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# **Natura Impact Statement**

Replacement Dwelling House, Hazelwood  
Demesne, Calry, Co. Sligo

Further Information: 17 August 2020



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### Executive Summary

This *Natura Impact Statement* (NIS) has been prepared by NM Ecology Ltd on behalf of Hazelwood Demesne Ltd (the applicant), as part of a planning application for the replacement of a derelict dwelling house within the grounds of Hazelwood Demesne. The NIS was originally submitted in April 2020, but has been updated following a request for further information from Sligo County Council.

The site is located approx. 25 m from the Garvogue River, and is adjacent to the *Lough Gill* Special Area of Conservation. In accordance with their obligations under the *European Communities (Birds and Natural Habitats) Regulations 2011* (SI 477/2011), the planning authority (in this case Sligo County Council) must assess whether the proposed development could cause 'likely significant effects' on any Natura 2000 sites. This document provides supporting information to assist the authority with an Appropriate Assessment, including: a description of the proposed development, a review of the site's environmental setting, details of Natura 2000 sites within the potential zone of impact, an appraisal of *source-pathway-receptor* relationships, and an assessment of potential impacts.

If a precautionary approach is adopted, it is possible that pollutants (suspended sediments, concrete/cement and hydrocarbons) from the proposed development site could cause an impact on aquatic habitats and fauna within the *Lough Gill* SAC, either alone or in combination with other nearby developments. In response, a range of mitigation measures will be implemented during the construction of the project in order to avoid or minimise the risk that any pollutants could reach the Garvogue River. Subject to the successful implementation of these measures, we conclude that the proposed development will not have significant impacts on any Natura 2000 sites.

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# 1 Introduction

## 1.1 Introduction

This Natura Impact Statement has been prepared by NM Ecology Ltd on behalf of Hazelwood Demesne Ltd (the applicant) as part of a planning application for the replacement of a derelict dwelling house within the grounds of Hazelwood Demesne. The planning application and Natura Impact Statement were originally submitted in April 2020, but a request for further information from Sligo County Council in July 2020, including the following:

1. It is policy of the Sligo & Environs Development Plan, P-NH-1 to protect natural heritage sites designated in European and national legislation and in other relevant international conventions, agreements and processes. This includes sites designated or proposed as Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites and Natural Heritage Areas (NHAs). Section 5.3 of the Natura Impact Statement, details the developments permitted under PL15/296 and PL18/412 but fails to address the permission sought under PL20/180 for the construction of a 1.262m<sup>2</sup> sprinkler water and spillage run off retention pond. You are therefore requested to submit;

(a) An amended Natura Impact Statement which details the potential in-combination effects of the development sought under PL20/180.

(b) Proposals to provide a fenced off aquatic buffer zone, of minimum width of 10 meters provided along the Garvogue River.

You are advised to consult with the NPWS in relation to the above request.

This revised NIS provides the information requested by Sligo County Council, notably the addition of planning application PL20/180 in the cumulative impacts section, and the inclusion of a fenced-off aquatic buffer zone along the Garavogue River.

## 1.2 Background to Appropriate Assessment

Approximately 10% of the land area of Ireland is included in the European Network of Natura 2000 sites, which includes Special Protection Areas (SPAs) to protect important areas for birds, and Special Areas of Conservation (SACs) to protect habitats and non-avian fauna. Legislative protection for these sites is provided by the *European Council Birds Directive (79/409/EEC)* and *E.C. Habitats Directive (92/43/EEC, as amended)*, which are transposed into Irish law by the *European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011)*.

In accordance with Article 42 of the national regulations, planning authorities must consider the potential impacts of any development on the integrity of the Natura 2000 network. The first stage of this process is a simple screening exercise to determine whether the development has potential to affect any Natura 2000 sites. If there is a viable risk of impact (adopting a precautionary approach), the development should proceed to the second stage of the process,

which is known as ‘Appropriate Assessment’ (AA). In Section 3.1 of *Appropriate Assessment of Plans and Projects in Ireland*, the second stage of the AA process is described as follows:

*“This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement [...] to identify and characterise any possible implications for the site in view of the site’s conservation objectives, taking account of in-combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 4, or the plan or project should be abandoned. The Appropriate Assessment is carried out by the competent authority, and is supported by the Natura Impact Statement.”*

This document is a Natura Impact Statement, which provides supporting information to assist the local authorities with an Appropriate Assessment, and includes the following sections: a description of the proposed development, details of Natura 2000 sites within the zone of impact, an appraisal of potential pathways for indirect effects, an assessment of potential impacts, mitigation measures, and a conclusion.

