Castlegar Priority Area for Action – Desk study Summary

This is a summary of the desk study for the Castlegar Priority Area for Action (PAA), which is located on border of Co Galway and Co. Roscommon. Desk studies 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 desk study also includes information learned from the public at a community information meeting specific to the Castlegar PAA which was held on the 1st of October 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 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 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 Castlegar PAA is located in east Galway, and there are a number of towns and villages located in and around the PAA including, Mountbellew, Moylough, Ballygar and Newbridge. The PAA covers an area approximately 158km².

The PAA is made up of six river waterbodies which are distinguished by a unique name and number**.** The six waterbodies are Castlegar_010, Castlegar_020, Shiven (South)_010, Killian_020, Shiven (South)_050 and Suck_120.

Castlegar_010 rises in the townland of Killamude west and flows northwards from Lough Nahinch towards Mountbellew. The Castlegar_020 rises near Moylough, the river flows towards Mountbellew, through a built-up area of housing estates and flows into the Shiven_030.

Shiven (South)_010 has two distinct tributaries, before they confluence to form the main river channel. One tributary rises in the townland of Derreen and the other tributary rises in the townland of Rockfield west, and flows southeast past Kilkerrin. The two tributaries confluence at the old school on the R364, 3km south of Kilkerrin.

There are three distinct tributaries that confluence to form the Killian_020 main river channel. These three tributaries confluence in the towland of Kilcoosh. From here the river flows southeast, flows under the Kingstown bridge and into Killian_030.

Shiven (South)_050 flows east from the Ballinamore Bridge for 3.7km to Islandcausk Bridge where it flows into the Shiven (South)_060 river waterbody. Suck_120 begins at Mount talbot in Co. Roscommon and flows south for approximately 10 km where it flows through the bridge at Ballyforan and meets the Suck_130.

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 Castlegar PAA, the current ecological status of the rivers plus the location of the monitoring points the Environmental Protection Agency (EPA) use to undertake their assessments for the rivers.

