

Bleach and Lough Graney Priority Area for Action Desk Study Summary

This is a non-technical summary of the desk study on the Bleach and Lough Graney Priority Area for Action (PAA).

A desk study is the first step in our work. We gather available information about the river into a single document. The information comes from many public bodies including:

- Environmental Protection Agency
- Local authorities
- Inland Fisheries Ireland
- Forestry Service
- Irish Water
- Department of Agriculture, Food and Marine
- Other public agencies

It also includes information learned from the public at a local community meeting. The community meeting for the Bleach and Lough Graney PAA was held in Flagmount, Co. Clare in May 2019.

The study helps us to understand:

- The quality of the water in the river
 - Has it changed in the last few years?
- The importance of the river
 - Are there any rare plants, animals or habitats that must be protected?
 - Is it used to supply our drinking water?
- The human-made impacts
 - Is there a wastewater treatment plant?
 - Is land used for agriculture or forestry?
 - Has the river been changed physically?

Background and location

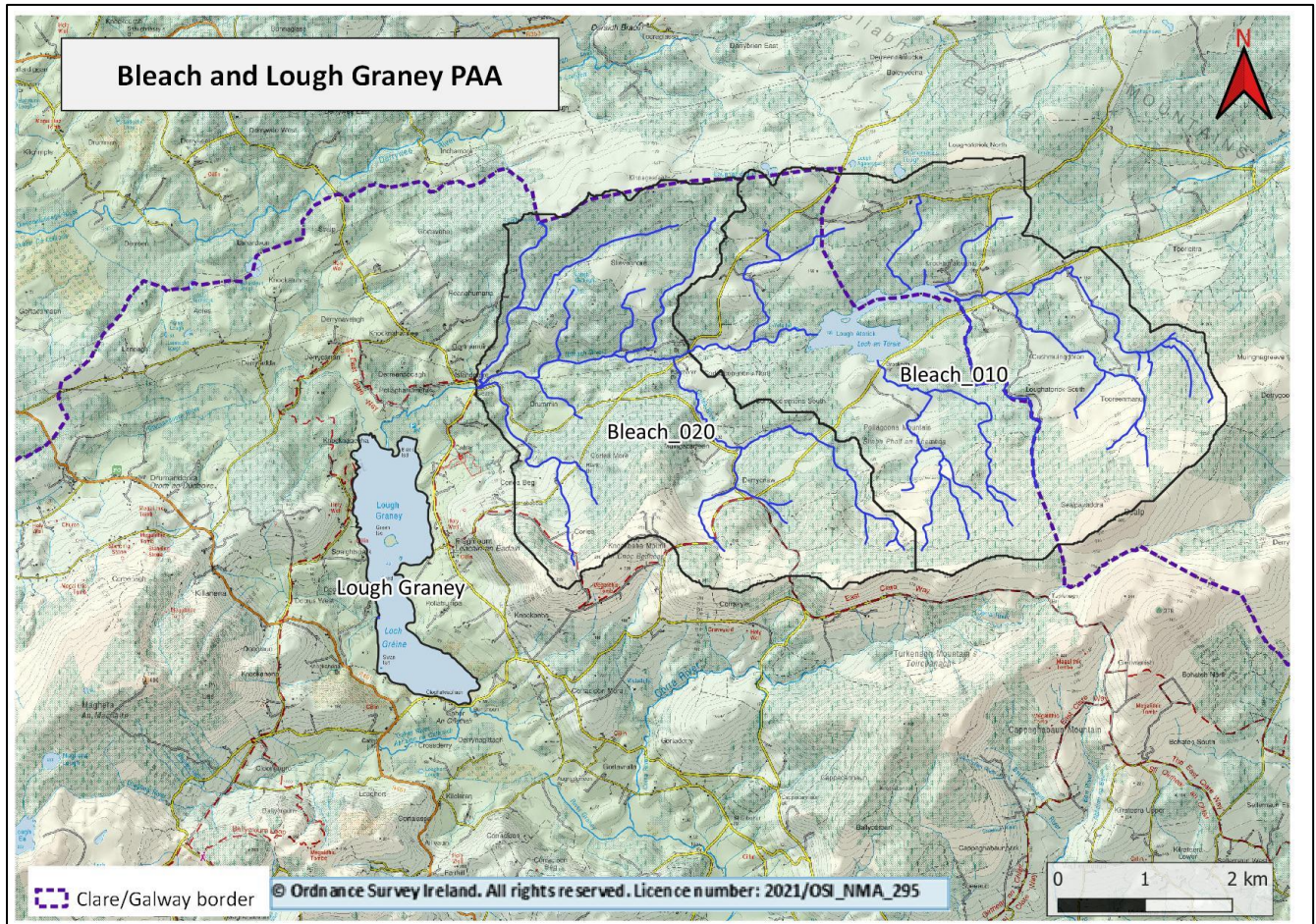
Most of the Bleach and Lough Graney PAA is located in Co. Clare, apart from a section of the eastern part of the PAA which is in Co. Galway. It comprises three sections or waterbodies which are distinguished by a unique number (shown in Figure 1 below):