### **1.3 Statement of authority**

This report was written by Nick Marchant, the principal ecologist of NM Ecology Ltd. He has an MSc in Ecosystem Conservation and Landscape Management from NUI Galway and a BSc in Environmental Science from Queens University Belfast. He is a member of the Chartered Institute of Ecology and Environmental Management, and operates in accordance with their code of professional conduct.

He has twelve years of professional experience, including nine years as an ecological consultant, one year as a local authority biodiversity officer, and two years managing an NGO in Indonesia. He provides ecological assessments for developments throughout Ireland and Northern Ireland, including wind farms, infrastructural projects (roads, water pipelines, greenways, etc.), and a range of residential and commercial developments.

### **1.4 Methods**

#### Guidelines and general approach

This report has been prepared with reference to the following guidelines:

- *Appropriate Assessment of Plans and Projects in Ireland* (Department of the Environment, Heritage and Local Government, 2009)

- *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4), E.C., 2002*
- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal* (Chartered Institute of Ecology and Environmental Management, 2019)

In accordance with Section 3.3.6 of *Appropriate Assessment of Plans and Projects in Ireland*, the report accompanying an Appropriate Assessment includes the following components:

1. Describes the plan or project in sufficient detail to make clear its size, scale and objectives.
2. Describes the baseline conditions, conservation objectives, and relevant ecological and environmental issues in relation to the relevant Natura 2000 sites.
3. Identifies potential adverse impacts of the plan or project on the Natura 2000 sites.
4. If possible, explains how those effects will be avoided through mitigation.
5. Sets out a timescale and identifies the mechanisms through which the mitigation measures will be secured, implemented and monitored

#### Desk and field studies

Internet-based resources were accessed between January and August 2020 from the following sources:

- Plans and specifications for the proposed development
- Qualifying interests and conservation objectives of Natura 2000 sites from [www.npws.ie](http://www.npws.ie)
- Bedrock, soil, subsoil, surface water and ground water maps from the Geological Survey of Ireland webmapping service ([www.gsi.ie/mapping.htm](http://www.gsi.ie/mapping.htm)), the National Biodiversity Data Centre (<http://maps.biodiversityireland.ie/>), and the Environmental Protection Agency web viewer (<http://gis.epa.ie/Envision/>)
- The *Sligo County Development Plan 2017 - 2023*, the *Sligo & Environs Local Area Plan 2010-2016* (which has been extended, pending an update), and details of permitted or proposed developments from the local authority's online planning records

## **2 Description of the proposed development**

### **2.1 Proposed development**

The proposed development will involve the demolition of an existing derelict / ruined dwelling, and the construction of a two-storey replacement dwelling on the same footprint. The dwelling will not be continuously occupied, but will be used as temporary accommodation for directors of the operating company. Access will be from the east of the site via an existing cobble stone path. Some external hard landscaping will be provided to the front and rear of the new dwelling.

Foul water will be pumped to the distillery's waste water treatment plant (recently granted planning permission, reference 18412), and will subsequently be discharged to groundwater via a soil polishing filter and infiltration pad. This is a temporary arrangement, as a connection to an Irish Water foul sewer will be constructed in the future. Rainwater from the roof of the structure will pass through a rainwater harvesting unit, and any excess will be discharged to a soakaway. External hard surfaces will be permeable, allowing rainwater to percolate to ground.

## 2.2 Other nearby developments (potential in-combination effects)

The proposed development site is included in the green belt of the *Sligo and Environs Development Plan 2010-2016* (which has been extended, pending an update), for which the planning objective is to “*prevent encroachment of development in environmentally-sensitive and visually vulnerable areas*”. It is also noted that “*development in the Buffer Zone and Green Belt will generally be limited to agriculture and other rural resource-based activities*”.

