

River Avon catchment profile

Introduction

From its head waters near Greengairs, North Lanarkshire, the River Avon runs to enter the Firth of Forth at Grangemouth, draining a catchment of ~188km². The catchment includes the settlements of Linlithgow, Bathgate, Armadale and Blackridge.

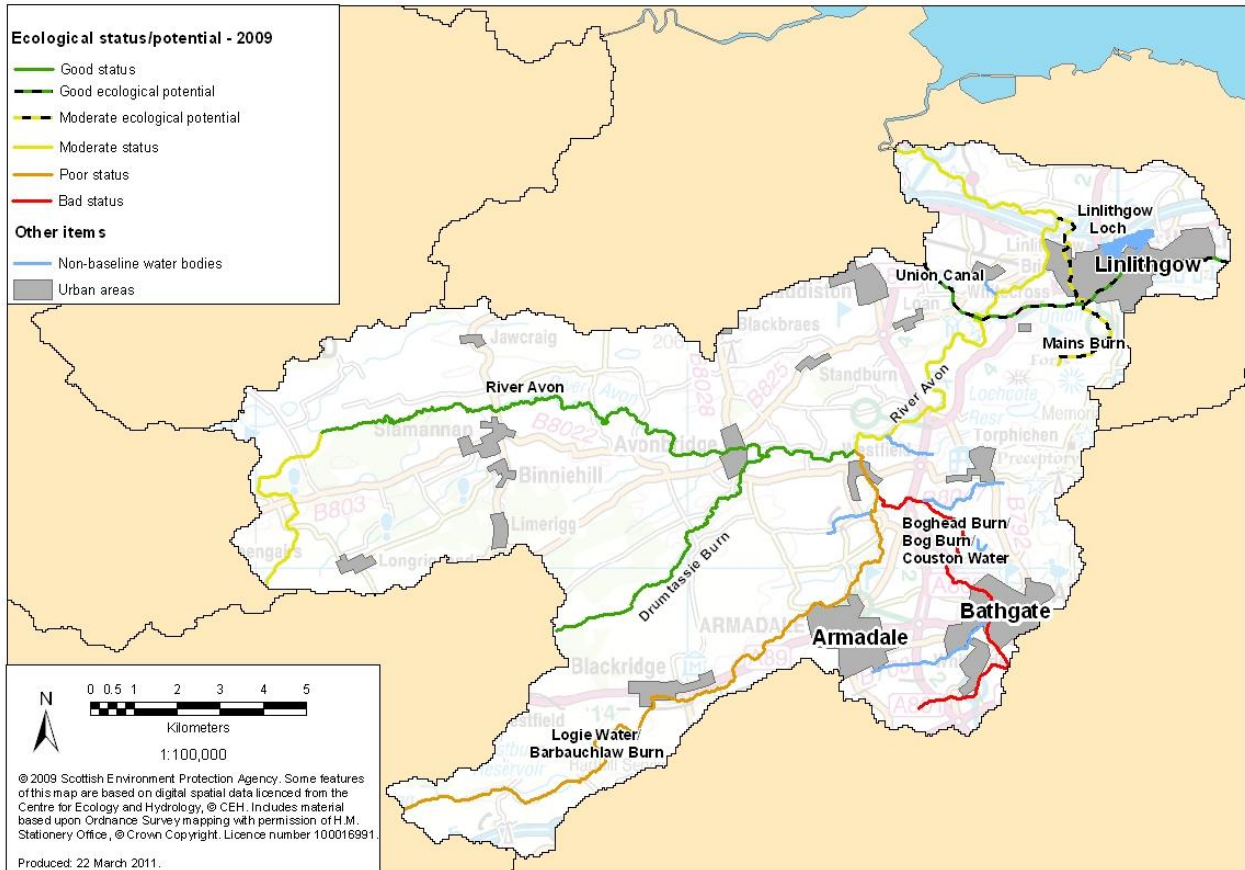


Figure 1: River Avon catchment

The catchment contains eight baseline¹ surface water bodies, one of which is heavily modified and another artificial. The catchment also contains eight non-baseline water bodies. There are two groundwater bodies associated with the catchment.