- Bleach_010: This includes the headwaters of the Bleach River which rise in Co. Galway at Cushmuingdoran and Tooreenmanus, then flows north westwards into Co. Clare, into Lough Attorick. After the river leaves the lake, it continues to flow west to Corlea Bridge.
- Bleach_020: The river continues flowing westwards to Bleach Bridge and is joined by several tributaries draining lands from the north and south of the river from areas such as Slieveanore and Corlea. A large tributary draining the southeast of this waterbody, through

Derrycraw and Muingacareen, joins the main Bleach River channel approx. 300m downstream of Corlea Bridge.

- Lough Graney: This lake is situated within the Graney_020 waterbody which is not part of the PAA and is located southwest of Bleach_10 and Bleach_020. The Bleach river enters the lake at its northern shore. The Drumandora River and several other streams (not in the PAA) also flow into Lough Graney.

Figure 1 Bleach and Lough Graney Priority Area for Action



Catchment Description

The Bleach and Lough Graney PAA is in the northeast of County Clare with part of it located in south Co. Galway.

Bleach_010 and Bleach_020 are in upland terrain with the mountains of Pollagoona and Knockbeha in the southern part of the PAA. Slieveanore and Loughattoric North are in the northern part of the PAA. The area boasts a scenic value for walkers through these upland areas and around Lough Graney, through which the East Clare Way route passes.

Soils are generally blanket peat and poorly draining throughout. Land use across the PAA is primarily forestry with some agriculture.

Lough Graney is 3.7km² in size (370 hectares). It is located to the southwest of the Bleach River. The Bleach and Drumandora Rivers both flow into the north and north-western side of the lake

respectively with other smaller streams entering the lake from around its immediate catchment. The scenic village of Flagmount is located on its eastern side.

Lough Graney is a prime angling lake especially for brown trout and is one of the reasons why it was chosen as a PAA. It was also seen as an opportunity to closely liaise with other relevant bodies such as the Forest Service, a cross county local authority and an angling group in Woodford south Galway.

To note, Lough Graney is in waterbody Graney (Shannon)_020 which is not part of the Bleach and Lough Graney PAA. The River Graney flows from the lake at its southern shore in a southeast direction towards Lough Derg.

The PAA is within the European protected (Natura 2000) Sites of:

- Special Protection Area (SPA) Slieve Aughty Mountains
- Special Area of Conservation (SAC) Pollagoona Bog
- Special Area of Conservation (SAC) Loughattorick South Bog.

It also contains the Natural Heritage Area (NHA) Lough Attorick District Bogs.

Water Quality in the Bleach and Lough Graney PAA

Rivers are classified into five quality classes (status), with high being unpolluted and bad being the most polluted.



The Environmental Protection Agency assigns status at (approximately) 3-yearly intervals based on the standards set out in European legislation, the Water Framework Directive. Status is based on many different elements that altogether indicate the overall health of the river, for example the ecology recorded in river habitats, the physico-chemical condition of the river (oxygen levels, nutrient concentrations, indicators of organic and chemical pollution etc) and also the physical condition of the riverbed and bank.

We need to make sure that the Bleach and Lough Graney PAA achieves its quality objectives of Good Status and that Bleach_020 achieves High Status. We have reviewed water quality data available for each of the waterbodies and we have found that:

- Bleach_010 deteriorated from Good to Poor status between 2012 and 2014 and returned to Good status in 2017. We have identified that the reason for the deterioration in status was due to sediment in the river because of forestry activity such as clear felling. Nutrient levels in this waterbody are consistently within good status values and are therefore not an issue.
- Status in Bleach_020 dropped from High to Moderate status between 2012 and 2014 and improved to Good in 2017. This waterbody has a High status objective which means it must improve to High status by 2027. We believe that the issues impacting this waterbody were because of the impacts upstream in Bleach_010. There are limited chemistry data for this waterbody but they do indicate that there is not a nutrient issue here. A return to High status will be based on its natural rate of recovery and protective measures in both waterbodies to support water quality improvement and prevent further impact from forestry.
- Lough Graney is at Moderate status. We have identified that there is a nutrient issue in this lake with phosphorus levels that promote algal blooms and support the excessive growth of macrophytes which are aquatic plants.

Sources of Pollution

Pollutants find their way to rivers by a number of paths:

- They can be piped directly to the river from large sources such as wastewater treatment plants, or small sources such as faulty septic tanks, farmyards, roadside drains etc.
- They can flow across the ground to the river when nutrients which are applied to the land as fertiliser are washed off by rainfall before the crop and soil has absorbed them. This is usually a problem where soils are wetter and poorly draining, particularly during wet weather. This is the predominant pathway in the Bleach and Lough Graney PAA.
- Groundwater losses occur when pollutants move down through the soil and rock into groundwater and eventually into rivers, lakes and coastal waters. This usually occurs when too much fertiliser is applied to land, or when the soil isn't ready to absorb the nutrient (e.g., temperatures too cold, incorrect soil pH etc) and is common in free draining/ light soils.