Hazelwood House and the associated factory building are currently being converted to a distillery, and construction works are ongoing (planning reference 15296). An on-site wastewater treatment plant has recently been granted planning permission, and will be constructed in the coming years (planning reference 18412).

A planning application was submitted by the applicant in June 2020 for “*the construction of a 1,262 m<sup>2</sup> sprinkler water and spillage run off retention pond (volume 3,428 m<sup>3</sup>), to the west of previously approved whiskey distillery (reg. ref. 15/296), together with associated drainage, pump kiosk and ancillary site works and services.*” Further Information has been requested for the application, and at the time of writing it has not yet been submitted. The purpose of the pond is to temporarily hold any liquid material arising during a fire in the distillery, or from a major spillage. At all other times it will remain empty, other than occasional removal of rainwater. It will be located approximately 200 m to the south-east of the proposed development site, and will be approximately 100 m from the Garvogue River. The planning application also included a Natura Impact Statement prepared by NM Ecology Ltd, which outlined a range of pollution-prevention measures for the construction of the pond, including silt fencing between the construction site and the Garvogue River. This application will be discussed further in the cumulative impact assessment in Section 5.3 of this report.

With the exception of the distillery and associated works, the greenbelt zoning of the land will prevent any other major developments in the vicinity of the site, so future development in the area will be small in scale and unlikely to cause cumulative / in-combination impacts with the proposed development. There are no other live or recently-approved planning applications in the vicinity of the site on the online planning records of Sligo County Council.

### **3 Receiving environment**

#### **3.1 Environmental setting**

The Hazelwood Demesne is located on a peninsula between Lough Gill (to the south and east) and the Garvogue River (adjacent to its western boundary). The main property (Hazelwood House) is a three-storey 18<sup>th</sup> century Palladian-style residence. In the 1960s, a large factory was built to the south of the property. The residence and factory have been used for a range of public services and private industry, but all activity ceased in 2006. In May 2016, the applicant received planning permission for the conversion of the residence and factory to a whiskey distillery and visitors centre.

Hazelwood House and the factory are surrounded by a large expanse of ancient / long-established broadleaved woodland, which extends along the valley of the Garvogue River to the north-east of the site. With the exception of the Hazelwood Demesne, the rest of the peninsula is owned by Coillte and is managed for public amenity and nature conservation. It is one of the largest and longest-established expanses of broadleaved woodland in Sligo.

The subject of the proposed development is a derelict / ruined single-storey dwelling in the west of the site near the Garvogue River. It has no roof, and consists only of some standing walls, which are in poor structural condition. Many of the walls are coated in dense ivy.

In the surrounding area, some land to the north of the site and on the western side of the Garvogue River is used for intensive agriculture, either as grazing pastures for livestock and horses, or for the production of hay and silage. All other surrounding areas consist of mature woodland. Sligo town is located approximately 2km to the north-west.

#### **3.2 Geology, groundwater and soils**

The underlying bedrock is limestone, which is a regionally-important, karstified aquifer. Subsoils are shale / sandstone till, and soils are acid brown earths / brown podzolics (deep, well-drained, derived from acidic materials). Considering the high permeability of the underlying bedrock and soils, it is expected that most rainwater would percolate to ground rather than flowing over land.

#### **3.3 Hydrology**

Lough Gill is part of the Garvogue Water Management Unit, and is fed by a large catchment to the north, east and south of the lake. Water flows out of the lake into the Garvogue River, which flows north-west through Sligo town, reaching the transitional waters of Sligo Harbour / Garvogue Estuary approx. 5.5 km downstream, and ultimately reaching coastal waters in Sligo Bay a further 6.5 km to the west.

Under the Water Framework Directive status assessments 2010-2018, Lough Gill is currently of Moderate status, the Garvogue River is of Poor status, the transitional waters of Sligo Harbour are of Moderate status, and the coastal waters are of Good status.

