

Indicator name			Version
NB33 Progress towards the environmental objectives of the River Basin Management Plans			15/04/16
Indicator type:	Risk/opportunity	Impact	Action
			X
SCCAP Theme	SCCAP Objective	CCRA risk/opportunity	
Natural Environment	N2: Support a healthy and diverse natural environment with the capacity to adapt	<ul style="list-style-type: none"> • BD13 Water quality and pollution risks • BD14 Ecosystems risks due to low flow and increased water demand • WA2 Lower summer river flows 	

At a glance
<ul style="list-style-type: none"> • The River Basin Management Plans (RBMPs) are a critical element of Scotland's Climate Change Adaptation Programme and contribute to the delivery of actions to improve the resilience of both the natural and built environments to the impacts of climate change. • Assessment identifies good progress with regard to many measures, but also targets for improvement that have been missed in a number of areas (particularly rural diffuse pollution and physical condition). • Changes in level of understanding and assessment methodology can make it difficult to determine the real level of progress towards condition targets. • The first RBMPs set targets for 2015, 2021 and 2027 but it may be necessary to look even more long term in order to identify potential future challenges that may impact on the sustainable management of the water environment.

Latest Figure	Trend										
<table border="1"> <thead> <tr> <th>Surface water bodies</th> <th>Proportion meeting 2015 objective (%)</th> </tr> </thead> <tbody> <tr> <td>Rivers</td> <td>75</td> </tr> <tr> <td>Lochs</td> <td>82</td> </tr> <tr> <td>Estuaries</td> <td>82</td> </tr> <tr> <td>Coastal</td> <td>83</td> </tr> </tbody> </table>	Surface water bodies	Proportion meeting 2015 objective (%)	Rivers	75	Lochs	82	Estuaries	82	Coastal	83	N/A
Surface water bodies	Proportion meeting 2015 objective (%)										
Rivers	75										
Lochs	82										
Estuaries	82										
Coastal	83										

Latest figures are for 2014 and represent the condition targets (including non-deterioration) for both the Scotland and Solway River Basin Districts combined

Why is this indicator important?

The Scottish Government (2013) have identified the need to improve the condition of the water environment in order to make it both more resilient in itself to the consequences of climate change as well as to provide a healthy resource that can benefit wider climate change adaptation. The River Basin Management Plans (RBMP) are therefore a critical element of Scotland's Climate Change Adaptation Programme and contribute to the delivery of actions to improve the resilience of both the natural and built environments to the impacts of climate change (Scottish Government, 2014; SEPA, 2014a).

The first RBMPs for the Scotland and Solway river basin districts (RBD) were published in December 2009 and set out the environmental objectives¹ for all water bodies (rivers, lochs, estuaries, coastal waters and groundwater) along with a programme of measures designed to achieve them by tackling existing pressures and preventing deterioration (SEPA, 2013c). Water bodies at less than good condition in 2008 were set environmental improvement targets for 2015, 2021 and 2027. All water bodies also have the objective of preventing deterioration of condition, whatever their initial status. Improvement objectives were based on a balance between improving the water environment and the benefits Scotland derives from its sustainable use, and therefore the planned improvements in many instances have been phased over the three periods (SEPA, 2009a). A small proportion of water bodies were also identified which would have lower targets set than the baseline condition. This was in the main due to the spread of invasive non-native species (e.g. North American signal crayfish for which there is currently no effective control measure available) or the presence of new developments where deterioration of status had been permitted² (SEPA, 2009a) (Table 1; Appendix 2 Table A1).

