

Lough Currane Priority Area for Action

Desk Study Report

(AFA0112)



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Summary

The Lough Currane Priority Area for Action (PAA) consists of two river waterbodies: Cummeragh 010 and Isknagahiny Lough Stream 010 (Capall river). Lough Currane itself is not included in the PAA. Both waterbodies are high status objective sites 'At Risk' of not meeting this objective. Cummeragh 010 has been at 'Good' status from 1992 up to 2018. The status of Cummeragh 010 is driven by its macro-invertebrate community. Isknagahiny Lough Stream was at 'High' status until 2015 when it dropped to 'Good'. The status of Isknagahiny Lough Stream is based on hydromorphology (its biological status is 'High' (2018)).

The PAA lies within the Finglasriver[Waterville]_SC_010 subcatchment (id: 21_8) which is part of the Dunmanus-Bantry-Kenmare catchment (hydrometric area 21). The PAA waterbodies are also part of the Lough Currane Freshwater Pearl Mussel catchment, one of the top 8 priority areas for Freshwater Pearl Mussel conservation under SI 296 of 2009. In 2018, the Freshwater Pearl Mussel EIP project, a voluntary result based agri-environmental programme for farmers was started in 2018 and will run for 5 years. The PAA also includes part of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

The area is characterised by steep mountain slopes and areas of open heath and blanket bog. Rainfall is high—between 2 and 3 meters annually. Soils are shallow, peaty and the bedrock is at or near the surface in many areas. The geology is Devonian Old Red Sandstone, overlain by blanket peat or sandstone till. The ground waterbody (Sneem) is a poor aquifer (PI) or moderately productive only in local zones (LI). As a result, most of the rainfall is discharged rapidly to surface water courses via surface drains, overland flow or shallow groundwater pathways. Drainage density is high and there are several lakes. Cummeragh 010 is the river sub basin around Derriana Lough ('High' status) and flows into Cummeragh 020 ('High' status). The EPA monitoring point for Cummeragh 010 is approximately 2.5 km downstream of the Derriana Lough outflow. Isknagahiny Lough Stream 010 is a headwater that flows into Isknagahiny Lough (unassigned status).

The significant issue in Isknagahiny Lough Stream 010 is the erosion of the bank downstream of the monitoring point on the left-hand side (hydromorphology). The suspected cause is recent clearing of vegetation along the bank. The significant issue in Cummeragh 010 is not clear. The land between Derriana Lake and the EPA monitoring point (Ford d/s of Cummeragh Bridge) consists mainly of bog and moorland with some plantation forestry and pasture on reclaimed land. There is also a quarry and a seatrout and salmon hatchery in the catchment. Due to the nature of the catchment activities related to land drainage, afforestation and land reclamation have the potential to release nutrients and sediments to the river.

Catchment assessment in Cummeragh 010 will consist of a stream walk starting at the EPA monitoring point (Ford d/s of Cummeragh Bridge) working upstream towards Derriana Lake outlet. In Isknagahiny Lough Stream, an assessment of the riparian vegetation at the monitoring point will be carried out.

1 Background

Table 1-1: Background information on the Lough Currane PAA

Priority Area for Action	Catchment Number	Catchment Name	Sub catchment	Region	Local Authority
Lough Currane	21	Dunmanus-Bantry-Kenmare	Finglasriver[Waterville]_SC_010	Southwest	Kerry

Priority Area for Action	No. of <i>At Risk</i> WBs	No. of <i>Review</i> WBs	No. of dRBMP Prioritised WBs	No of WBs for Status Improvement:		
				2021	2027	Beyond 2027
Lough Currane	2	0	2	1	1	0

Reason for selection	
	<ul style="list-style-type: none"> • Two water bodies are failing to meet protected area objectives for Priority 8 Freshwater Pearl Mussels. • Opportunity to work with Waterville rivers trust and interested local community. • Major sea trout and salmon fishery (unique sea trout) • One deteriorated water body. • Two <i>At Risk</i> High Ecological Status objective water bodies.