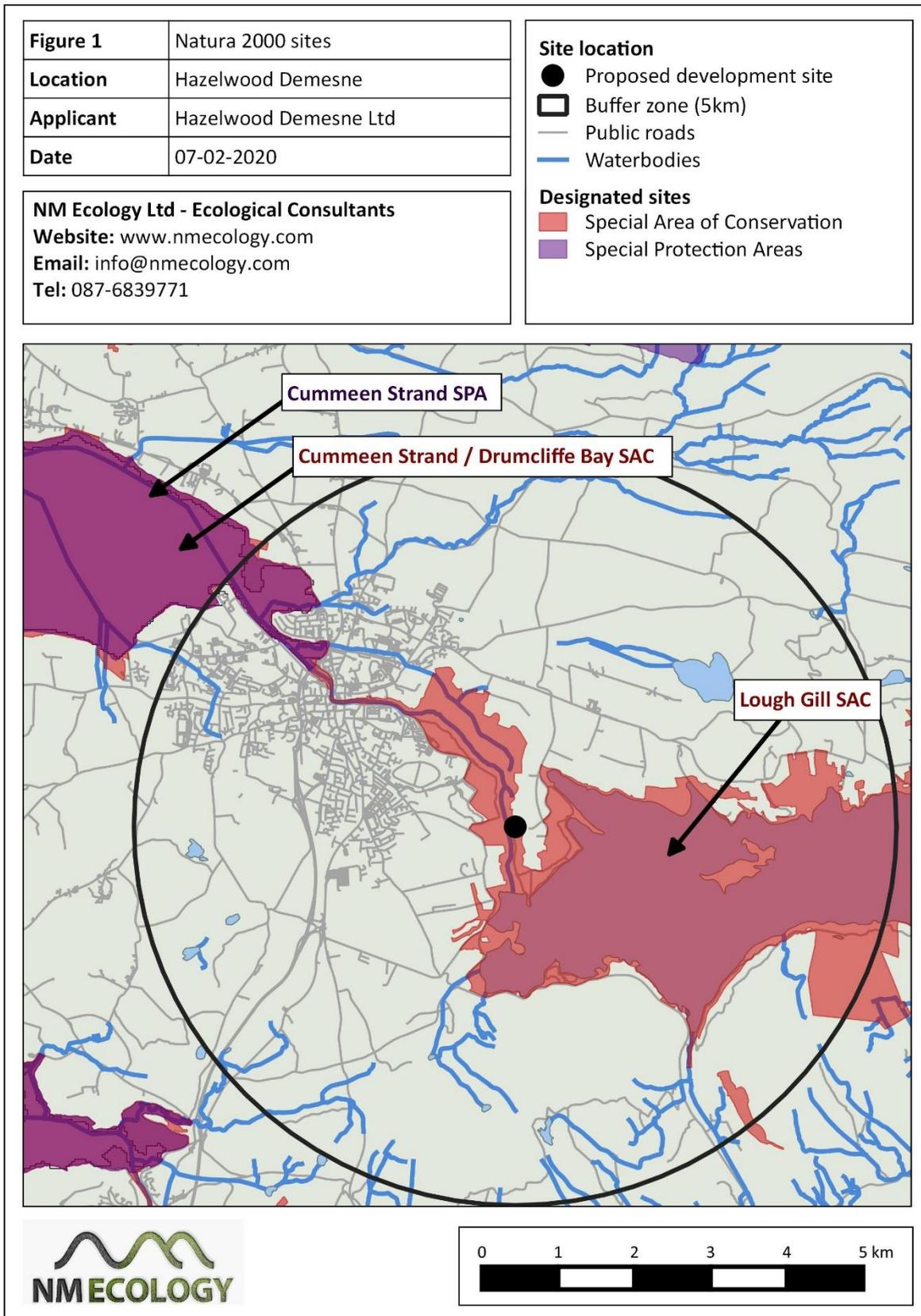
## 4 Description of Natura 2000 sites

### 4.1 Identification of Natura 2000 sites within the zone of impact

Potential direct and indirect impacts on Natura 2000 sites were assessed within a potential zone of impact of 5km. Descriptions of each site are provided in Table 1, and a map of relevant sites is shown in Figure 1.

