Summary: Lough Allen Priority Area for Action Desk Study

This is a simple summary of the desk study on the Lough Allen Priority Area for Action (PAA).

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

- the Environmental Protection Agency
- local authorities
- Inland Fisheries Ireland
- Irish Water
- Other public agencies

It will also include information learned from the public at a local community meeting which we plan to hold in late 2021.

The study helps us to understand:

- The quality of the water in the lake and the rivers
    - Has it changed in the last few years?
- The importance of the lake and the rivers
    - 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?

We do desk studies first and then local catchment assessment studies (LCAs), so an LCA report contains the most up to date information where available.

Background and location

LAWPRO catchment scientists work in specific catchment areas called Priority Areas for Action (PAAs). The Lough Allen PAA is mostly in Co. Leitrim with the south-easterly section of the PAA in Co. Roscommon. A small area in the very north of the PAA is in Co. Cavan. It originally consisted of seven waterbodies. We have added a further two waterbodies that flow into the PAA because we have identified the water quality to be impacted. We now plan to carry out work in nine waterbodies:

- The Lough Allen waterbody is a lake. It is a very large, deep lake which is longer from north to south than it is from east to west. It is nearly three times as long as it is wide. The land around the east, west and north of Lough Allen is mountainous. The land falls steeply towards the lake, except in the north-west and in the north-east where the river Shannon and the Owengar river flow in through lowland valleys. The land to the south of the lake where the Shannon flows out is also lowland, the small hills here are mostly drumlins. Drumshanbo town sits at the southern tip of the lake. From Drumshanbo the Lough Allen canal runs out of the lake and to the south, where it joins up with the Shannon near Leitrim village.
- The section of the River Shannon from its source in Co. Cavan, to Shannonbridge at the very bottom of County Roscommon, is known as the Upper Shannon. The Shannon is a very long river and for this reason it is divided into many sections or waterbodies which are distinguished by a unique number. The Shannon waterbodies within the Lough Allen PAA are:
    - Shannon (Upper)_030: This section of the Shannon flows from the village of Dowra, on the Cavan-Leitrim border, to the townland of Annagh Lower where it flows into Lough Allen.
    - Shannon (Upper)_040: This section of the Shannon flows out of Lough Allen at Bellantra Bridge, on the Leitrim-Roscommon border, to Battle Bridge on the R284 near Leitrim village. Battle bridge is also the junction between the Shannon and the Lough Allen Canal. The Shannon (Upper)_040 also includes a stream which flows into Lough Allen in the north-east near the village of Ballinagleragh in County Leitrim.
- The Owengar river flows into Lough Allen from the north-west near the village of Drumkeeran. Our focus is on a short section of the river which flows from Cloonmeone Bridge and into Lough Allen just north of Drummans Island.
- The Diffagher river flows into the Owengar river at Cloonmeone Bridge. Our focus in this river is on the section impacted by a landslide in June 2020. This section runs from Dawn of Hope Bridge to Cloonmeone Bridge.

- The Drumshanbo Stream flows from the south-western slopes of Slieve Anierin, it flows through Drumshanbo town and into lough Allen just north of the town at Carricknabrack.
- The Sheskinacurry waterbody is made up of four small streams flowing down the western slopes of Slieve Anierin and into the south-eastern shores of Lough Allen. The streams flow from the townlands of Barnameenagh, Barnameenagh West, Lavaur and Greaghfarnagh into the townlands of Cornashamsoge, Derryteigeroe and Derrintober.
- The Stony waterbody is made of four small streams flowing down the western and north-western slopes of Slieve Anierin and into the eastern shores of Lough Allen. They flow through the townlands of Cormongan, Srabrinagh, Cornamucklagh South and Cleighran Beg.
- The Tarmo waterbody is made up of three small streams flowing down the eastern and south-eastern slopes of Corry Mountain and into the western shores of Lough Allen. Two of the streams are in Co. Leitrim. The third and most southerly stream lies along the Leitrim-Roscommon border.