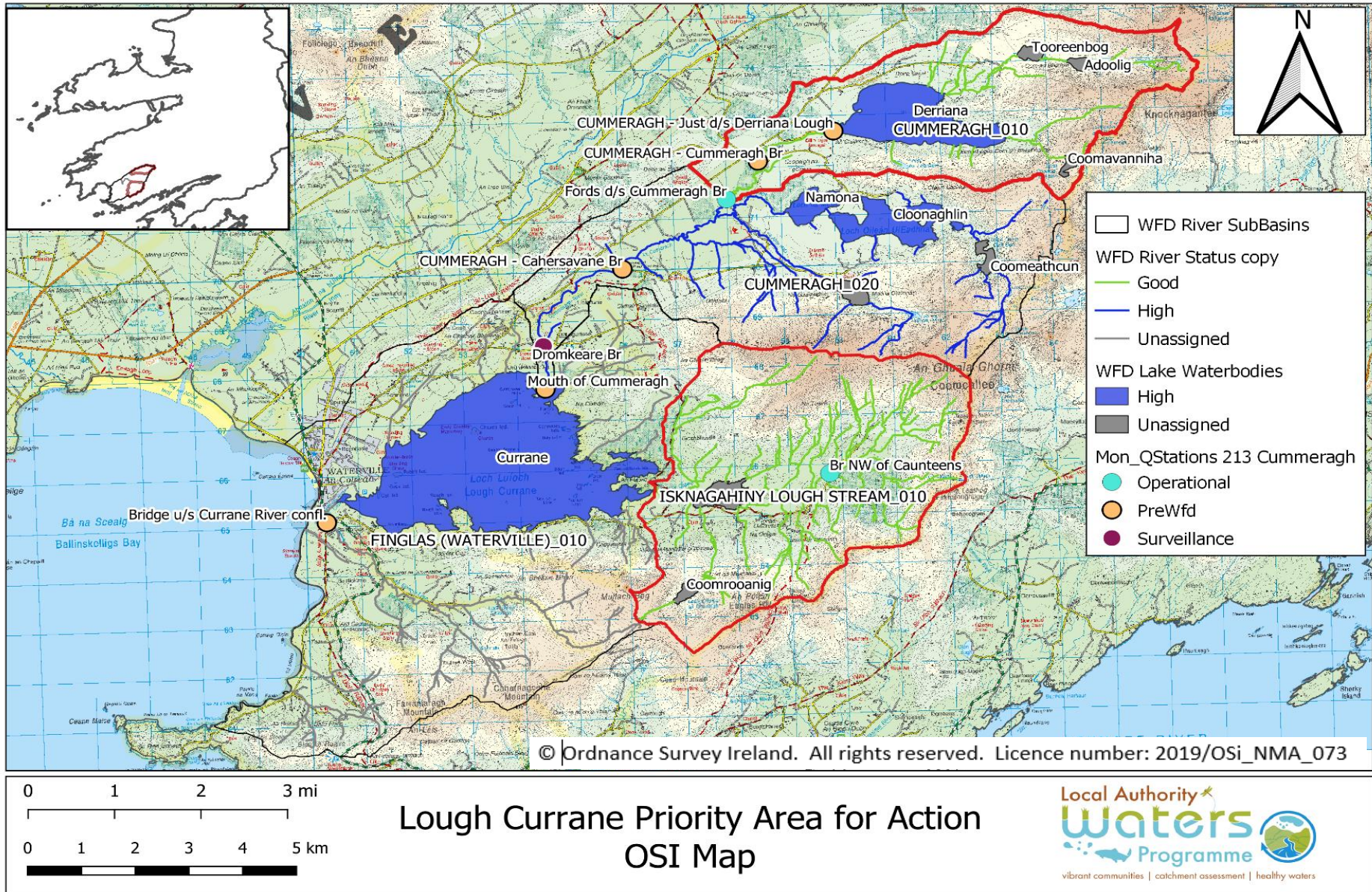


Figure 1-1: Lough Currane Priority Area for Action Ecological Status (2015).

Table 1-2: Summary table of individual waterbodies within the Lough Currane PAA

Water body Code	Water body Name	Risk	Obj.	Ecological Status			Pressures		
				2009	2012	2015	Category	Subcategory	Sig? (Y/N)
IE_SW_21C040400	Cummeragh 010	At Risk	High	Good	Good	Good	Anthropogenic Pressures	Unknown	Y
IE_SW_21I030100	ISKNAGAHINY LOUGH STREAM_010 (Capall River)	At Risk	High	High	High	Good	Forestry	Forestry	Y
							Hydromorphology	Riverbank Erosion	Y

Table 1-3: Summary table of waterbodies and monitoring stations associated with the PAA

Water body Code	Water body Name	Risk	Ecological Status	Monitoring station			
			2010-2015	Code	Description	Type	Data
IE_SW_21_377	Tooreenbog Lake	Not at risk	Unassigned	LS210021301800010	Tooreenbog Lough Shore 1	Investigative	n/a
IE_SW_21_372	Adoolig Lake	Not at risk	Unassigned	n/a			
IE_SW_21_389	Coomavanniha Lake	Not at risk	Unassigned	n/a			
IE_SW_21_449	Derriana Lough	Not at risk	High	LS210021301200010 to LS210021301200080	M_1 to M_5 (macrophytes) Mid lake station Shoreline at boat slip	Operational monitoring	Macrophytes, General Conditions
IE_SW_21C040400	Cummeragh 010	At Risk	Good	RS21C040200	Just d/s Derriana Lough	PreWFD	1990-2006 & 2018 (Q value)
				RS21C040300	Cummeragh Br	PreWFD	No data
				RS21C040400	Fords d/s Cummeragh Br	Operational	1990-2015 (Q value)
IE_SW_21C040700	Cummeragh 020	Not at risk	High	RS21C040600	Dromkeare Br	Surveillance & Operational	Biology, chemistry, supporting chemistry
IE_SW_21I030100	ISKNAGAHINY LOUGH STREAM_010	At Risk	Good	RS21I030100	Br NW of Caunteens	Operational	Invertebrate status, Hydromorphology
IE_SW_21_423	ISKNAGAHINY LOUGH	Not at risk	Unassigned	n/a			

