Lough Melvin and Drowes Priority Area for Action - Desk Study Summary

This is a summary of the desk study for the Lough Melvin and Drowes Priority Area for Action (PAA), Co. Leitrim. Desk studies are reports 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 desk study also includes information learned from the public at community information meeting specific to the Lough Melvin and Drowes PAA which was held in February 2019.

In our desk studies, we examine a number of things:

- **quality** – how the water quality has changed since 2007.
- **importance** – for example, if its water is being 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 discharges from wastewater, agriculture, forestry practices, physical changes to the water etc.

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

1. Background and Location

The Lough Melvin and Drowes PAA is a cross-border catchment, with part of the eastern side of the catchment being shared with Northern Ireland. Within the PAA there are a total of nine river water bodies (Sragarve_010, Kinlough_010, Ballagh_010, Glenaniff_010, Drowes_010, County River (Carran West), County River (Lattone), Rosfriar_010 and Lattone_010) and two lake water bodies (Lough Melvin and Lattone Lake) (**Figure 1**). Lough Melvin is the main lake waterbody in the sub-catchment with all river waterbodies to the east and south discharging into it. The Drowes_010 is the largest river waterbody in the sub-catchment and flows into Lough Melvin from both the north and south; it is also the connection between the Lough Melvin outflow and the coast, located to the northwest of the lake, near Tullaghan.

The landscape within the Lough Melvin and Drowes PAA is elevated in the east and southeast of the catchment, dominated by the Arroo and Dough/Thur Mountains, with the remainder of the catchment being low-lying and relatively flat with a gentle undulating landscape. The main villages in the PAA include Kinlough and Tullaghan with part of the environs of Bundoran extending into the catchment in the north-west, while Rossinver and Kiltyclogher are located to the east of the PAA.

The PAA was selected for several reasons:

- The Drowes_010, has recently deteriorated in water quality. This is an important waterbody as it flows into Donegal Bay which is a protected area water dependant habitat.
- Lough Melvin is also not meeting its water quality objective. The lake is also a protected area for drinking water.
- A previous catchment management plan was established for this area which can be built on and may inform and focus investigation.
- There are six unassigned river water bodies that flow into Lough Melvin. These are waterbodies which do not have any information or data available. It is important to determine the water quality of these waterbodies and to determine if they are impacting Lough Melvin.
- This is a cross border catchment which requires a cross agency approach.