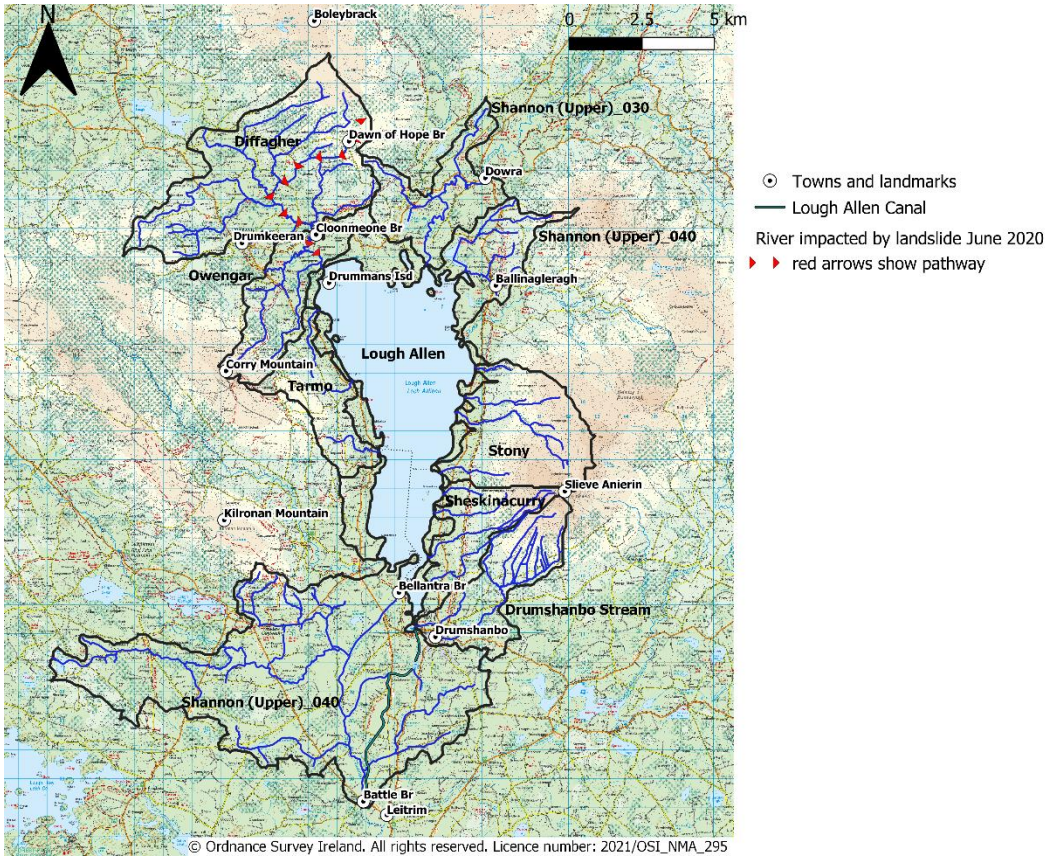

Figure 1 The Lough Allen PAA

Catchment Description

A catchment is an area of land around a river, lake, or other body of water. Rainwater that falls in the catchment flows to the river, lake, or coastline.

The main settlement in the catchment area of the Lough Allen PAA is Drumshanbo town in Co. Leitrim. It sits at the southern end of Lough Allen. The villages of Dowra and Ballinagleragh are in the north-east of the PAA. Agriculture is the main land-use in the PAA with some areas of forestry on higher ground. The soils are generally wet soils throughout the PAA although there are patchy areas of dry soils in some places. Notably, on the western shores of lough Allen to the south-east of Corry Mountain and to the west of the Shannon south of Kilronan Mountain.

In the past, the mountains to the east and west of Lough Allen were mined, mainly for coal. Today there are some quarries and windfarms on the mountains to the west, the coal mines are no longer used but some are now tourist attractions. Many bogs on the Corry and Kilronan Mountains are National Heritage Areas (NHA). Boleybrack to the north and Slieve

Anierin to the east are Special Areas of Conservation (SAC) for wildlife. Hill walking is popular along walking trails such as the Miner's Way and Historical Trail and the Leitrim Way. Cycling is popular along the Kingfisher Cycling Trail. Many visitors to Lough Allen are on boating holidays along the Shannon Waterway. Day cruising and water sports are also popular on Lough Allen. It is known among anglers for pike and trout fishing.

Water Quality in the Lough Allen PAA

Rivers and lakes are classified into five quality classes (status), with high being unpolluted and bad being the most polluted. We need to make sure that the waterbodies in the Lough Allen PAA are at Good status.

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 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.

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

- The Lough Allen waterbody is currently at Moderate status. We have identified that the levels of the nutrient phosphorous in the lake is too high. Water levels in the lake are controlled by sluice gates at Bellantra Bridge, this human change to the natural flow of water in the lake may be impacting the wildlife.
- The status of the Shannon (Upper)_030 waterbody is currently unknown.
- The Shannon (Upper)_040 waterbody is at Moderate Status. Although the water quality in the section of this waterbody flowing out of Lough Allen is satisfactory, there is a lack of sensitive types of fish, such as salmon. This may be due to human changes to the natural flow of the river. Inland Fisheries Ireland (IFI) and the Environmental Protection Agency (EPA) plan to review this issue. The next stage of our work will focus on the section of this waterbody flowing into Lough Allen from the Ballinagleragh area. There is currently no available data on the water quality of this section.