Source: EPA 2018

2 Receptor information

2.1 Overview table

Table 2-1: Receptor information for Cumberagh 010 waterbody

		Plot graph	Map Y/N	Derriana Lough	Cumberagh 010 (outflow from Derriana L)	Cumberagh 020
				IE_SW_21_449	IE_SW_21C040400	IE_SW_21C040700
Risk Category			N	<i>Not at risk</i>	<i>At risk</i>	<i>Not at risk</i>
Biological Status (Inverts)	2010-2015		Y	High	Good (1992-2018)	High
	2016-2018				Good (at Derriana L. outlet)	High
	trends in Q values				no change	No change
Biological Status (Fish)	2010-2015				High	n/a
Ortho-P (rivers) or total P (lakes) (mg/l P)	baseline 2010-2015 (high, good thresholds)			0.006 (<0.010, High)	no chemistry data	0.005 (<0.010, High)
	Trends - stat sig/env. sig?			no trend, only 3 years of data (2013-2015)		Downwards (not sig)
	distance to threshold			Far		Far
Ammonia (mg/l N)	baseline 2010-2015 (high, good thresholds)			0.019 (<0.040, High))		0.017 (<0.040, High))
	Trends - stat sig/env. sig?			no trend, only 3 years of data (2013-2015)		Downwards (not sig)
	distance to threshold			Far		Far
TON (mg/l N)	baseline 2010-2015			no data		0.129 (<1.80, Good)
	Trends - stat sig/env. sig?					Upwards
	distance to threshold					Far
Other water quality data						
Hydromorphology	RHAT score	Table				

		Plot graph	Map Y/N	Derriana Lough	Cummeragh 010 (outflow from Derriana L)	Cummeragh 020
	Evidence of arterial drainage			No	No	No
Ecological status	2010-2015		Y	High	Good	High
	Element driving status			Macrophytes	Macroinvertebrates	Macroinvertebrates
	change (since 1st cycle)			n/a	No Change	No Change
Protected areas	Special Area of Conservation (SAC)		Y	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC		
			Y	Margaritifera Sensitive Area: Catchments of SAC populations listed in SI 296 of 2009		
Drinking water						
Relevant info. from notes of EPA biologist (from storyboards)						
Significant issue/impact for receptor (e.g. PO4)					Sediment/PO4	

Source: EPA 2018

Table 2-2: Receptor information for ISKNAGAHINY LOUGH STREAM_010

		ISKNAGAHINY LOUGH STREAM_010	ISKNAGAHINY LOUGH
		IE_SW_21I030100	IE_SW_21_423
Risk Category		<i>At risk</i>	<i>Not at risk</i>
Biological Status (Inverts)	2010-2015	High	
	2016-2018	High	
	trends in Q values	no change	
Biological Status (Fish)	2010-2015	n/a	
Ortho-P (rivers) or total P (lakes) (mg/l P)	baseline 2010-2015 (high, good thresholds)	One value reported in Nov 2010 (0.012 mg/l ortho-P, 0.010 mg/l Nh4-N, 0.2 mg/l TON)	No chemistry data
	Trends - stat sig/env. sig?		
	distance to threshold		
Ammonia (mg/l N)	baseline 2010-2015 (high, good thresholds)		
	Trends - stat sig/env. sig?		
	distance to threshold		
TON (mg/l N)	baseline 2010-2015		
	Trends - stat sig/env. sig?		
	distance to threshold		
Other water quality data			
Hydromorphology	RHAT score	0.78 (Good) (2015)	
	Evidence of arterial drainage	no	
Ecological status	2010-2015	Good	
	Element driving status	Hydromorphology	
	change (since 1st cycle)	Disimproved (was high)	
Protected areas	Special Area of Conservation (SAC)	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	
		Margaritifera Sensitive Area: Catchments of SAC populations listed in SI 296 of 2009	
Significant issue/impact for receptor (e.g. PO₄)		hydromorphological (bank erosion, absence of bank vegetation) and lack of riparian tree cover (rough grazing/improved pasture)	