**Table 1: Natura 2000 sites within 5km of the proposed development site**

Site name	Distance	Qualifying Interests
Lough Gill SAC (site code 1976)	10 m W	<p><b>Annex I Habitats:</b> natural eutrophic lakes; old sessile oak woods; alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i></p> <p><b>Annex II Species:</b> white-clawed crayfish, sea lamprey, brook lamprey, river lamprey, Atlantic salmon, otter</p>
Cummeen Strand / Drumcliff Bay SAC (627)	3.5 km downstream	<p><b>Annex I Habitats:</b> estuaries; mudflats and sandflats; embryonic shifting dunes; shifting dunes with <i>Ammophila arenaria</i>; fixed coastal dunes with herbaceous vegetation; <i>Juniperus communis</i> formations on heaths or calcareous grasslands; petrifying springs with tufa formation (Cratoneurion)</p> <p><b>Annex II Species:</b> narrow-mouthed whorl snail, sea lamprey; river lamprey; common seal</p>
Cummeen Strand SPA (4035)	3.9 km downstream	<p><b>Habitats:</b> coastal wetlands</p> <p><b>Special conservation interests:</b> wintering populations of light-bellied brent goose, oystercatcher and redshank</p>



#### 4.2 Identification of potential pathways for indirect impacts

Indirect impacts on designated sites can occur if there is a viable pathway between the source (the proposed development site) and the receptor (the habitats and species for which a site has been designated). The most common pathway for impacts is surface water, for example if a pollutant is washed into a river and carried downstream into a designated site. Other potential pathways are groundwater, air (e.g. sound waves or airborne dust), or land (e.g. flow of liquids, vibration). The zone of effect for hydrological impacts can be several kilometres, but for air and land it is rarely more than one hundred metres. The magnitude of impacts (e.g. the concentration of pollutants) usually decreases as the distance between source and receptor increases. An appraisal of potential pathways between the proposed development and nearby Natura 2000 sites is provided below.

The existing derelict dwelling and access road are located approx. 10 metres outside the boundary of the *Lough Gill* SAC. However, they are located at a slightly higher elevation than the river, so it is possible that surface water could flow west into the SAC. Considering the proximity of the site to the SAC, there could also be pathways via ground water, land and air.

There is also a risk of indirect impacts on the *Cummeen Strand* SPA and *Cummeen Strand / Drumcliffe Bay* SAC, both of which are downstream on the Garvogue River. However, as the *Lough Gill* SAC is much closer to the proposed development site than the *Cummeen Strand* SAC / SPA, any indirect impacts on the former would be of greater magnitude than the latter. Therefore, for the purposes of this report, impacts will be assessed primarily in relation to the *Lough Gill* SAC, but the conclusions would also apply to the *Cummeen Strand* SAC / SPA, even though the sites will not be discussed explicitly.

#### 4.3 Distribution of qualifying interests of the *Lough Gill* SAC

The SAC has been designated for the protection of three habitats: natural eutrophic lakes, old sessile oak woods, and alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*. The 'natural eutrophic lake' refers to the *Lough Gill*, while the woodland habitats refer to the ancient / long-established broadleaved woodland around the margins of the lakes, and on islands.

The SAC has been designated for the protection of a number of aquatic species: Atlantic salmon, sea, brook and river lamprey, white-clawed crayfish and otter. The primary habitats for all of these species are the lake and rivers. The fish and crayfish are exclusively aquatic, but otters also occupy holts and other breeding / resting places in terrestrial habitats near the water's edge. The author has surveyed the proposed development site on a number of occasions since 2015, and has never recorded any holts (or other breeding / resting places) in the vicinity of the existing dwelling. This is likely to be due to anthropogenic activity and development in the area over recent decades.

#### 4.4 Conclusion of Stage 1: Screening Statement

In Section 3.2.5 of *Appropriate Assessment of Plans and Projects in Ireland* (NPWS 2010), it is stated that the first stage of the AA process can have three possible conclusions:

**1. AA is not required**

Screening, followed by consultation and agreement with the NPWS, establishes that the plan or project is directly connected with or necessary to the nature conservation management of the site

**2. No potential for significant effects / AA is not required**

Screening establishes that there is no potential for significant effects and the project or plan can proceed as proposed.

**3. Significant effects are certain, likely or uncertain**

The plan or project must either proceed to Stage 2 (AA), or be rejected.