Table 1 Number and proportion of water bodies with changes in overall condition planned by 2015 (based on assessment made in 2009 at the start of the 1st RBMPs). The table provides detail of water bodies expected to improve in condition as well as the numbers expected to deteriorate to less than 'Good' or from 'High' to 'Good'

	Improvement	Expected deterioration	
		→ Good	→ < Good
Rivers	263 (11%)	80 (3%)	7 (<1%)
Lochs	41 (12%)	26 (8%)	1 (<1%)
Estuaries	0 (0%)	10 (20%)	0 (0%)
Coastal	18 (4%)	28 (6%)	0 (0%)

This indicator examines progress towards the environmental improvement target. The RBMP process is a six-year cycle (the second RBMPs were published in December 2015, following extensive

¹ Further information on the principles for setting objectives can be found here: <http://www.gov.scot/Resource/Doc/173709/0048450.pdf>

² Such exceptions to the rule, or "exemptions", provide for developments whose benefits to human health, the maintenance of human safety or sustainable development outweigh the benefit to the environment and society of preventing deterioration of status or which are otherwise of overriding public interest (SEPA, 2009).

consultation and review), and subsequent indicator updates will aim to capture both the achievements towards the first and subsequent plans.

Related indicators:

- NB24 Proportion of water bodies not meeting good overall status
- NB27 Summer low flow events in Scottish rivers
- NA13 Abstraction of water for irrigation
- NA14 Freshwater bodies affected by diffuse pollution due to agriculture

What is happening now?

The latest available figures for condition and therefore progress towards targets for 2015 have been summarised in Table 2 (see Appendix 2 Table A2 for more detail).

Table 2 Latest (2014) progress toward the objectives of the first River Basin Management Plans (figures are for the whole of Scotland), along with the proportion of water bodies in good or better status for each RBD.

Surface water bodies	Proportion meeting 2015 objective (%)	Proportion in good or better status (%)*	
		Scotland RBD	Solway RBD
Rivers	75	55 (63)	46 (52)
Lochs	82	70 (71)	16 (52)
Estuaries	82	90 (85)	90 (83)
Coastal	83	97 (97)	100 (100)

* 2015 target in brackets

Assessment also showed that there were a number of water bodies (47 in the Scotland RBD and 4 in the Solway RBD) where the appropriate measures have been put into place to remove or reduce the relevant pressures but the natural recovery process meant that the objective would be achieved post-2015 (Scottish Government, 2015b; Scottish Government & Environment Agency, 2015b). Figures 1a and 1b detail the most widespread pressures on water bodies in both the Scotland and Solway RBDs.