- The Owengar waterbody is currently at Good Status. This is the status that is required for this waterbody (the objective status). The next stage of our work will focus on the small 2km long section of this waterbody between where the Diffagher river flows in at Cloonmeone Bridge and where it flows into Lough Allen. We have identified that this section of the river may be carrying too much sediment into Lough Allen due to the landslide event in the Diffagher river in June 2020.
- The Diffagher waterbody is currently at Moderate Status. We have identified that the levels of sediment in the river are too high. This is due to a landslide that happened in June 2020.
- The Drumshanbo Stream waterbody is currently at Poor Status. We have identified that the levels of the nutrients ortho-phosphate, ammonia and nitrate in the river are too high. This is the cause of unsatisfactory water quality in the river.
- The status of the Sheskinacurry waterbody is currently unknown.
- The status of the Stony waterbody is currently unknown.
- The status of the Tarmo waterbody is currently unknown.

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

Water body 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 (2019)	Desk study Review Potential Significant Issue (2019)
			2007 - 2009	2010 - 2012	2010 - 2015	2013-2018				
Allen	Lake	*At Risk*	Moderate	Poor	Moderate	Moderate	Agriculture (Pasture)	Nutrient Pollution	Urban Waste Water	Total Phosphorous
									Single House Discharges	
									Landslide	Nutrient pollution and Sediment
									Hydromorphology	Altered Habitat
							Invasive Species (Zebra Mussels)	Morphological Changes	No available records of Zebra Mussel observed in Lough Allen, the pH of the lake is not typical of that which suits Zebra Mussel.	
Shannon (Upper)_030	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Agriculture (Pasture)	Nutrient pollution	Forestry	Unknown
									Urban Waste Water	
Shannon (Upper_040	River	*At Risk*	Moderate	Moderate	Moderate	Moderate	Anthropogenic Pressures (Unknown)	Fish Status	Agriculture	Unknown
									Urban Waste Water	
									Single House Discharges	
									Forestry	
Owengar (Leitrim)_020	River	*Not At Risk*	Good	Good	Good	Good	Not at Risk; meeting objective therefore no significant issue		Landslide (impacting 2km stretch upstream of Lough Allen)	Nutrient Pollution and Sediment

Water body 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 (2019)	Desk study Review Potential Significant Issue (2019)
			2007 - 2009	2010 - 2012	2010 - 2015	2013-2018				
Diffagher	River	*Not At Risk*	Good	Good	Good	Good	Not at Risk; meeting objective therefore no significant issue		Landslide	Nutrient Pollution and Sediment
Drumshanbo Stream	River	*At Risk*	Poor	Moderate	Poor	Poor	Urban Waste Water	Nutrient Pollution	Forestry	Nutrient Pollution and Biochemical Oxygen Demand
								Organic Pollution	Peat Extraction	
							Agriculture (Pasture)	Nutrient Pollution	Section 4 discharge licence	
Sheskinacurry	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Unknown	Unknown	Agriculture	Unknown
									Forestry	
									Peat Extraction	
Stony	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Unknown	Unknown	Agriculture	Unknown
									Forestry	
									Peat Extraction	
Tarmo	River	*Review*	Unassigned	Unassigned	Unassigned	Unassigned	Agriculture (Pasture)	Nutrient Pollution	Quarries	Unknown
									Forestry	

Sources of Pollution

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

- They can be piped directly to the river or lake 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 or lake 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.

We have identified potential sources of pollution in the Lough Allen PAA which we will examine further. These are agriculture, wastewater, forestry, peat cutting, quarries and landslides. Other sources may also be identified during our fieldwork.

Next Steps

Information Meetings

We are planning to hold a community information meeting towards the end of 2021 to tell the public about our work and to hear about water quality concerns from people living in the area.

Agricultural Sustainability Support and Advice advisors from Teagasc will hold an information meeting for farmers in this catchment. During the meeting they will give details of the supports available for farmers in this catchment.

Local Catchment Assessment

LAWPRO's catchment scientists will carry out fieldwork to identify areas with highest impact. We will collect water samples to learn more about the nutrient levels in the rivers flowing into

Lough Allen. We will walk selected stretches of these rivers and along the shoreline of the lake to identify where pollutants are being lost from the land.

The outcome of this work will be published here when available.