Having considered the particulars of the proposed development, we conclude that this application meets the third conclusion, because significant effects are uncertain. Due to the proximity of the *Lough Gill* SAC, and the potential pathways for indirect impacts, there is a risk that a large-scale pollution event could cause significant impacts on its qualifying interests. There may also be a risk of in-combination effects with other nearby developments (refer to Section 2.2). Therefore, in accordance with the precautionary principle, it is suggested that Appropriate Assessment will be required. Potential impacts are considered in further detail in Section 5, and mitigation measures are outlined in Section 6.

## 5 Assessment of potential impacts

### 5.1 Direct effects on the qualifying interests of the SAC

The proposed development site is located outside the SAC. There will be no modification of Annex I habitats (i.e. woodland or lake), nor any disturbance of Annex II species (fish, crayfish or otters). There are no otter holts in the vicinity of the existing dwelling. Therefore, the proposed development will not cause any direct impacts (e.g. habitat loss or fragmentation) on the SAC.

### 5.2 Potential indirect effects on qualifying interests

#### Construction phase

The construction of the proposed development will involve groundworks, stockpiling of materials, the use of heavy machinery, and the pouring of concrete. These activities have potential to generate pollutants, including:

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- Concrete and cement, which are composed of highly alkaline, corrosive fine sediments that are very harmful for aquatic fauna
- Suspended silt or other sediments, which can reduce water quality, harm aquatic fauna, and/or alter the flow of the river
- Hydrocarbons (oil, petrol, diesel, etc), solvents and other chemicals, which can be toxic to aquatic fauna

The site slopes towards the Garvogue River, so it is possible that pollutants could flow downhill into the *Lough Gill SAC*. It is noted that the SAC has been designated for the protection of a range of aquatic habitats and species, all of which could be vulnerable to pollution. Water quality in the Garvogue River is currently of Poor status.

A hypothetical impact assessment of potential pollution incidents is difficult, because any potential impacts would vary depending on: the type of pollutant, the quantity of material entering the river, the rate at which it would occur, and the time of year. It is expected that minor pollution incidents would be diluted by the river, reducing their concentration to negligible levels before they could affect any of the qualifying interests of the SAC. However, if a precautionary approach is adopted (as stipulated in the legislation), it is possible that a large-scale pollution event could cause significant impacts on the conservation status of habitats or species within the SAC. Therefore, mitigation measures will be required during construction in order to prevent any pollution incidents.

#### Operational phase

Foul water from the proposed development will be pumped to the distillery's Waste Water Treatment Plant (WWTP), which was recently granted planning permission (planning reference 18412). The design capacity of the plant accounts for the discharge from this development, as outlined in the engineer's reports that accompany the planning application. Effluent from the WWTP will subsequently be discharged to groundwater via a soil polishing filter and infiltration pad. A Tier 2 Hydrogeological Assessment of the wastewater discharge was carried out by Envirologic Consulting as part of the planning application. It includes the following conclusions:

*"A Tier 2 hydrogeological assessment was carried out to assess the suitability of substrate conditions at a site in Hazelwood Demesne, County Sligo to accept and dispose of treated effluent emanating from a proposed whiskey distillery and visitor centre. A desk study was performed and followed up with field investigations which included a hydrogeological survey, drilling to install 2 monitoring wells on site, aquifer testing, and hydrochemical sampling. All works were performed taking cognisance of EPA guidelines.*

*Substrate conditions were found to be suitable, in terms of hydraulic loading, for the disposal of treated effluent to ground via an infiltration pad. Background groundwater quality was shown to be high. In terms of orthophosphate, nitrates and ammonia, there is chemical*

*capacity to assimilate treated effluent and dilute to concentrations that satisfy the Groundwater Regulations (2010).*

*The primary receptor was identified as surface water quality in the Garavogue River. Calculations have shown that the proposed development will have no impact on surface water quality.”*

A Natura Impact Statement was submitted as part of the application, and it was concluded that the development would not lead to any impacts on the *Lough Gill* SAC or any other Natura 2000 sites. On this basis, it can be concluded that foul water from the proposed development will not lead to significant impacts on the SAC.

Rainwater runoff from the roof of the structure will pass through a rainwater harvesting unit, and any excess will be discharged to a soakaway. External hard surfaces will be permeable, allowing rainwater to percolate to ground. Rainwater is considered to be unpolluted, so there will be no impact on surface water (the Garvogue River) or groundwater.

