Bundorragha Priority Area for Action – Deskstudy Summary

This is a summary of the deskstudy for the Bundorragha Priority Area for Action (PAA), Co. Mayo. Deskstudies are reports that are prepared by the catchment scientists using available information and data. To write these reports, we use information available for all waters that we plan to assess in the PAA. We get our information from:

- The Environmental Protection Agency
- Local Authorities
- Inland Fisheries Ireland
- Irish Water
- The Department of Agriculture, Food and the Marine
- Other public agencies.

The deskstudy also includes information learned from the public at a community information meeting specific to the Bundorragha PAA which was held on the 6th March 2019.

In our deskstudies, we examine a number of things:

- quality – how the water quality has changed since 2007
- importance – for example, if its water is used for drinking water, and if there are any rare plants or animals in it that we need to protect
- impacts from human activity – here we focus on impacts that damage water quality such as from wastewater discharges, agriculture, forestry practices, physical changes to the water body etc.

We complete desk studies first before starting our field-based assessments or local catchment assessments (LCAs).

1 Background and Location

LAWPRO catchment scientists work in specific catchment areas called Priority Areas for Action (PAAs). The Bundorragha PAA is located in Co Mayo, located in the Delphi Valley with the Mweelrea mountains to the west and Sheeffry Hills to the east. The PAA is made up of four water bodies: the Bundorragha_010, Bundorragha_020, Lackakeely_010 river water bodies and Killary Harbour coastal water body.

The Bundorragha_010 river water body is known locally as the Glencullin River and it rises in Mweelrea mountains (Ben Bury). It flows through Lough Cunnel, Glencullin Lough and Doo Lough.

Downstream of Doo Lough the river is known as the Owengarr River, and it flows into and out of Fin Lough. The Glenummera River flows into the southern end of Doo Lough on its eastern side but is not part of the PAA at this time. The river outflow from Fin Lough is known as the Bundorragha River (Bundorragha_020) and has multiple first and second order tributaries flowing into it.

The Lackakeely_010 river water body is made up of several small coastal streams which discharge directly into Killary Harbour along its northern shores. Killary Harbour coastal water body stretches from Leenaun at its eastern end to its exit into the Western Atlantic.

A catchment is an area of land around a river, lake or contributing into a body of water e.g. an estuary or coastal area. Rainwater that falls within a catchment eventually flows into rivers, lakes, or directly into estuaries or coastal waters bringing with it any contaminants that may be in the landscape. The map below (Figure 1) shows the catchment area for the Bunddoragha PAA, along with the current ecological status of the rivers and the coastal water body, plus the location of the monitoring points the Environmental Protection Agency (EPA) use to undertake their assessments of the river catchment. The PAA does not include all of the contributing catchment to Killary Harbour.