From our desk study, we have identified two potential sources of pollution in the Bleach Lough Graney PAA which we will examine further. These are forestry and agriculture:

Forestry felling is the most likely source of sediment that impacted Bleach_010 and Bleach_020 causing the deterioration in status in the period 2010 - 2015. The predominant land use in both waterbodies is forestry planted on blanket peat. Much of this forestry was planted prior to knowledge and guidance on best practice by the Forest Service and therefore was planted to the edge of tributary streams and the main river channel itself leaving it as a high-risk source of run-off to the river when clear felling and replanting is undertaken. Run-off from forestry activity potentially contains excess sediment (peat is highly erodible), nutrients and brash (tree debris, twigs, bark, needles etc) for example and can impact water quality in a number of ways. Brash in water can decay and break down releasing nutrients causing growths of algae downstream. Nutrients are also released from disturbed soil especially peat which is lost to water through drainage routes. Sediment deposition in rivers can damage habitats such as beds for fish spawning and impact their food source. It also provides substrate for the growth of aquatic plants and weeds that can choke up our waters and lower oxygen levels.

Phosphorus levels in Lough Graney are generally below relevant limits but algal blooms occasionally occur, indicating an issue with phosphorus. There is also an issue with macrophyte (aquatic plants) growth that is driving the moderate status. There is likely an historical source of phosphorus here that may be bound up in lake sediments.

It is still unclear as to whether agriculture is a significant pressure to Lough Graney. There are areas with wet and poorly draining soils which mean a higher potential for nutrients such as phosphate to be lost to surface waters particularly in wet weather. Rivers and tributary streams to the lake are currently being sampled to assess this pressure further.

Other sources may also be identified during our fieldwork.

Next Steps

Community Engagement Meetings

We held a community information meeting in Flagmount on the 7th May 2019 to tell the public about our work and to hear about water quality concerns from people living in the area.

Comments and issues raised at the meeting included:

- Some views were expressed that landowners need to be supported in adopting measures to improve water quality otherwise it could be seen to be prohibitive to live in the area
- It was felt that more requirements on farmers to adopt measures is becoming onerous
- Questions were asked as to whether there are resources available to achieve water quality targets and are there rewards for environmental outcomes?
- General questions around water quality and impacts of pollution particularly from forestry, agriculture and pesticides. What happens if water quality targets are not met, and what are the penalties?
- Discussion around the rate of projected growth of forestry in Ireland in the future and the use of cypermethrin in forestry and impact to wildlife habitats
- There was acknowledgement and support that good water quality is needed and an interest in how collaboration with other bodies works in this programme

Agricultural Sustainability Support and Advice advisors held an information meeting for farmers within the PAA on 17th May 2019. During this meeting, the advisors gave details of the supports available for farmers in this catchment.

Local Catchment Assessment

LAWPRO scientists will undertake a catchment walk to try to identify the reasons for the deterioration in water quality. We will be looking for evidence of sediment and/or nutrient impact. We will collect field parameters (DO, conductivity, pH) at various locations and comment on extent and type of sediment. Where results are indicative of impact, we will walk upstream to identify the extent of impacted stretches and locate potential pressures.

A report on the outcome of this local catchment assessment work will be published here when available.

The table below gives some summary information on waterbody status, possible water quality issues and sources of pollution for the waterbodies in the Bleach and Lough Graney PAA.

Table 1 Ecological status, pressures and significance in the Bleach and Lough Graney PAA

WB Code	WB Name	WB Type	Risk	Ecological Status				EPA Characterisation Significant Pressure Category (Sub-category) (2013-2015)	EPA Characterisation Significant Issue (2013-2015)	Desk Study Review Potential Additional Pressures (2020)	Desk Study Review Potential Significant Issue (2020)
				2007 – 2009	2010 – 2012	2013 – 2015	2016 -- 2018				
IE_SH_25B07 0100	Bleach_010	River	<i>At Risk</i>	Un assigned	Good	Poor	Good	Forestry	Sediment	None	Sediment
IE_SH_25B07 0200	Bleach_020	River	<i>At Risk</i>	High	High	Mod	Good	Forestry	Sediment	None	Sediment and possibly nutrients
IE_SH_25_19 0	Lough Graney	Lake	<i>At Risk</i>	Mod	Mod	Mod	Mod	Forestry Agriculture (Pasture) Invasive species	Nutrients Nutrients Zebra mussel	None	Nutrients (phosphate) and sediment

Figure 1, Lough Graney, view from northern shore



Figure 2, WFD monitoring point, Corlea Bridge, Bleach_010