2.2 Hydromorphology

Table 2-3: ISKNAGAHINY LOUGH STREAM_010 hydromorphological assessment (RHAT) score

HA	21
Pre WFD River Code	21I03
Pre WFD River Name	ISKNAGAHINY LOUGH STREAM
Station Code	RS21I030100
River Basin District	South Western
Local Authority	Kerry County Council
WFD River Waterbody Code	IE_SW_21I030100
WFD River Waterbody Name	ISKNAGAHINY LOUGH STREAM_010
Station Name	Br NW of Caunteens
Easting	59763
Northing	65816
Waterbody Survey Code	WBS034438
Waterbody Survey Name	IE_SW_21I030100 - 28 Jul 15
Hydromorphology Survey Name	Morphology - RS21I030100 - 28 Jul 15
Assessment Year	2015
Fieldsheet Date	28/07/2015 03:30 PM
Visibility Upstream	20
Visibility Downstream	80
Hydromorphology Class	Good
Hydromorphology Score	0.78125
Sum Attribute Score	25/32
Channel Form Score	4 (High)
Channel Form Comments	
Channel Vegetation Score	2 (Moderate)
Channel Vegetation Comments	very little woody habitat
Channel Substrate Condition Score	4 (High)
Channel Substrate Condition Comments	
Channel Barriers To Continuity Score	4 (High)
Channel Barriers To Continuity Comments	
Bank Structure Left Score	1 (Moderate)
Bank Structure Right Score	1.5 (Good)
Bank Structure Comments	DS LHS eroding, bare earth. US RHS slight poaching
Bank Vegetation Left Score	0.5 (Poor)
Bank Vegetation Right Score	1 (Moderate)
Bank Vegetation Comments	LHS DS bare earth, gravel eroding, RHS DS simple vegetation, odd tree
Riparian Landcover Left Score	2 (High)
Riparian Landcover Right Score	1 (Moderate)
Riparian Landcover Comments	LHS Scrub US and DS, RHS RG US and scrub DS
Floodplain Connectivity Left Score	2 (High)
Floodplain Connectivity Right Score	2 (High)

Source: EPA 2018

3 Significant pressures

3.1 Initial EPA characterisation

Table 3-1: Initial EPA characterisation

Water body Name	Id	Category	Sub Category	Name	Significant?	Pressure & Impact details
CUMMERAGH_010	WBP0006283	Anthropogenic Pressures	Unknown	n/a	Yes	Other Significant Impacts
ISKNAGAHINY LOUGH STREAM_010	WBP0005467	Forestry	Forestry	n/a	Yes	Altered habitat due to Morphological changes
	WBP0006403	Hydro-morphology	Riverbank Erosion	n/a	Yes	Altered habitat due to Morphological changes

EPA 2018

3.2 Interim conclusions on significant pressures

CUMMERAGH_010: Quarry (Qy 060) and seatrout and salmon hatchery (Waterville Fisheries and Development Group, Section 4 licence) between outlet of Derriana Lough and Cumberagh bridge. The effluent from a seatrout and salmon hatchery reaches the river, via constructed wetlands. Reclaimed land for pasture along both bank of the river from just d/s Derriana Lough to Cumberagh Bridge (Fig. A-1). Commercial forestry (Coillte) also north and beside Cumberagh Bridge.

ISKNAGAHINY LOUGH STREAM_010: reclaimed land for pasture to the north of the EPA monitoring point (Br NW of Cauteens). It also appears that the tributary draining pasture to the north of the EPA monitoring point has been straightened. Commercial forestry (Coillte) to the east of the monitoring point. Recent clear felling as suspected cause of bank erosion and hydromorphological issues.

4 Pathways information (diffuse pollution)

Potential critical source areas (circled) are those with improved grassland on shallow mineral soil and correspond to areas with high risk of phosphate runoff to surface waters (Appendix A).

Table 4-1: Pathway information check list

Factor	Description
Aquifer type	LI: locally important aquifer which is moderately productive only in local zones PI: Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
Topography	high mountain steep slopes, flat valley floor
Bedrock unit	devonian old red sandstone
GWB	Beara Sneem (IE_SW_G_019) Poorly productive bedrock
Gwb flowpath	Due to the generally low permeability of the aquifers within this GWB and the high slopes, a high proportion of effective rainfall will runoff, or discharge rapidly to surface water courses via interflow and shallow flow. Baseflow to rivers and streams is likely to be relatively low. GW is generally concentrated in a thin zone at the top of the rock, although deeper groundwater flows along faults and major fractures. Note fault close to monitoring point in Cummeragh 010
Subsoil type	Rock, blanket peat, and TDSS (Sandstone till - Devonian)
Subsoil permeability	mostly n/a rock is near or at surface, some moderate in Cummeragh 010
Groundwater vulnerability	Mostly E & X on mountain slopes, high to moderate d/s Derriana Lough
Soil type	Acid mineral shallow rocky peaty (AminSRPT) and blanket peat (BkPT)
Soil drainage	Poor (blanket peat and poorly drained soil).
Po4 susceptibility (surface)	moderate to high
No3 susceptibility (surface)	low /very low
No3 susceptibility (sub surface)	low /very low
Po4 PIP (Surface water)	moderate (rank 4)
No3 pip (Surface water)	low /very low
No3 pip (ground water)	low /very low
likely main flow pathways	near surface drainage and overland flow
likely CSAs	Shallow mineral soils with land reclamation