In summary, there will be no risk of significant impacts on the SAC during the operation of the proposed development.

### **5.3 Potential cumulative impacts**

Potential cumulative impacts were considered for three other developments within the Hazelwood Demesne, as follows:

- The main planning approval for the Hazelwood Distillery and Visitor’s Centre (planning reference 15296), which is for extensive renovations and a change of use for Hazelwood House and the former Saehan Media factory. This development is currently in construction. Hazelwood House is located approx. 160 m east of the proposed development site, and the factory is located 220 m to the south-east. Both are located approx. 200 m from the Garvogue River;
- A recent planning consent for a waste water treatment plant and percolation area (planning reference 18412). Permission was granted in February 2020, and the applicant is currently addressing the planning compliance measures. The treatment plant will be located 180 m south-east of the proposed development, and the percolation area 50 m to the north-east. The treatment plant will be approx. 100m from the Garvogue River, and the percolation area approx. 50m;
- A live planning application for a sprinkler water and spillage runoff retention pond (planning reference 20180) located to the west of the distillery building. The application was submitted in June 2020, and further information was requested by Sligo County Council in July 2020. The pond will be constructed approx. 200 m to the south-east of the proposed development site, and will be more than 100 m from the Garvogue River.

Natura Impact Statements were submitted for all three planning applications, which included pollution-prevention measures and other mitigation strategies. Subject to these measures, it was concluded that the developments would not cause significant impacts on Natura 2000 sites.

It is considered highly unlikely that any of these developments would lead to in-combination effects with the proposed development, because: all Natura Impact Statements include mitigation measures and conclude no impacts on Natura 2000 sites, none of the developments are located in the immediate vicinity of the proposed development, none will involve any significant work in the vicinity of the river, and all are substantially different in character. Nonetheless, if a precautionary approach is adopted, it is possible that multiple concurrent construction projects could lead to small-scale in-combination effects on water quality in the Garvogue River. Therefore, it will be necessary to implement appropriate mitigation measures during the construction of the proposed development in order to prevent any pollution incidents.

## **6 Mitigation and Monitoring**

### **6.1 Pollution-prevention measures (construction phase)**

The following mitigation measures have been designed to avoid or minimise any negative impacts on water quality in the Garvogue River by preventing fine sediments, concrete / cement, hydrocarbons or any other pollutants from reaching the watercourse. All are standard pollution control measures that are regularly used on construction sites in Ireland, and confidence in their success is high. They have been developed with reference to the following guidelines:

- *Guidelines on protection of fisheries during construction works in and adjacent to waters* (Inland Fisheries Ireland, 2016)
- *Pollution prevention guidelines: PPG5 - works and maintenance in or near water* (UK Environment Alliance, 2007)
- *Managing concrete wash waters on construction sites: good practice and temporary discharges to ground or to surface waters* (UK Environment Agency 2011).

The implementation and monitoring of all mitigation measures will be the responsibility of the site foreman. The contractor will be required to employ an Ecological Clerk of Works prior to the commencement of construction works, who will assist with the interpretation and implementation of the mitigation strategy. However, it will be the responsibility of the foreman to ensure that the strategy is implemented effectively. Liability for any pollution incidents will be assigned to the foreman and their construction company.

### Aquatic buffer zone

Due to the proximity of the proposed development site to the Garvogue River, the construction contractor must ensure that no pollutants can travel overland into the river. To achieve this, a fenced-off aquatic buffer zone of 10 m width will be installed along the western boundary of the construction area, measured from the water's edge, as follows:

- A temporary construction fence (Heras or similar) will be installed along the edge of the buffer zone, marked with signs stating no-entry to construction personnel
- No vehicles will operate within the buffer zone, and no construction materials will be stored there
- A silt fence will be installed along the edge of the buffer zone in order to prevent any overland flow of silt or concrete sediments towards the river. It will be at least 50m in length, and will curve inland at the northern and southern edges in order to trap overland water flow
- The lower 200 – 300 mm of the silt fence will be buried vertically underground, or if this is impeded by existing hard surfaces, the lower edge will be held in place using sandbags. The fence will be held up by support poles at intervals of 2 m.
- All fences will be installed before the commencement of construction works, and will remain in place until all works are complete
- The fence will be replaced or repaired if it is punctured or collapses during construction