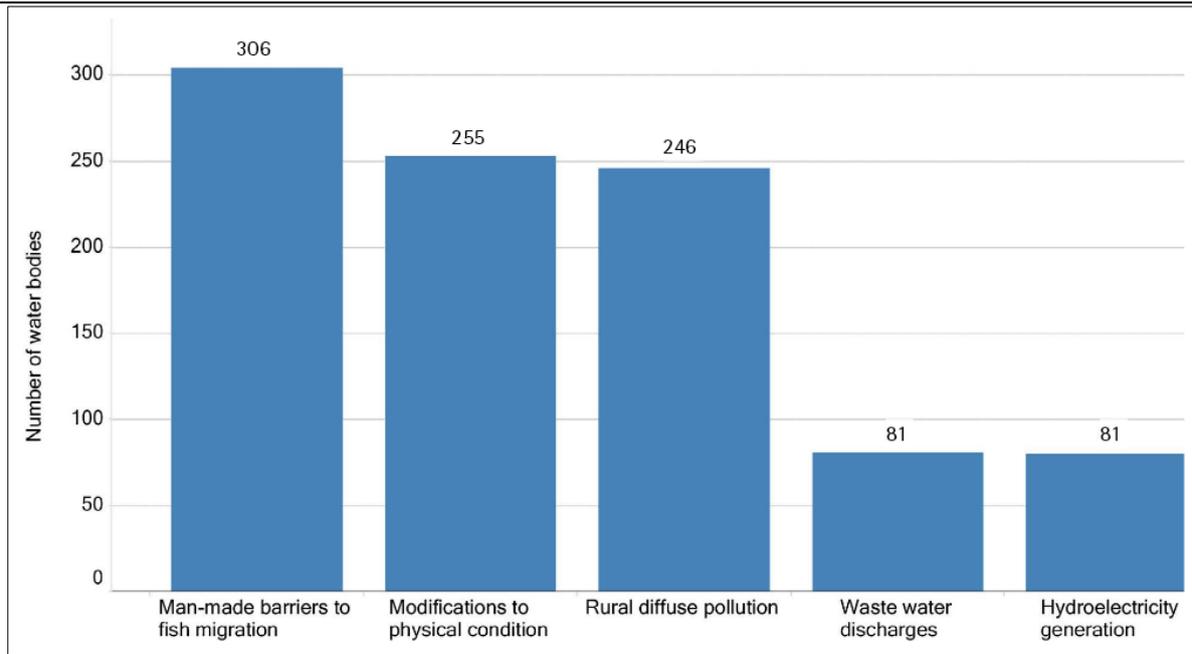


Figure 1a Most widespread pressures in the Scotland RBD (NB a significant number of water bodies are affected by more than one pressure. These water bodies feature in more than one of the bars in the figure) (source: Scottish Government, 2015a)

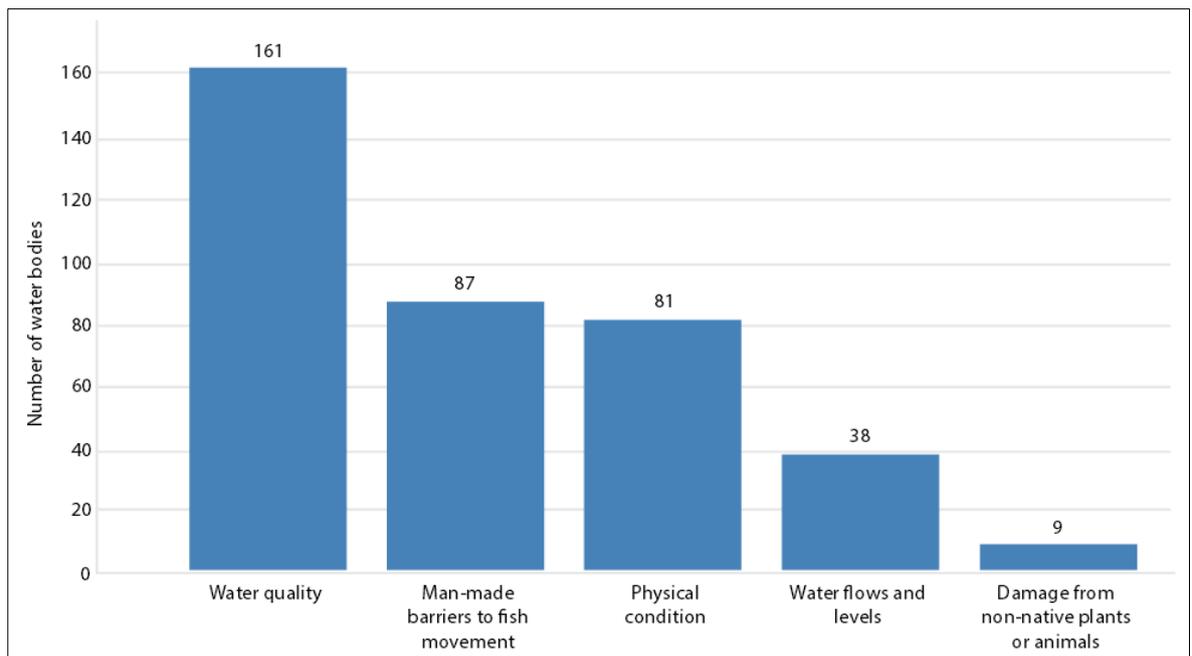


Figure 1b Most widespread pressures in the Solway RBD (NB a significant number of water bodies are affected by more than one pressure. These water bodies feature in more than one of the bars in the figure) (source: Scottish Government & Environment Agency, 2015a)

Assessment of progress in the Scotland and Solway RBDs identified good progress with regard to many measures, but also identified that targets for improvement were likely to be missed in a number of areas (SEPA, 2013a/2013b):