From *Desk Studies for Areas for Action, EPA Recommendations. Version 3, January 2019*

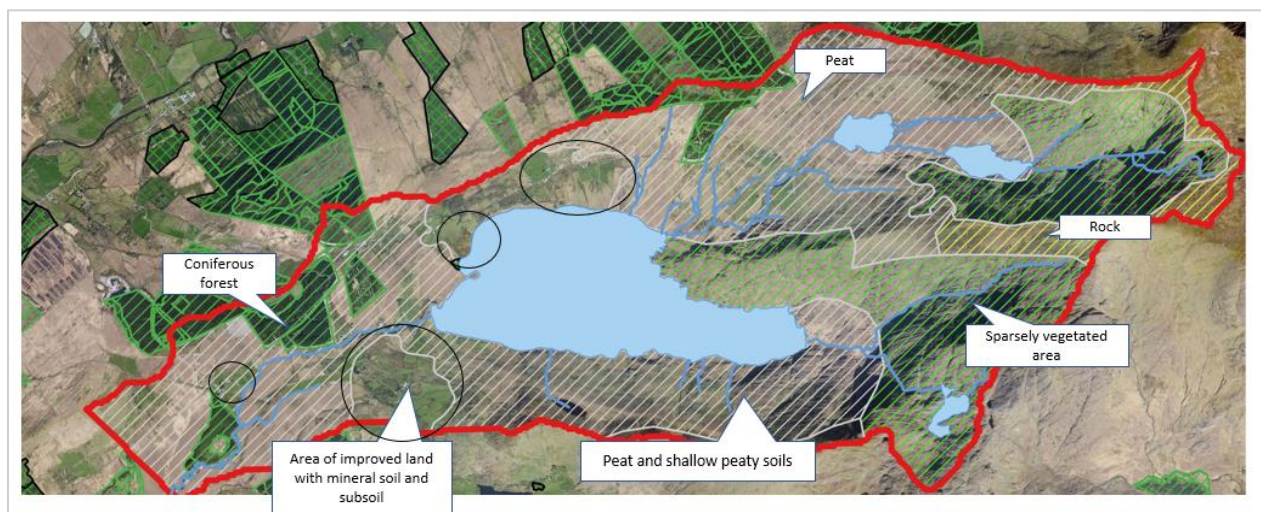


Figure 4-1: Land use and soil type in Cummeragh 010.

5 Interim conclusions on the PAA

Cummeragh 010 and Isknagahiny Lough Stream 010 (Capall river). Lough Currane itself is not included in the PAA. The Currane catchment is one of the 'top 8' freshwater pearl mussel catchments.

Cummeragh 010

- Cummeragh 010 is a 'High' status objective river and one of the top 8 priority areas for Freshwater Pearl Mussel conservation under SI 296 of 2009.
- 'Good' status from 1992 up to 2018 and as such is 'At risk' of not meeting its WFD objectives.
- The status is determined by the macro-invertebrate community at 'Fords d/s Cummeragh Br'.
- There is no hydrochemistry monitoring data for the stream; however, the hydrochemistry from Lough Derriana is indicative of 'High' status.
- Significant pressures haven't been identified in the initial characterisation except to evaluate the suitability of the lake influence on the monitoring point.
- Due to the nature of the catchment activities related to land drainage, afforestation and land reclamation have the potential to release nutrients and sediments to the river. There is also a quarry and a seatrout and salmon hatchery in the catchment.
- Potential critical source areas are those adjacent to the stream channel with a direct pathway to the receptor.

Isknagahiny Lough Stream 010 (Capall river)

- Isknagahiny Lough Stream 010 (Capall river) is a 'High' status objective waterbody and part of the freshwater pearl mussel SAC.
- The stream was at 'High' status until 2015 when it dropped to 'Good'.
- The status of the stream is due to its hydromorphology (its biological status is 'High' (2018)).
- The RHAT (River hydromorphological assessment technique) score for the waterbody was 'Good' in 2015. Hydromorphological issues were as follows: erosion of the bank downstream of the monitoring point on the left-hand side bank, a lack of woody debris in the channel and a lack of riparian woodland.
- Workplan to check if the condition of the bankside still eroded and the quality of riparian vegetation.
- Consult with EPA on outcome of hydromorphological assessment using MQI (morphological quality index).