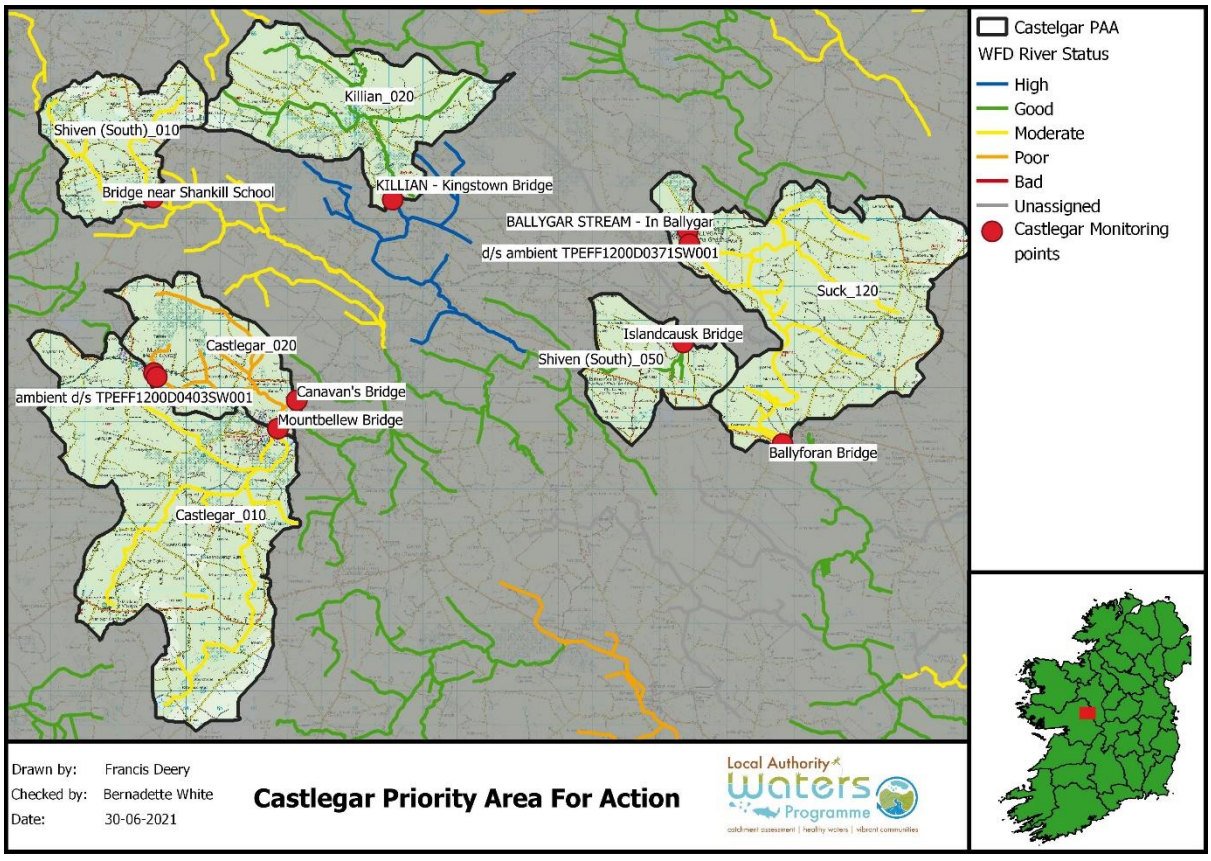


Figure 1: The Castlegar PAA

2. Catchment Description

Agriculture, forestry, and peat extraction are the main land use activities in the Castlegar PAA. The main crop is permanent pasture with small areas of Winter Wheat, Winter Barley, Winter Oats, Spring Barley and Spring Oats. There are small areas of traditional hay meadow and species rich grassland, which would have been and possibly are currently in agri – environmental schemes. In terms of soil type there is a broad 50/50 split between well drained soils and peat/poorly drained soils in the PAA.

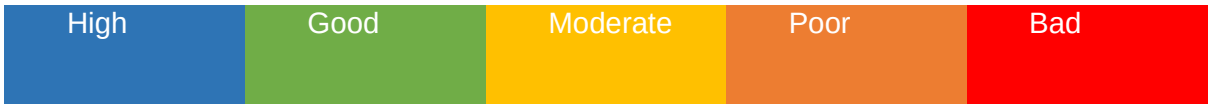
The Suck_120 is part of the river Suck Callows Special Protection Area (SPA) which is also a Natural Heritage Area (NHA). The conservation objectives for the SPA are to protect and restore the habitat for the Whooper Swan, Wigeon, Golden Plover, Lapwing and Greenland White – fronted Goose. There are also several protected bogs and a turlough within the PAA, and there are a number of turloughs located around the PAA. Camderry Bog SAC and Lough Lurgeen Bog/Glenamaddy Turlough SAC are both located in the Killian_020 catchment.

3. Blue Dot Catchments Programme

The Shiven (South)_050 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 Cashla 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. 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 or lake shore.

We need to make sure that the Castlegar PAA achieves at least Good Status, with the Shiven (South)_050 achieving high status. We have reviewed water quality data available for each of the waterbodies in the PAA (Table 1) and we have found that:

- **Castlegar_010** is currently at moderate ecological status, this river has been moderate since 2005.
- **Castlegar_020** is currently at poor ecological status, this river has been poor since 1987.
- **Shiven (South)_010** is currently at moderate ecological status, it has been moderate since 2014.
- **Killian_020** is currently at good ecological status, Killian_020 is meeting its ecological objectives.
- **Shiven (South)_050** is currently at good ecological status, it has been at good since 2015, and is therefore failing to meet its high-status objective.
- **Suck_120** is currently at moderate ecological status, it has been at moderate since 2009.

