

Summary: Clodiagh Priority Area for Action Desk Study

This is a summary of the desk study carried out for the Clodiagh Priority Area for Action (PAA).

Desk studies are reports that are prepared by the catchment scientists using available information and data. To write these reports, we gather information for all waterbodies (e.g., tributaries, main channel, lakes) in the PAA. The information sources we use for this can include:

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

We also collect information shared to us by the public at a local community meeting which we arrange in each PAA. The Clodiagh community meeting was held in the Rathgormack Community and Hiking Centre in November 2018. Our desk study reports examine the following:

- How the water quality has changed over time,
- The level of protection that is needed e.g., if the water is used for drinking water or not, and if there are any rare plants or animals which rely on high water quality to survive,
- Impacts from human activity where we identify the sources of pressure which may be impacting a waterbody negatively. These sources of pressure can range from wastewater treatment, agriculture, forestry, physical changes to the riverbank etc.

Desk studies are completed before starting our field-based assessments also known as local catchment assessments (LCAs). The Clodiagh PAA desk study was written in 2019.

Background and location

The Clodiagh PAA comprises of single catchment area that contains a single section of the whole waterbody: **Clodiagh_010**, see map in Figure 1. It is a headwater rising in the Comeragh mountains at lake Mohra and lake Coumduala. There are no settlements in the waterbody, the village of Rathgormack is just outside the water body.

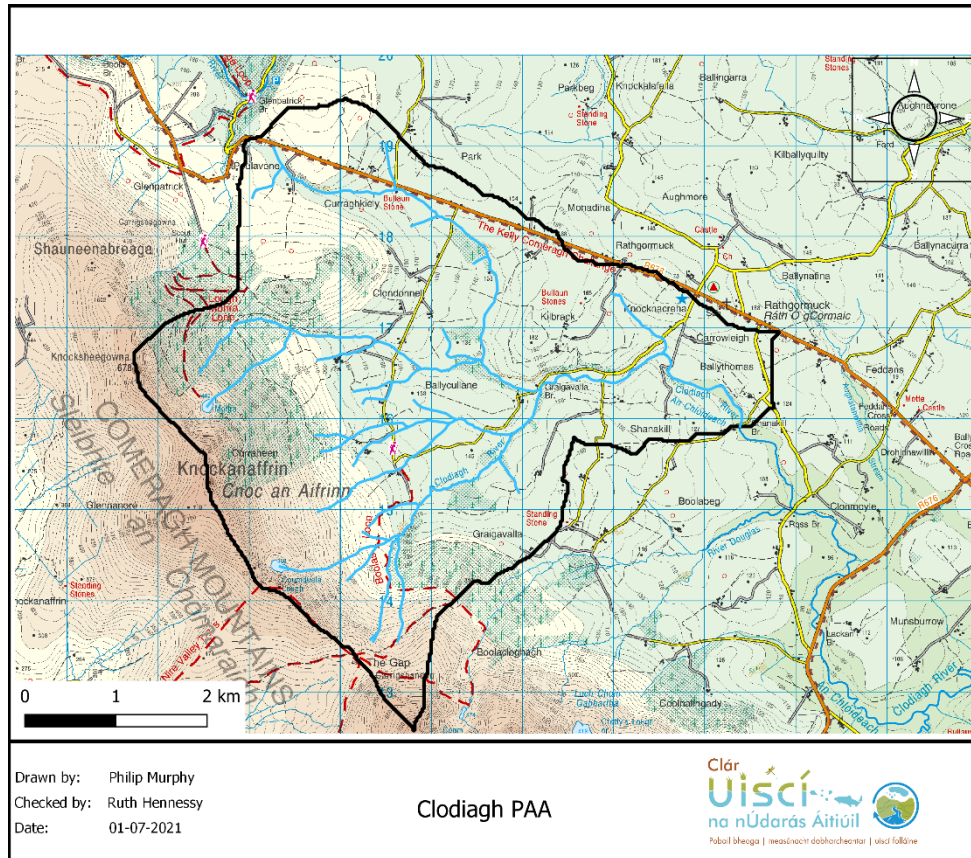


Figure 1 The Clodiagh PAA showing Clodiagh_010 waterbody (green) and catchment boundary (black).