Water-dependent protected areas

The catchment contains the following water-dependent protected areas which are all currently achieving their objectives:

- Two drinking water protected areas
- Two freshwater fish designation – River Avon and Union Canal
- One urban waste water treatment directive sensitive area – River Avon (including Barbauchlaw Burn, Logie Water, Couston Water)

Further information on the water bodies within the River Avon catchment can be found on the [RBMP interactive map](#). The Forth Area Management Plan and other catchment profiles within the Forth sub basin district can be found on [SEPA's website](#).

¹ A baseline water body is a river which drains a catchment greater than 10km², lochs bigger than 0.5km², all coastal waters out to three nautical miles, transitional waters such as estuaries and groundwaters. A non-baseline water body is a river or loch which falls below the size threshold.

Classification and pressures summary

The 2009 classification status and pressures for the River Avon catchment is shown in Tables 1 and 2 below.

Table 1: Classification status, pressures and objectives for baseline water bodies within the River Avon catchment in 2009; water bodies are ordered from the upstream extent of the catchment to the downstream extent

Surface water body	Water body ID	2009 overall classification	Pressures	Good by
River Avon (Source to Jawhills)	3102	Moderate ecological status	Point source pollution – sewage disposal Diffuse source pollution – livestock farming Morphology – multiple pressures	2027
River Avon (Jawhills to Logie Water confluence)	3101	Good ecological status	-	-
Drumtassie Burn	3109	Good ecological status	-	-
Logie Water/Barbauchlaw Burn	3106	Poor ecological status	Point source pollution – sewage disposal Diffuse source pollution – urban development, sewage, mining & quarrying of coal Morphology – barrier to fish passage & multiple pressures	2027
Boghead Burn/Bog Burn/Couston Water	3107	Bad ecological status	Point source pollution – sewage Diffuse source pollution – urban development, mining & quarrying of coal Morphology – multiple pressures and barrier to fish passage	2027
River Avon (Logie Water confluence to Estuary)	3100	Moderate ecological status	Point source pollution – sewage	2025
Union Canal (Kirk Bridge to Park Farm)	6	Good ecological potential	-	-
Mains Burn	3103	Moderate ecological potential	Morphology – multiple pressures, barrier to fish passage	2021

Table 2: Classification status, pressures and objectives for the groundwater bodies associated with the River Avon catchment in 2009

Groundwater	Water body ID	2009 classification	Pressures	Good by
Stirling and Falkirk bedrock and localised sand and gravel aquifers	150234	Poor chemical status	Diffuse source pollution from mining and quarrying of coal	Less than good beyond 2027
		Poor hydrological status	<i>To be completed. New failure – awaiting further information</i>	-
Polmont sand and gravel	150237	Good overall status	-	-

Small water bodies

The following small (non-baseline²) water bodies are also within the River Avon catchment: Linlithgow Loch, Manuel Burn, Brunton Burn, tributary of the Bog Burn, Bell's Burn, tributary of the Couston Water, Crinkle Burn, tributary of the Barbauchlaw Burn. Future updates to this catchment profile will include more detailed information on any pressures and measures associated with these non-baseline water bodies.

Linlithgow Loch is under pressure from point source sewage pollution associated with the St Ninian's Way combined sewer overflow CSO and from septic tanks discharging to the Bells Burn in the Edinburgh Road area which enters the loch. Additional pressures include diffuse source pollution associated with mixed farming and physically modifications due to bank reinforcement.

It is planned that Scottish Water will investigate first time sewerage provision to address the septic issues by 2025. Currently, there is an Environmental Improvement Action Plan for Linlithgow Loch. Furthermore a catchment management plan is being produced for the loch, co-ordinated by the Centre for Ecology and Hydrology and the Scottish Agricultural College to address pressures on the loch and surrounding catchment.

Pressures, measures and objectives summary

No deterioration objectives

No pressures exist on the two surface water bodies which are at good ecological status, the one groundwater body at good status and on the water-dependent protected areas. Under the Water Framework Directive we have a requirement to ensure that there is no deterioration in status.

For those water bodies currently less than good ecological status the objective is to ensure that no further deterioration occurs, in addition to any improvement objectives.