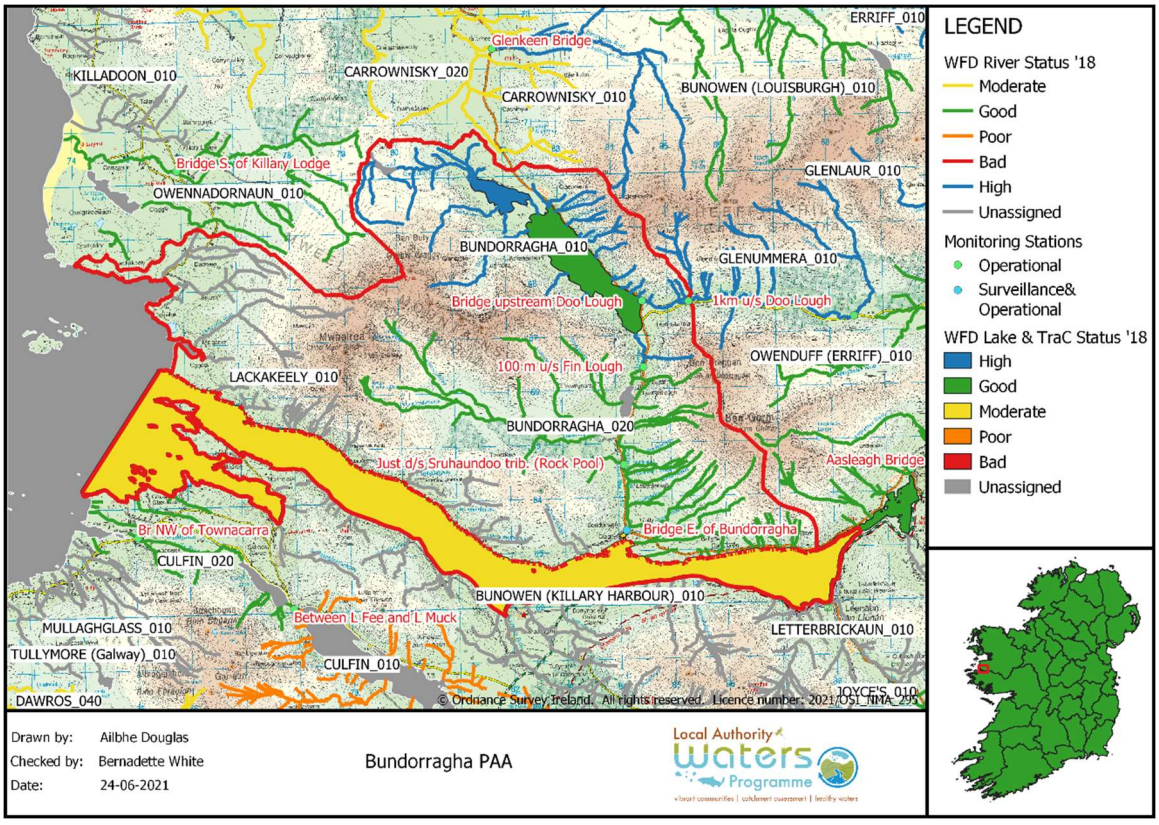


Figure 1 Bundorragha PAA and ecological status

2 Catchment Description

There are no towns or villages located within the catchment area however Louisburgh lies to the north and Leenaun to the south-east.

The dominant soil type is peat. Landuse in the PAA is largely comprised of extensive areas of sheep grazing on commonage, with a small portion with private forestry. There is a Coillte forestry plantation upstream of the PAA. There are two accommodation facilities within the PAA – Delphi Resort (Adventure Centre) and Delphi Lodge. The Bundorragha river is very popular for angling.

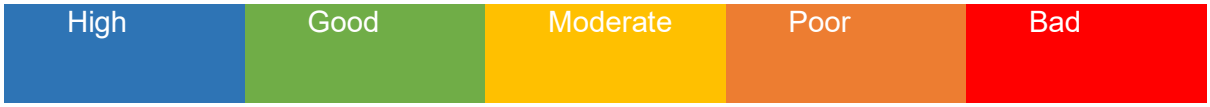
The PAA is part of the Mweelrea – Sheeffry – Erriff Complex SAC. There are several protected habitats and species identified for this SAC, however the Freshwater Pearl Mussel is the most significant species which requires restoration of its habitat. A section of the PAA is also included in the European Innovation Partnership (EIP) Project called the Pearl Mussel Project and further information can be found here: Welcome to the Pearl Mussel Project | Freshwater Pearl Mussel Ireland.

3 Blue Dot Catchments Programme

The Bundorragha River (Bundorragha_010 and Bundorragha_020) together with the Glenummera River are also part of the Blue Dot Catchments Programme which is a collaborative programme being delivered by a range of agencies as a means of focusing attention and resources towards the protection and restoration of our high status objective waters. The EPA have identified the waters in Ireland that should have a high status objective, and these are more commonly known as Blue Dot waters or Blue Dots. Ireland has seen a long-term declining trend in our high status waters. Blue Dot waters are our best quality waters. They have the highest ecological quality of all our waters and often a greater diversity of species that are sensitive to pollution. Blue Dot waters have a natural physical form that has not been changed much by human activities. Further information on this Programme can be found here - Blue Dot Programme - Local Authority Water Programme (lawaters.ie).

4 Water Quality History in the Bundorragha PAA

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



The EPA assign status at (approximately) 3-yearly intervals based on the standards set out in the Water Framework Directive (WFD). 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 river bed and bank or lake shore.

We need to make sure that the Bundorragha PAA achieves it's Good and High Status objectives. The Bundorragha_010 and Bundorragha_020 both have a high status objective (as does the upstream Glenummera River) while the Lackakeely_010 and Killary Harbour both have a Good status objective. We have reviewed water quality data available for each of the waterbodies (Table 1) and we have found that:

- **Bundorragha_010**: When this water body was selected to be included within the PAA, it was not regularly monitored by the EPA. However, it has now been added to the WFD monitoring programme and was assessed in both 2017 and 2020 and achieved high status.
- **Bundorragha_020**: The monitoring point for this water body has consistently achieved high macroinvertebrate status however the water body is classified at Good status because of both fish status and hydromorphology status at the monitoring point (Bridge east of Bundorragha).
- **Lackakeely_010**: This water body is not monitored by the EPA and therefore is unassigned. Its status is therefore unknown.
- **Killary Harbour**: This coastal water body had recovered to Good status in the 2013 to 2015 assessment period, but declined again in the 2016 – 2018 assessment period. The recent deterioration was driven by dissolved oxygen.

