposed development for the affected European Site, namely the River Suck Callows SPA (site code: 004097), in view of the site's conservation objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment.

In completing the appropriate assessment, the Board considered, in particular, the following:

- i) the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,
- ii) the mitigation measures which are included as part of the current proposal, and
- iii) the conservation objectives for the European Site.

In completing the appropriate assessment, the Board accepted and adopted the screening and the appropriate assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the aforementioned European Site, having regard to the site's conservation objectives.

In overall conclusion, the Board was satisfied that the proposed development would not adversely affect the integrity of the European Site in view of the site's conservation objectives.

The Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Site, in view of the site's conservation objectives.

14.0 Conditions

1. The proposed development shall be carried out and completed in accordance with the plans and particulars lodged with the application, except as may otherwise be required in order to comply with the following conditions.

Reason: In the interest of clarity.

2. No leachate from the proposed Integrated Constructed Wetland will be discharged into the Loughbrown Stream.

Reason: To protect the environment.

3. A suitably qualified person shall be appointed by the local authority to oversee the design and construction of the integrated constructed wetland. The person appointed shall monitor the excavation and storage of all material within the site. Upon completion of the works a report of all site works shall be prepared by the appointed person and submitted to the local authority to be maintained on record.

Reason: In the interest of orderly development.

4. A suitably qualified person shall be appointed by the local authority to oversee the planting of wetland vegetation within the ponds. The main wetland species shall include *carex riparia*, *glyceria maxima* and *typha latifolia* and any other such species which are deemed to be suitable for the treatment of the leachate. Any plants which die or are removed or become seriously damaged or diseased shall be replaced within the next planting season with others of similar size and species.

Reason: To ensure that adequate treatment of leachate occurs within the integrated constructed wetlands.

5. (a) The local authority shall prepare and fully implement a landscaping scheme with shall provide for the planting throughout the integrated constructed wetland site.

(b) All planting shall be adequately protected from damaged until established. Any plants which die, are removed or become seriously damaged or diseased within a period of five years from the completion of the development shall be replaced within the next planting season with others of similar size and species.

Reason: In the interest of visual amenity.

6. All external lighting within the proposed development shall be sufficiently cowled so as to ensure that light spillage beyond the boundary of the site is minimised.

Reason: In the interest of amenity.

7. Where chemicals are to be stored on site, such chemicals shall be stored in a suitably bunded area.

Reason: In order to prevent pollution.

8. Instream and bankside works shall be carried out in low flow, dry weather conditions between May and September.

Reason: In order to prevent pollution.

9. Discharge sampling chambers to be provided as part of the scheme at the outfall pipe to the Suck River shall be readily accessible. Samples shall be recorded and logged on a monthly basis and shall be made available for public inspection at the offices of the local authority during normal office hours.

Reason: To allow for inspection and public access to information.

10. The local authority shall facilitate the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard the local authority shall comply with the following requirements:
- (a) Satisfactory arrangements shall be made for the supervision by a suitably qualified archaeologist of all excavation investigations and site development works associated with the integrated constructed wetlands.
 - (b) All groundworks on site shall be monitored by an archaeologist who shall advise on measures, as may be necessary, to ensure that any damage to remaining archaeological material is avoided or minimised.
 - (c) Satisfactory arrangements shall be made for the post excavation research and the recording, removal and storage of any archaeological remains which may be considered appropriate to remove. In this regard, a comprehensive report on the completed archaeological excavation shall be prepared within a period of six months.

Reason: In order to conserve the archaeological heritage of the area.

Paul Caprani,
Senior Planning Inspector

15th December, 2016.