Table 1: Ecological status, pressures and significance in the Castlegar PAA (blue indicating high status)

WB_Name	Ecological Status				EPA Characterisation Significant Pressure Category (Sub – Category) 2013 – 2015)	EPA Characterisation Significant Issues (2013 – 2015)	Desk Study Potential additional pressures (2019)	Desk Study potential Significant issues
	2007 - 2009	2010 - 2012	2012 - 2015	2013 – 2018				
Castlegar_010	MES	MES	MES	MES	Agriculture (Pasture)	Nutrient Pollution	No additional pressures identified	
						Altered habitat due to morphological changes		
					Hydromorphology (Channelisation)	Altered habitat due to hydrological changes		
						Altered habitat due to morphological changes		
Castlegar_020	PES	PES	PES	PES	Urban Wastewater (Agglomeration PE of 1,001 – 2,000 (Mountbellew)	Organic Pollution	Urban Wastewater (Moylough WWTP)	Nutrients
						Nutrient Pollution		
Killian_020	UA	HES	MES	GES	Agriculture (Pasture)	Nutrient Pollution	No additional pressures identified	
						Altered habitat due to morphological changes		
					Forestry (Forestry)	Nutrient Pollution		
						Other significant impacts – Sediment		
					Domestic Wastewater (Wastewater Discharge)	Nutrient Pollution		
Shiven (South)_010	PES	PES	MES	MES	Domestic Wastewater (Wastewater Discharge)	Nutrient Pollution	No additional pressures identified	
					Agriculture (Agriculture)	Nutrient Pollution		
						Altered habitat due to morphological changes		
Shiven (South)_050	HES	HES	GES	GES	Hydromorphology (Channelisation)	Altered habitat due to hydrological changes	Peat Cutting	Sediment and Nutrients (Ammonia)
						Altered habitat due to morphological changes		
Suck_120	MES	MES	MES	MES	Hydromorphology (Channelisation)	Altered habitat due to hydrological changes	No additional pressures identified	

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

There are a number of sources of pollution in the Castlegar PAA. Hydromorphology, agriculture and Urban wastewater are the pressures that are present in the Castlegar PAA.

- **Hydromorphology (Channelisation):** Hydromorphology is the alteration of river flows or physical impacts to the rivers themselves which can affect the sediment regime and flow in the river. Hydromorphology pressures are impacting the Castlegar_010, Shiven (South)_050 and Suck_120. The Mountbellew Drainage District is present on the Castlegar_010 and the Suck Drainage District is present in Shiven (South)_050 and Suck_120.
- **Urban Wastewater:** The Mountbellew WWTP is contributing to the nutrient and organic pollution of the Castlegar_020. Moylough WWTP is also contributing to the nutrient load that is present in Castlegar_020.
- **Agriculture:** Agriculture is impacting on Castlegar_010, Shiven (South)_010 and Killian_020, in terms of nutrient pollution. The majority of the land in these three river catchments is permanent pasture.

6. Next Steps

Community Engagement Meeting

We held a community information meeting on the 2nd of October 2019 in the Malthouse in Mountbellew 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 main issues raised at the meeting were related to the level of silt in the rivers and there was also comments and question around grants for Septic tanks from Galway County Council. Another topic of conversation of the Q&A session was the Mountbellew wastewater treatment plant.

Farmers Meeting

The Agricultural Sustainability Support and Advisory Programme advisors from Teagasc held an information meeting for farmers within the PAA on the 13th of February of 2020, where the advisors gave details of the supports available for farmers in this catchment. The meeting was attended by farmers located in the PAA and it involved presentations from the ASSAP advisors and LAWPRO Catchment Scientist followed by a Q&A session with the attendees.

7. Local Catchment Assessment

The desk study helps us inform our approach for undertaking our own fieldwork or LCA. It is anticipated that the LCA will start in Spring 2020 and will include biological assessments using the Small Streams Impact Score (macroinvertebrates, macroalgae and macrophytes) plus water quality probes to record dissolved oxygen, conductivity, temperature, and pH, plus water samples will be taken for lab analysis. Samples will be taken at various points on all six rivers to narrow down the issues in the two rivers. Assessments upstream and downstream of point sources such as the WWTPs, will also be undertaken. This first round will inform where further detailed assessments and catchment walks may be required.

Castlegar_010 river at the bridge in Mountbellew