6 Workplan

6.1 EPA further characterisation actions

WB Name	Id	Action	Responsible Organisation	Further Characterisation Action details
CUMMERAGH_010	FC002581	IA1 Provision of Information	Environmental Protection Agency	Question over suitability of monitoring point. The reason it's not High status is because it's a lake outflow essentially. Decided that this is not a representative site because it's just a lake outflow.
ISKNAGAHINY LOUGH STREAM_010	FC003322	IA8 High status RWB pressures	Local Authority Waters Programme (LAWPRO)	Subbasin is within the Cumeragh-Currane Priority FPM Catchment. RWB has a HES Objective but dropped from HES (2007-2012) to GES (2010-2015), driven by RHAT score (biology otherwise indicative of High status). Forestry and associated hydromorphological pressures are the likely significant pressures here as discussed with Kerry Co Co. There is a large patch of clearfelling (approx. 330m x 1km) adjacent to a tributary coming in from the south side of the main stream, and the monitoring station is just downstream (RS211030100), which may be the source of silt.

6.2 Local Catchment Assessment

Note: follow protocol for sampling in Sampling in Freshwater Pearl Mussel Rivers (LAWPRO Ecology Working Group Briefing Note No. 4). to include the following:

- Contact local NPWS Ranger and Freshwater Pearl Mussel Project in advance of survey and advise on planned local catchment assessment (LCA) work. Check stretch of river with bathyscope prior to kick sample.
- Pre survey any stretch of river in FPM SAC prior to sampling using a bathyscope. Surveys in FPM rivers to be undertaken on sunny days which aids and increases underwater visibility.
- Identify freshwater pearl mussel habitat as delineated by NPWS (2018). No kick sampling will be carried out in these areas. Record the following instream observations: macroalgal and macrophyte cover and density in these areas. This can be undertaken by wading carefully using the bathyscope.
- Catchments with other extant populations (as per Sensitive Areas layer). Perform presence/absence check before kick sampling.
- Catchments with previous records, but current status unknown (as per Sensitive Areas layers). Perform presence / absence check before kick sampling.

CUMMERAGH_010

1. IA1: Provision of Information: discuss with EPA the suitability of the monitoring point (Ford d/s Cumeragh Br). EPA further characterisation suggests it is 'just a lake outflow'. Is it possible for an outflow river from a lake to be 'good' status, when the lake status is 'high'?

2. IA7/IA8: local catchment assessment (SSIS) downstream from Derriana Lough – starting at the EPA monitoring point—Ford d/s Cumberagh Br and working upstream to the two pre-WFD monitoring points: Cumberagh Br and just d/s Derriana Lough. Assess potential impacts of forestry, land drainage and reclamation and point sources: trout fishery and quarry. Does the ecological status change between these points?
3. If neither of the first two steps resolve the issue, work more generally with Freshwater Pearl Mussel project to restore the natural hydrological regime of the catchment – lower levels of artificial drainage and less intense land use. The cultivated areas of the catchment are small and confined to an area immediately north of the lake and to either side of the outflow.

ISKNAGAHINY LOUGH STREAM_010

1. Update hydromorphological status – either by the EPA or LAWPRO, has the condition of the riparian structure and riparian vegetation improved? Is the LHS bank still bare of vegetation and being eroded? Consult with EPA on outcome of hydromorphological assessment using MQI (morphological quality index).
2. SSIS of the EPA monitoring point: any changes in status since 2015/2018? If so proceed upstream and assess inputs from pasture (to the north) and forestry (to the south).

7 Review of possible mitigation options

Possible mitigation options include interpreting nutrient and sediment pathways to watercourses. Given the high rainfall and surface driven flow paths, this would involve buffer margins along waterways and restoring/enhancing retention within the catchment through wet grassland and peat habitat management and/or the use of alluvial/riparian woodland.

8 Communications

Public meeting Dromid Centre, Cillín Liath, Waterville, Co. Kerry. 5th June 2019.

Streamside meeting for farmers organised by Teagasc Agricultural Sustainability, Support and Advice Programme (ASSAP) on 09 January 2020.