Verification of good ecological potential

In the case of the Union Canal (Kirk Bridge to Park Farm) – a heavily modified water body at good ecological potential (GEP) - there is a need for SEPA to verify the assessment that the pressures

² Under the Water Framework Directive we are only required to formally identify pressures, determine the classification status, develop and implement measures and report progress to the European Commission for baseline water bodies. However, the Water Framework Directive applies to the whole water environment and if any pressures exist on non-baseline water bodies we would seek to address these through river basin planning; especially, for example, where an activity on a non-baseline water body causes, or has the potential to cause, a downgrade in status to a downstream baseline water body or protected area.

associated with the heavily modified designation are at GEP. The objective for these is to ensure that there is no deterioration.

On the Mains Burn, a 330 m long culvert which is a flood defence structure is presenting a barrier to fish passage. Information obtained through stakeholder workshops has indicated that this structure cannot be removed or fish passage provided without compromising the purpose of the structure and therefore it has been screened out and is deemed to be a good ecological potential. SEPA are to verify this information either by local knowledge or a site visit.

Point source pollution

Sewage

On the River Avon (Source to Jawhills) water body, a measure to address the sewage pressure associated with the Upperton Village waste water treatment works is expected to be delivered through Scottish Water investment by 2025.

On the Boghead Burn/Bog Burn/Couston Water, the Bathgate waste water treatment works is causing a sewage pressure. On the Logie Water/Barbauchlaw Burn water body, the cumulative impact of the Armadale, Blackridge and Bathgate waste water treatment works are causing a sewage pressure. On the downstream River Avon (Logie Water confluence to Estuary) water body, the cumulative impact of Blackridge, Armadale, Bathgate, Whitecross and Linlithgow waste water treatment works are downgrading the water body to moderate status.

Scottish Water is currently investing in projects to address the sewage pressures at Blackridge, Armadale, Bathgate and Linlithgow waste water treatment works, with improvements to water quality to be delivered by 2015. Improvements to Whitecross and further improvements at Bathgate and Armadale waste water treatment works will be delivered through future Scottish Water investment by 2025.

The Barbauchlaw Mill surface water outfall in Armadale is also creating water quality problems for the Logie Water/Barbauchlaw Burn water body. Scottish Water is expected to address this by 2025.

The surface water outfall at the Whitehill Industrial Estate in Bathgate is creating a point source pollution pressure on the Boghead Burn/Bog Burn/Couston Water water body. It is expected that this will be addressed by 2025 through the installation of a sustainable urban drainage system by Scottish Water.

Septic tanks in the Ballencrieff Mill area are affecting water quality on the Boghead Burn/Bog Burn/Couston Water. Scottish Water is expected to address this pressure by 2025.

Diffuse source pollution

Sewage

The diffuse sewage pressure on the Logie Water/Barbauchlaw Burn water body is associated with septic tanks. It is planned that Scottish Water will deliver first time sewerage provision in the Craigrigg Cottages area to address this pressure in 2025.

Urban development

In addition to the point source pressure associated with the surface water outfall discussed above, run-off from Whitehill Industrial Estate in Bathgate is also created a diffuse source pollution pressure on the Logie Water/Barbauchlaw Burn water body. Through engagement with relevant stakeholders e.g. SEPA, West Lothian Council and those businesses operating on the industrial estate, Scottish Water are likely to produce a surface water action plan which will aim to put in place measures to address this pressure by 2025.

A combination of road drainage, run-off from industrial sites in the Whiteside area of Bathgate and housing development are causing a diffuse pollution pressure on the Boghead Burn/Bog Burn/Couston Water. Again, partnership working to produce a surface water action should enable this pressure to be addressed by 2027.

Mining and quarrying of coal

The Boghead Burn/Bog Burn/Couston Water and Logie Water/Barbauchlaw Burn water bodies are impacted from elevated iron levels associated with historic coal mining activities in the area. Discussions will need to take place with the Coal Authority to consider options to install a minewater treatment scheme in this area to address this pressure by 2027.

Agriculture

The River Avon (Source to Jawhills), water body is impacted by diffuse pollution associated with farming activities. The catchment is a candidate priority catchment for the third river basin planning cycle. This means that focused work to tackle rural diffuse pollution within the catchment will commence in 2021 with an aim to achieve improvements by 2027. Further information on the priority catchment approach can be found on the [priority catchment page on SEPA's website](#).