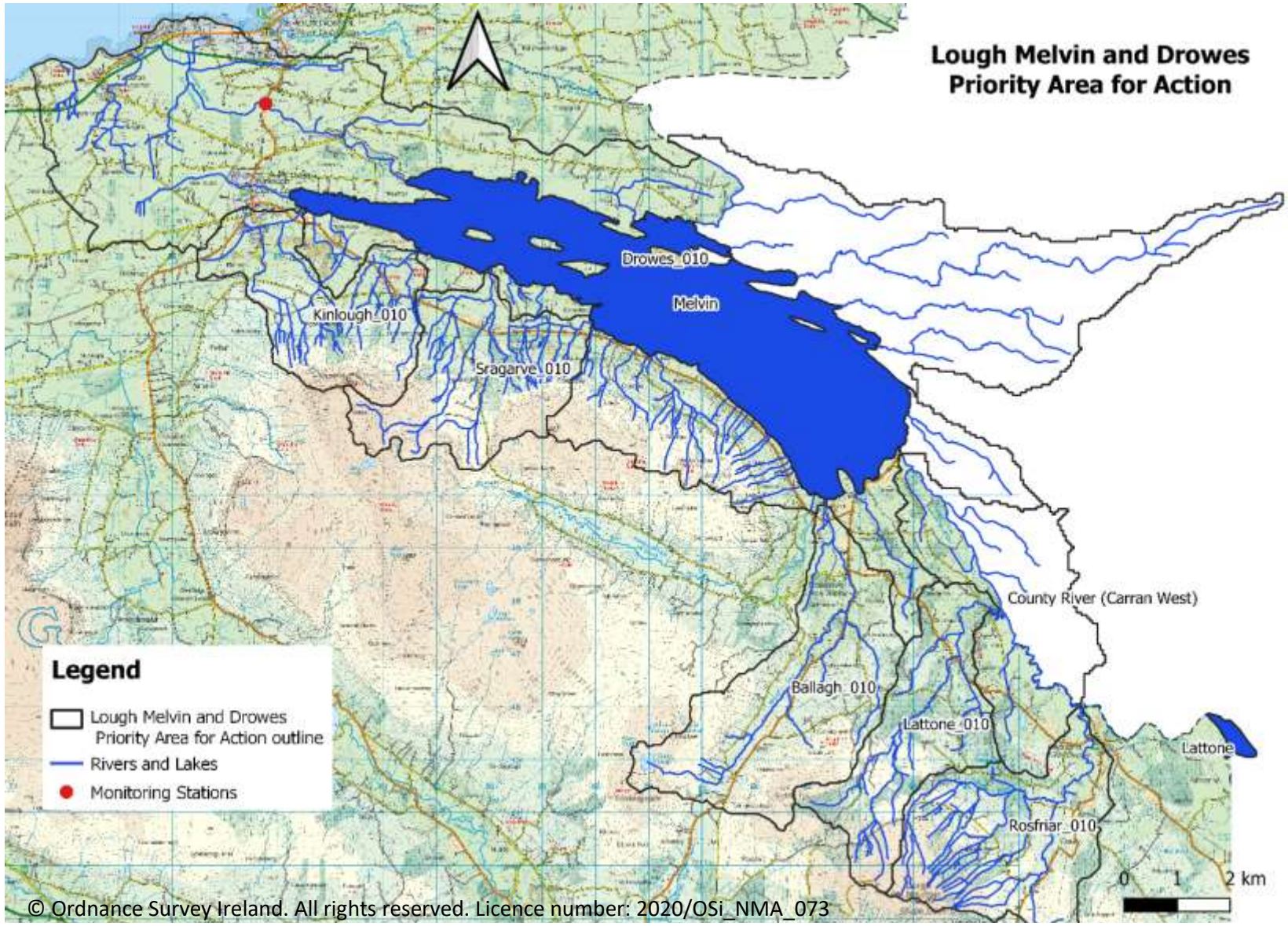

Figure 1 The Lough Melvin and Drowes PAA.

2. Catchment Description

Lough Melvin is a dominant feature within the PAA with land cover comprising a mixture of agricultural land with significant areas of peat and forestry situated to the south and south-east of the Lough Melvin. Soils are mainly wet throughout the PAA, although there are very small areas of dry soils in the upper mountains of the waterbody.

There are three groundwater springs located to the south of Rossinver and Kiltyclogher, which are used for drinking water, while Lough Melvin itself is also used as a drinking water supply. The Donegal Bay Special Protection Area (SPA), designated for its wetlands and water birds, is located to the west of the catchment, while the Sligo/Leitrim Uplands SPA is located to the south of Lough Melvin. The Aghavoghil Bog Natural Heritage Area (NHA) is in the middle of the catchment while the Dough/Thur Mountains NHA is in the south-east. The Lough Melvin and the Arroo Mountain Special Areas of Conservation (SACs) are within the catchment, both of which are also proposed Natural Heritage Areas (pNHAs).

3. Blue Dot Catchments Programme

While there are no Blue Dot waterbodies within the Lough Melvin and Drowes PAA, the Glenaniff River which flows down from the Arroo Mountains and into Lough Melvin has been identified as a Blue Dot River. The Blue Dot Catchment 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 Environmental Protection (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 Lough Melvin and Drowes PAA

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

High	Good	Moderate	Poor	Bad

The Environmental Protection Agency assign status approximately every 3 years 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 the physical condition of the riverbed and bank or lake shore.

We need to make sure that the waterbodies in the Lough Melvin and Drowes PAA achieve their good status objectives. We have reviewed water quality data available for each of the waterbodies (**Table 1**) and we have found that:

- **Lough Melvin:** is currently at moderate status and is required to achieve good status. We are unsure what is causing this unsatisfactory water quality in the lake as issues with excess nutrients have not been detected.
- **The Drowes_010:** is currently meeting its required good status. While no improvements are required, it is still important that the status is protected and that the waterbody is not allowed to deteriorate.
- There are a number of unassigned waterbodies within the Lough Melvin and Drowes PAA, these include: **Kinlough_010, Sragarve_010, Ballagh_010, County Water (Carran West), Lattone Lake** and the **Lattone_010**. Within unassigned waterbodies the status of the water quality is currently unknown. This means that there is no available information for these waterbodies, on whether they are currently not having water quality issues or, are having issues which are causing unsatisfactory water quality. It is, therefore, the role of the LAWPRO Catchment Scientist to determine what the current water quality is within these waterbodies and any issues which may be associated with them.

Table 1 Ecological status, pressure and significance in the Lough Melvin and Drowes PAA.