Date of completion of the desk study: 10 December 2018

Appendices

Appendix A: Surface water phosphate impact potential map

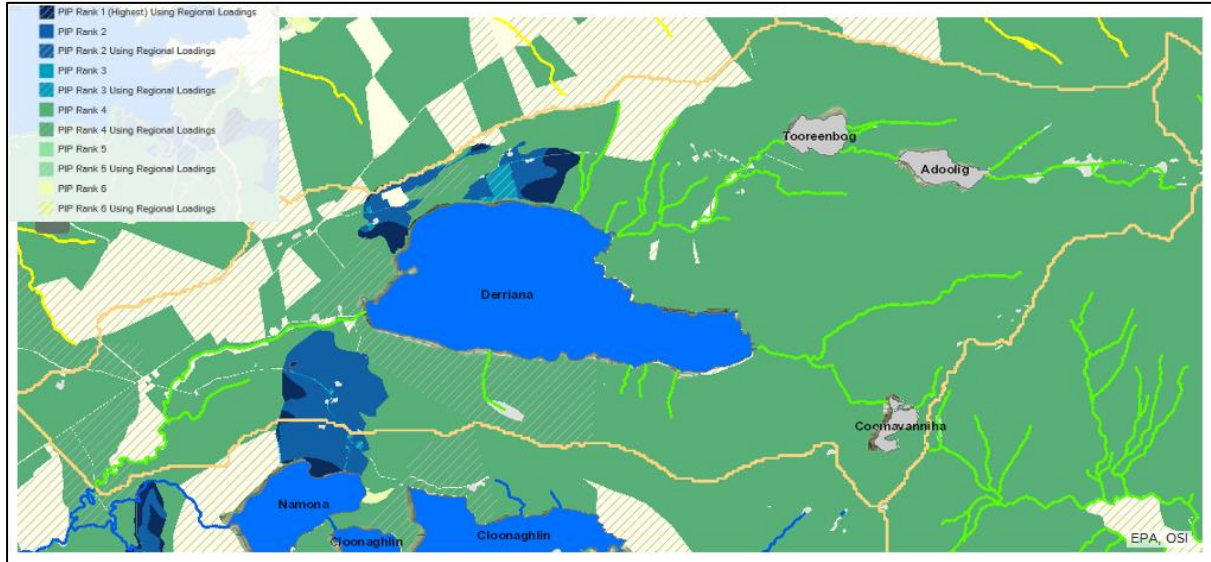


Figure A-1: Surface water phosphorus impact potential map (EPA 2018)