Morphology

Urban development

The Mains Burn which runs through Linlithgow Bridge is a heavily modified water body on account of the physical changes (low impact channel realignment/culverting/bank reinforcement) made to enable urban development and provide flood defence. As these modifications cannot be removed without compromising human safety, this water body has been designated as heavily modified and therefore has an objective to reach good ecological potential.

West Lothian Council are the appropriate responsible authority to deliver measures to address the pressures on this water body which can be restored and the council have indicated that potential projects could be delivered by 2020. Further discussions need to take place with the council to ascertain progress. It is suggested that SEPA hydromorphologists are consulted before any work commences to check that the mitigation work needed to be carried out to achieve good ecological potential matches up with the work to be carried out by the council so that funding resources are not wasted.

On the Boghead Burn/Bog Burn/Couston Water the channel has been straightened. Discussions are required with landowners to investigate options to address the pressures by 2027.

Barriers to fish passage

The barrier to fish passage at the old Westfield papermill site is creating a pressure on the Logie Water/Barbauchlaw Burn water body and the upstream stream water body – Boghead Burn/Bog Burn/Couston Water. West Lothian Council Planning Services are attempting to address this barrier through attaching planning conditions to future development consents.

Agriculture

Physical changes as a result of farming activities are creating pressures on the River Avon (Source to Jawhills) and Logie Water/Barbauchlaw Burn water bodies are expected to be addressed as part of the priority catchment work which commences in 2021. These pressures are therefore expected to be addressed by 2027.

Invasive non-native species

No water bodies are currently downgraded to less than good on account of the presence of aquatic invasive non-native species.

Riparian invasive non-native species such as Japanese knotweed, giant hogweed, Himalayan balsam and rhododendron are currently not incorporated into the morphology component of the Water Framework Directive classification scheme. However, this is expected to change before the end of the first river basin planning cycle. Efforts should be targeted to map the location of riparian invasive non-native species as this can be used by SEPA to inform future classification outputs. Please contact SEPA for a copy of the survey method. The Water Environment Restoration Fund can be used to fund eradication projects.

The River Forth Fisheries Trust has produced a biosecurity plan for the Forth district which covers a very similar area to the Forth Advisory Group area. Key objectives of the plan include preventing the introduction and spread of invasive non-native species, establishing a framework for detection and surveillance, and developing co-ordinated control and eradication programmes for invasive non-native species. This work will directly assist the achievement of RBMP objectives.

Areas for action

No.	Action	Suggested owner	Date
1	Continue to raise profile of RBMP and requirement to protect and improve the water environment.	SEPA/All AAG members	Ongoing - 2027
2	Engage with Scottish Water to promote appropriate projects into future quality and standards investment periods and ensure measures are on track to deliver	SEPA quality and standards team/Scottish Water	Ongoing - 2027
3	Continue to gather information on location of barriers to fish passage from appropriate stakeholders.	River Forth Fisheries Trust/Linlithgow, Slamannan and Avonbridge Angling Clubs/SEPA	Ongoing - 2027
4	Raise awareness of diffuse pollution and diffuse pollution general binding rules to support future priority catchment work.	Forth AAG/SEPA Land Unit/RBMP coordinator/local operations team	Ongoing - 2027
5	Continue to promote good practice and raise awareness of diffuse pollution general binding rules at industrial estates	SEPA local operations team	Ongoing - 2027
6	Work through AAG INNS sub-group to ensure co-ordinated action to tackle invasive non-native species to meet RBMP objectives.	River Forth Fisheries Trust/AAG INNS sub group	Ongoing - 2027
7	Contact West Lothian Council to determine progress in relation to fish barrier at Westfield	SEPA RBMP co-ordinator/WLC	2011
8	Discuss Mains Burn morphological improvements with West Lothian Council	SEPA RBMP co-ordinator/hydromorphologist /WLC	2012
9	Clarify scale of channelisation and morphological pressures on Boghead Burn/Bog Burn/Couston Water. Instigate discussions with landowners to investigate options to address the pressures by 2027.	SEPA RBMP co-ordinator/hydromorphology specialist	2012/2021
10	Verification of pressures at good ecological potential	SEPA local operations team	2014
11	Ensure priority catchment work progresses	SEPA land unit	2021
12	Ensure Coal Authority options to deliver minewater treatment at Boghead are discussed, progressed and on track to deliver	SEPA/Coal Authority liaison meetings	2021-2027