- Physical condition & fish barriers:** The majority of successful improvements have largely been due to the removal of barriers to fish migration. Initial scoping work and improved catchment-scale understanding resulted in reprioritisation and consequently the work that had been started by 2012 was on barriers not previously identified. There are more than 300 water bodies across

Scotland where physical modifications have affected the extent, quality and/or diversity of habitats for wildlife (SEPA, 2015b). There are also around 365 man-made structures currently known to pose a barrier to fish migration and estimated to be affecting the status of fish populations in around 330 water bodies. However, combined efforts of the Rivers and Fisheries Trusts for Scotland and SEPA (with funding support from the Water Environment Fund) has restored fish access to around 35 water bodies (SEPA, 2015b).

- **Rural diffuse pollution:** Rural diffuse pollution is the dominant reason for failure to achieve water quality targets (SEPA, 2015b). Between 2009 and 2012 a targeted approach was taken with priority catchments being identified for the first RBMP. Around one example of poor practice was found per kilometre, and land managers were engaged with in order to highlight the necessary improvement measures. However, in the Scotland RBD, 6% of all water bodies had been identified for improvement of water quality, but only 3% were identified as likely to achieve this by 2015, largely due to rural diffuse pollution where over half the planned improvements were not on track. Rural diffuse pollution was also the main reason for failure in the Solway RBD (SEPA, 2015b). Public bodies are working with those farmers who are yet to start improving their management practices, and, with the assistance of funding available under the Scottish Rural Development Programme, some land managers are actually doing more than is required by regulations (Scottish Government, 2015a).
- **Water flows and levels:** Though progress was initially slow to implement licence reviews to manage flows and levels, due to lengthy engagement with industry sectors regarding delivery of RBMP improvements and initial pilot trials, by March 2014 the majority of the reviews had taken place (Table 3a & b)³. Between the end of 2009 and the end of 2013, nearly 400 new small hydro-electricity schemes were authorised across Scotland. The impact of most schemes, on an individual basis, is not sufficient to affect the status of water bodies. However, around 50 water bodies have deteriorated to worse than good and the achievement of good status has been compromised in approximately 90 others (SEPA, 2015b). Most abstractions for agricultural irrigation only pose a significant risk during unusually dry periods. However, in some areas, abstractions for irrigation can significantly impact on flows or levels even when the weather has not been unusually dry.

Table 3 Progress towards implementing licence reviews to manage flows and levels³ (SEPA, 2013c; McGowan, 2014) a) December 2012; b) March 2014.

a)

Industry sector	Not started	Ongoing	Complete
Hydropower	0	29	4
Public water supply	1	23	64
Irrigation	0	147	14
Distilleries	0	1	7
Total	1	200	89

b)

Industry sector	Not started	Ongoing	Complete
Hydropower	0	8	25
Public water supply	0	9	79
Irrigation	0	35	126
Distilleries	0	1	8
Total	0	53	238

³ By the end of 2015, all first cycle licence reviews were completed apart from those that were substituted/reassessed or which have outstanding technical issues to be addressed (SEPA, 2016)

What has happened in the past?

The state of Scotland’s water bodies as a whole has significantly improved over the last few decades (Critchlow-Watton, 2014). In particular there has been significant progress in preventing and reducing pollution e.g. between 2000 and 2006 (pre-Water Framework Directive), the length of rivers in Scotland that were affected by pollution was reduced by 37% (SEPA, 2009a).

Over the period of 2009-2014 there was a decline in the proportion of water bodies meeting their environmental improvement objectives set out in the first RBMPs (Appendix 2 Table A2). However, over this period there has also been a considerable increase in the level of understanding of the water environment, as well as changes in assessment methodologies and environmental standards. One consequence of improvements to understanding and assessments is that real environmental change cannot be identified simply by comparing classification results across years. Instead, detailed analysis is required to disentangle the real change from other factors that affect the assessments. It is therefore not possible to identify any significant or meaningful trend in the data.

Additional analysis conducted by SEPA identified the changes in surface water body assessments which can be attributed to the improved knowledge base rather than any actual change in the condition of the water bodies (Figure 2)⁴.