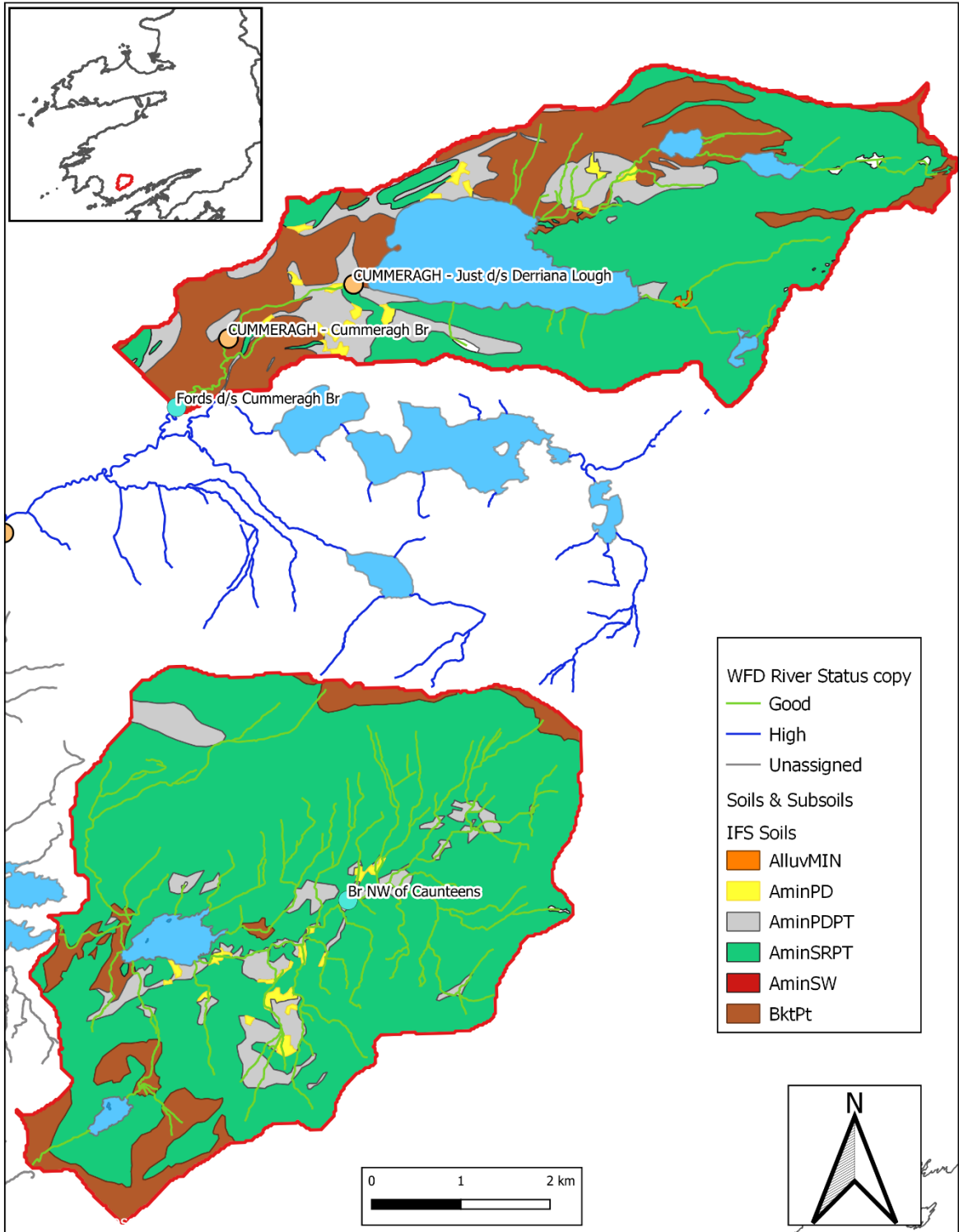


Figure A-2: Teagasc indicative forest soils map for the Lough Curane PAA (Teagasc)

Appendix B: Special areas of conservation in the L Currane PAA

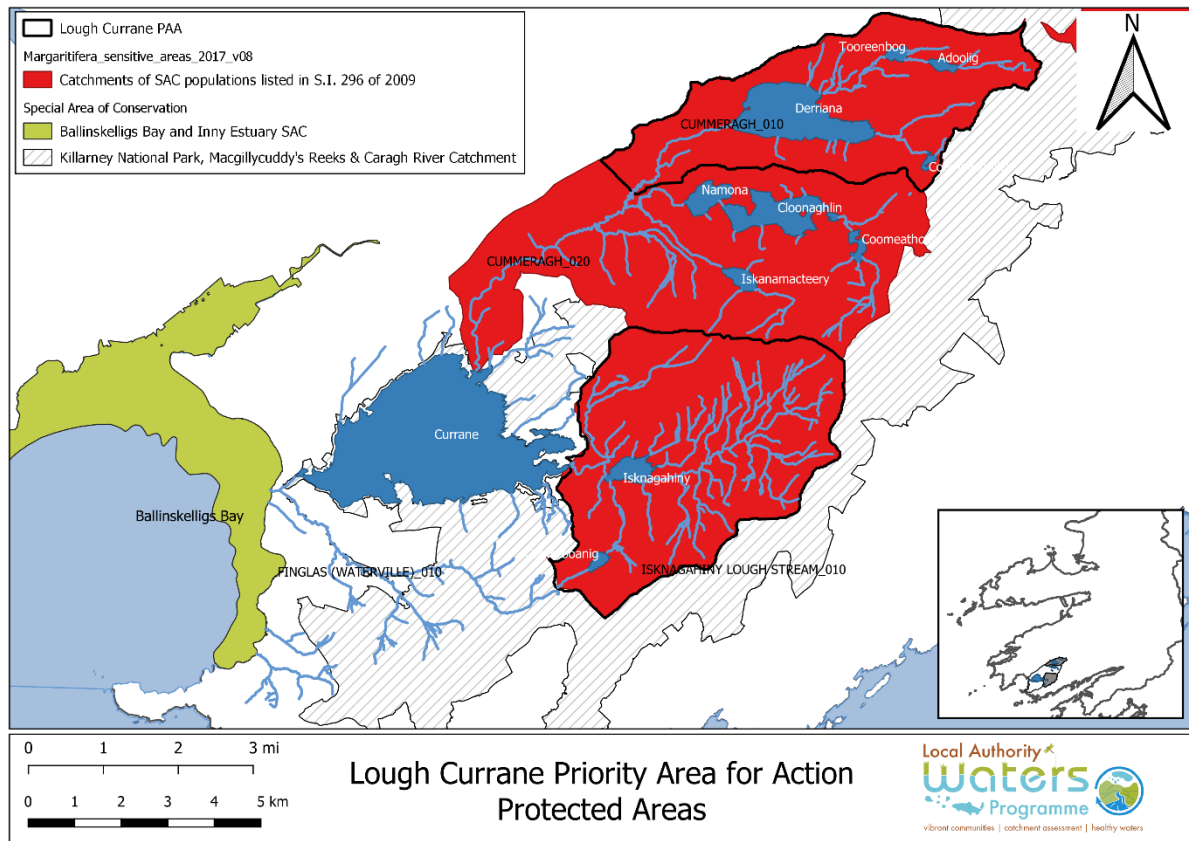


Figure B-1: Special Areas of conservation in the Lough Currane catchment (EPA 2018)

DRAFT