Catchment Description

A catchment is an area of land around a river, lake. Rainwater that falls in the catchment flows to the river or lake and eventually out to the coastline into the sea. The topography of the area determines the catchment size. The catchment area of the Clodiagh is a mix of high elevation mountain as well as sloped and gradually sloped low lying area. As a result, there is a variable mix of peat, mineral, and heavy soils throughout the catchment. Agriculture is the main land-use in the catchment but there are stands of public and privately owned forestry too. There are small areas of peat bogs, and a large area is part of the Comeragh mountain Special Area of Conservation (SAC). The Clodiagh is also designated catchment for the protection of the Freshwater Pearl Mussel, a rare and critically endangered mollusc found in the Clodiagh.

Water Quality in the Clodiagh PAA

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



The Environmental Protection Agency assign 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 physio-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. The EU and national requirement is to achieve at least Good status on all waterbodies and High status on specially protected waterbodies.

We have reviewed water quality information available for each of the waterbodies and we have found that:

- **Clodiagh_010** is at Good status. Nutrients were not determined as an issue in the waterbody but nitrogen levels were slightly elevated.

See **Appendix 1**: Summary Pressures and Issues in Clodiagh PAA for further details.

Sources of Pollution

Pollutants (nutrients/chemicals/pathogens) can enter a waterbody at different scales and through a variety of pathways:

- **Direct**: Pollutants 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. The severity of this depends on the amount of treatment the pollutant has or hasn't received.
- **Indirect & overland**: Pollutants can flow across the ground to the river as "run off". This can occur in agriculture when nutrients 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 wet or poorly drained and during inclement weather. It can also occur on dry and well drained soils if heavy rainfall occurs immediately after nutrients are applied. Additionally, sediment/soil particles can be lost to the waterbody after heavy rainfall.
- **Indirect & underground**: Pollutants can reach deep into groundwater over time through a process called "percolation". Rainwater naturally moves down through the soil and rock into groundwater and eventually into rivers, lakes and coastal waters and it will carry pollutants along the way if they are present. Pollutants are present when for example too much fertiliser is regularly applied to land. If fertiliser is not absorbed by crops it will build up to excessive levels beyond the crop needs and be susceptible to environmental losses through percolation. Some soil types are particularly susceptible to percolation and so environmental losses vary substantially between catchment areas. This is the case with excessive nitrogen fertiliser use on free draining sandy soils which is expected to have a higher proportion of nitrogen losses than on a poorly draining heavy soil.

We have identified a number of potential pollution sources in the Clodiagh PAA from the desk study. These are agriculture (pasture losses) and forestry (felling events/activity). Other sources may also be identified during our fieldwork.

- Agricultural losses from pasture is a possible source of nutrient pollution in the Clodiagh waterbody but measurements will have to be taken on-site to confirm this. There are areas

within the catchment where the soils are both poorly or well drained and lying on a steep slope. This means there is a high risk of inorganic and organic fertilisers being washed off the land and into the river, streams, and drains following heavy rainfall.

- There is also a risk of sediment/soil loss to the waterbody due the presence of forestry stands near the riverbanks. Sediment/soil loss is expected to occur during and after felling events or if bank modification has occurred.

Next Steps

Information Meetings

A community information meeting was held in November 2018. Additionally, the Agricultural Sustainability Support and Advice Programme (ASSAP) which included advisors from both Teagasc and Glanbia held an information meeting for landowners in the catchment on the 4th February 2019. This meeting gave details of the supports available for farmers in this catchment as a Priority Area for Action.

Fieldwork

LAWPRO's catchment scientists will carry out fieldwork to identify areas with highest impact. We will collect water samples to learn about the nutrient levels in the rivers. We will walk selected stretches of the river to identify where pollutants are being lost from the land.

The outcome of this work will be published here (www.lawaters.ie) when available.

Appendix 1: Summary Pressures and Issues in Clodiagh PAA

WB Name (WB Code)	WFD Risk	Status Obj.	Eco. Status			EPA Characterisation Significant Pressure Category (Sub-category) (2013-2015)	EPA Characterisation Significant Issue (2013-2015)	Desk Study Review Potential additional pressures (2019)	Desk study Review Potential Significant Issue (2019)
			2002	2014	2017				
Clodiagh_010 (IE_SE_16C030100) (Shanakill monitoring station)	At Risk	Good	G	G	G	Agriculture (Pasture)	-	Nitrogen loss from vulnerable soils	LCA required
						Forestry	-	Clear felling practices	LCA required

Table 1 Summary table of water bodies within Clodiagh PAA