Table 1 Ecological status, pressures and significance in the Bundorragha PAA (high status objective water bodies highlighted in columns 1 and 2 in blue)

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 Potential additional pressures (2019)	Desk study Potential Significant Issue (2019)
				2007 – 2009	2010 – 2012	2013 – 2015	2016 - 2018				
IE_WE_ 310_0000	Killary Harbour	Coastal	*Review*	Mod	Mod	Good	Mod	Anthropogenic Pressures (unknown)	None specified		
IE_WE_ 32B010100	Bundorragha_010	River	*Review*	Unassigned			High	N/A	N/A		
IE_WE_ 32B010200	Bundorragha_020	River	*At Risk*	High	High	Good	Good	Hydro-morphology (dams, barriers, locks, weirs)	Altered habitat due to hydrological & morphological changes	Invasive Species (rhododendron)	
								Hydro-morphology (embankments)	Altered habitat due to hydrological & morphological changes	Section 4	Nutrients, Organic, Pathogens
								Hydro-morphology (channelisation)	Altered habitat due to morphological changes		
IE_WE_ 32L120720	Lackakeely_010	River	*Review*	Unassigned				Anthropogenic Pressures (unknown)	None specified	Agriculture (pasture)	

5 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.
- 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.

The main pressures in the Bundorragha catchment are from hydromorphology which means the alteration of the river flows or physical impacts to the rivers themselves which can affect sediment movement in the river. Hydromorphology pressures are associated with agriculture and forestry, plus with use of the river for recreation. As the Bundorragha is a highly sensitive catchment, even small pressures will have a big impact. Therefore, all activities in this PAA have the potential to impact the rivers. The activities have the potential to generate sediment loss to the river plus the abstraction of water and damage to habitats in the PAA has the potential alter the natural flow levels in the Bundorragha river. The accommodation services provided in the PAA need to manage all waste water treatment on their sites to ensure no loss of nutrients such as phosphorus to the rivers, which can impact on the algal growth in the main river channels where the freshwater pearl mussel habitat is.

6 Next Steps

Community Engagement Meeting

We held a community information meeting at Glen Keen Farm, Louisburgh on the 6th of March 2019 to tell the public about our work and to hear about water quality concerns from people living in the area. The meeting involved two presentations by LAWPRO followed by a Q&A session with the attendees.

The meeting attendees queried about the importance of the freshwater pearl mussel and if they are found throughout the river; they asked about the potential for a community group in the area and what consultation there would be between a potential Rivers Trust with landowners such as farmers. Members of the community present also expressed concern about the expansion of Rhododendron in the catchment.

Farmers Meeting

The Agricultural Sustainability Support and Advisory Programme (ASSAP) advisors from Teagasc held an information meeting for farmers within the PAA on 19th March 2019, where the advisors gave details of the supports available for farmers in this catchment. It was noted that the Pearl Mussel Project will be a significant opportunity for farmers in the catchment as the farmers can be

recognised and financially rewarded for delivering environmental benefits, for both biodiversity and for water. The LAWPRO and ASSAP Teams advised that they would be working closely with the Pearl Mussel Project Team throughout the lifetime of the Project.

7 Local Catchment Assessment

LCA work will be limited in the Bundorragha_010 given the 2017 assessment by the EPA of this water body which confirmed it was achieving high status. For Bundorragha_020, catchment walks will be undertaken to review the hydromorphological pressures acting on this water body. Discussions will be required with the EPA in relation to documented Hydromorphology pressure; with the IFI in relation to fish status assessments and with the Pearl Mussel Project on their progress and actions implemented on the ground. For Lackakeely_010, assessments will aim to establish water quality conditions in the accessible small streams which discharge to Killary Harbour. For Killary Harbour, we will review data and information available for the Killary Harbour Shellfish Pollution Reduction Programme and engage with the Sea Fisheries Protection Authority and Bord Iascaigh Mhara.

Bundorragha River

Killary Harbour