WB Name	WB Type	Risk	Ecological Status				EPA Characterisation Significant Pressure Category (Sub-category)	EPA Characterisation Significant Issue	Desk Study Review Potential Additional Pressures	Desk Study Review Potential Significant Issue
			07-09	10-12	10-15	13-18	(2013-2015)	(2013-2015)	(2019)	(2019)
Sragarve_010	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Forestry			
							Agriculture (Pasture)			
							Anthropogenic pressures (Unknown)			
Kinlough_010	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Forestry			
							Agriculture (Pasture)			
							Anthropogenic pressures (Unknown)			
Ballagh_010	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Forestry			
							Agriculture (Pasture)			
							Anthropogenic pressures (Unknown)			
Drowes_010	River	*At Risk*	Good	Good	Moderate	Good	Agriculture (Pasture)	Nutrient Pollution	WWTP	Nutrient Pollution (Phosphorus and Ammonia)
Lough Melvin	Lake	*At Risk*	Moderate	Moderate	Moderate	Moderate	Invasive Species			
							Urban Waste Water (Agglomeration PE of 1,001 to 2,000)			
							Anthropogenic pressures (Unknown)			
County River (Carran West)	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Agriculture (Pasture)			
							Extractive Industry (Peat)			
							Forestry			
							Anthropogenic pressures (Unknown)			
Rosfriar_010	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Forestry			
							Agriculture (Pasture)			
							Anthropogenic pressures (Unknown)			

Lattone_010	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Forestry			
							Agriculture (Pasture)			
							Anthropogenic pressures (Unknown)			
Lattone Lake	Lake	*At Risk*	Bad	Bad	Bad	Unassigned	Forestry			
							Agriculture (Pasture)			
							Invasive species			

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 had time to 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 is not ready to absorb the nutrient (e.g., temperatures too cold, incorrect soil pH etc.) and is common in free-draining/ light soils.

Agriculture is a common source of pollution throughout the Lough Melvin and Drowes PAA. Agricultural activities are the source of contaminants such as nutrients and other chemicals (e.g., grassland herbicides) that enter the rivers during wet weather by overland flow, direct discharges or via drains connected to the waterbodies. Wet soils are most vulnerable to phosphorus, sediment and herbicide/ insecticide runoff during rainfall events. Furthermore, in areas where bedrock is expose or near to the surface, the application of slurry or chemical fertiliser, herbicides etc. will result in the direct transfer of the contaminant into the groundwater, which may then re-emerge in or in other nearby rivers and streams.

Forestry is also a source of potential pollution in the PAA. Within the PAA there is both commercial (Coillte) and privately owned forestry. The main species planted is *Sitka spruce*. The majority of Coilte planting occurred before 1990 i.e., before the introduction of the Forest Service guidelines. These guidelines outline buffer zone management along watercourses, management of ground preparation and other forest operations, which are designed to protect water quality. Furthermore, drainage channels through the forest may link directly into river channels with little or no buffer zone in place. This may become an issue when carrying out forestry activity such as felling and could need to be investigated further if impacts are observed in the waterbody.

Urban Waste Water (UWW) are considered a significant source of pollution. Excess nutrients may be released from a UWW treatment plants as a result of a high rainfall event. This is when the plant is running at maximum capacity and is unable to cope with treating all the untreated wastewater coming into the plant.

Invasive species (zebra mussel) have been identified as a potential pollution for Lough Melvin which will need confirming through the LCA of the PAA. The zebra mussel (*Dreissena polymorpha*) is an invasive species in Ireland, which thrive in calcium and nutrient rich conditions. They filter algae from the water reducing chlorophyll levels. This can cause water clarity to increase depending on the size of the zebra mussel population. This can lead to changes in the plant community. Zebra mussels cannot be controlled or eradicated from a lake at present.

6. Next Steps

Community Engagement Meeting

A community information meeting was held in the Lough Melvin and Drowes PAA at the Rossinver Community Centre on the 21st of February 2019. The meeting was attended by members of the public and local stakeholders. The meeting involved two presentations, one from the LAWPRO Community Water Officer outlining community projects which are currently going on within the Lough Melvin and Drowes PAA and the wider county of Leitrim and a second presentation from the LAWPRO Catchment Scientist, outlining the work which is planned for the Lough Melvin and Drowes PAA to determine the recent decline of water quality in the Lough Melvin and Drowes catchment. This was followed by a question and answer session with the attendees.

Farmers Meeting

The Agricultural Sustainability Support and Advice Programme (ASSAP) advisors from Teagasc held an information meeting for farmers, in the Rossinver Community Centre on the 21st of June 2019. This meeting was attended by farmers located within the PAA and involved presentations from the ASSAP advisors and the LAWPRO Catchment Scientist. During this meeting, the advisors answered questions and gave details of the supports available for farmers in this catchment.

7. Local Catchment Assessment

Local Catchment Assessment is expected to commence during the summer of 2019 to confirm the source of pollution affecting water quality within the Lough Melvin and Drowes catchment and to identify any additional pollution sources. Where water quality improvements have already occurred within the rivers, inflowing streams and lakes, LAWPRO will work to identify activities that pose a risk to maintaining the current good water quality within these waterbodies. Where agricultural activities are confirmed as impacting water quality through the introduction of sediments, nutrients and/ or pesticides, we will communicate our LCA findings to the ASSAP advisors for the area, who will work closely with farmers providing them with free and confidential advice to address these activities.

Figure 2 Lough Melvin .