### Concrete and cement

These products are highly toxic to fauna, particularly fish and other aquatic / marine species. It is expected that some pouring and/or mixing of concrete or cement will be required during construction works, so the following measures will be implemented in order to retain all cement-based materials within the boundaries of the proposed development site:

- Concrete pouring / mixing will only take place in dry weather conditions. It will be suspended if high-intensity local rainfall events are forecast (e.g. >10 mm/hr, >25 mm in a 24 hour period or high winds).
- If any on-site mixing of concrete is required, it will only be carried out in the east of the site, i.e. as far as possible from the Garvogue River. If any cement-based products will be stored on site, they will be kept in a sheltered area in the east of the site, and will be covered (e.g. with a thick plastic membrane) in order to prevent spread by wind
- Ready-mix lorries and larger plant will not be cleaned on-site; they will be taken to an appropriate off-site facility with capacity to capture and treat contaminated wash waters.
- If any on-site cleaning of tools or concrete-batching plant is required, it will take place in the east of the site. Wash waters will be discharged to an on-site soakaway area located as far as possible from the watercourse.

### Suspended sediments

The term 'suspended sediments' refers to any silt, mud or other fine sediment that becomes dissolved in water. Water can be contaminated by suspended sediments (SS) from open earthworks and excavations (either from rainfall or groundwater seepage), from rainfall on soil/sediment stockpiles, or from the tyres / tracks of construction vehicles. In order to retain all contaminated waters within the boundary of the proposed development site, the following measures will be implemented:

- Excavation works will be suspended if high intensity local rainfall events are forecast (e.g. >10 mm/hr, >25 mm in a 24 hour period, or high winds).
- If any excavations need to be dewatered, the SS-contaminated water will be retained and treated within the boundary of the proposed development site. It will be collected and pumped into a settlement tank / pond (or similar feature), left undisturbed until sediments have settled, and then discharged via a buffered outflow to a soakaway in the east of the site (i.e. as far as possible from the river)
- Stockpiles of mud, sand or other fine sediments will be stored in the east of the proposed development site, i.e. as far as possible from the river. Stockpiles will be levelled and compacted, and will be covered with thick plastic membranes in order to limit wind/rainwater erosion.
- Dust suppression measures will be implemented, as outlined in Section 8 of the IFI guidelines. However, water will not be abstracted from the Garvogue River for dust suppression purposes, because some of the qualifying interests of the SAC – notably lamprey – have been recorded within a few metres of the river bank.

### Hydrocarbons and chemicals

Hydrocarbons (oil, petrol, diesel, etc) and solvents are toxic to fauna. These chemicals can enter surface water or groundwater if they are accidentally spilled (e.g. during re-fuelling of machinery), or from leaking containers. In order to retain such materials within the boundaries of the proposed development site, the following measures will be applied throughout the construction works:

- Any fuel, oil or chemical containers will be kept in the east of the proposed development site, i.e. as far as possible from the river. These pollutants are hazardous and must be stored in a designated bunded area that has sufficient capacity to retain any spills
- All machinery will be protected from vandalism and unauthorised interference
- If any on-site re-fuelling is required, it will take place in the east of the site in a bunded / impermeable area. Immobile plant will be refuelled over drip-trays
- While in operation, diesel pumps, generators or other similar equipment will be placed on drip trays to catch any leaks
- A spill kit will be kept on site. If any spills occur, appropriate measures will be taken to intercept cement, hydrocarbons or chemicals on-site before they can reach the river

## 7 Conclusion

The proposed mitigation measures have been selected to avoid or minimise the risk that pollutants could reach the Garvogue River in sufficient quantities to cause significant impacts upon habitats or species in the *Lough Gill* SAC. The site foreman will be responsible and liable for the implementation and monitoring of the proposed mitigation.

These measures will substantially reduce the likelihood and magnitude of pollution events, thus preventing a significant negative impact upon the conservation status of the qualifying interests (aquatic fauna and habitats) of the SAC, either alone or in combination with other nearby developments. As a result, we conclude that the proposed development will not cause any significant negative impacts upon the integrity of any Natura 2000 sites.

## 8 References

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