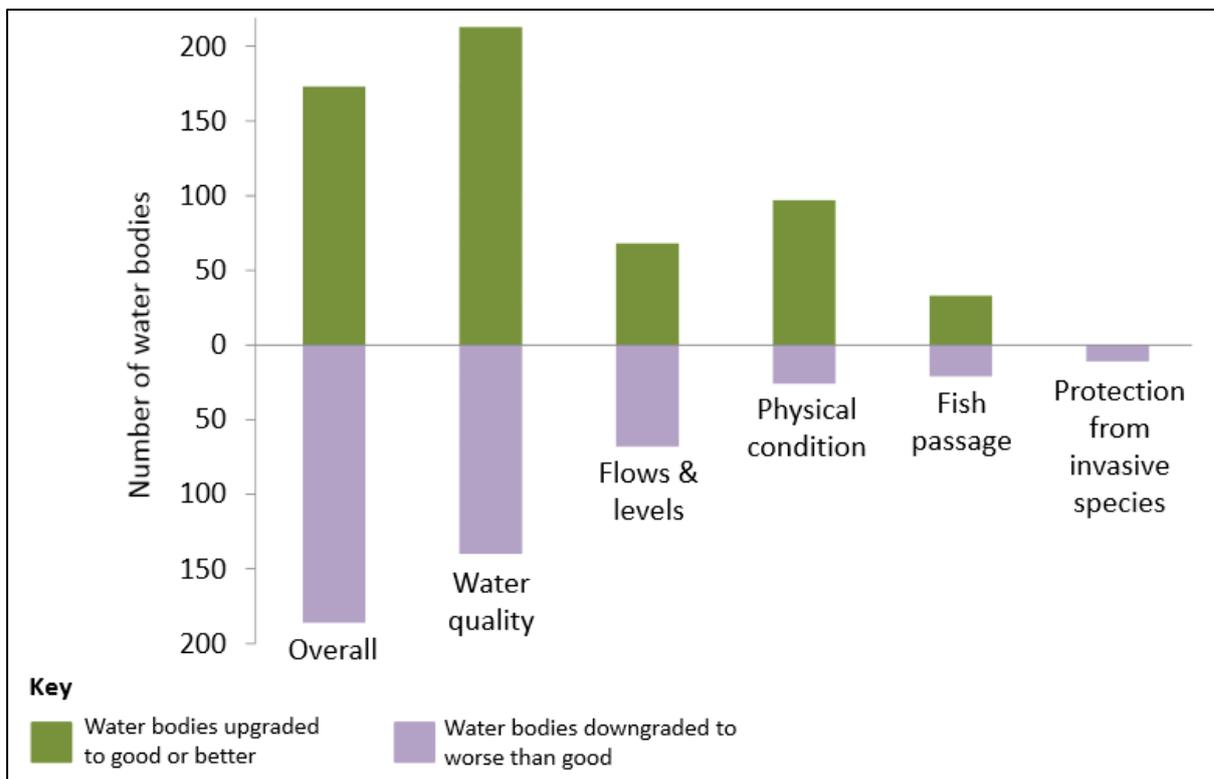


Figure 2 Changes in surface water body assessments *solely reflecting improved understanding*: 2008 to 2013 (source: SEPA, 2014a)

What is projected to happen in the future?

⁴ Detailed breakdown of the changes made in monitoring and classification are available in the RBMP appendices available at: <https://www.sepa.org.uk/environment/water/river-basin-management-planning/>

Figures 3a and 3b show the expected improvements to the condition of the Scotland and Solway RBD water bodies as a result of the actions planned for the period 2015-2027.

The main priorities for the second RBMPs have been identified as (SEPA, 2014a):

- Rural diffuse pollution
 - Build on the existing approach by increasing the effort focused on tackling rural diffuse source pollution;
 - Prioritise the catchments and focus areas according to where it is expected that work in those areas will deliver the greatest benefits.
- Urban diffuse source pollution and land contamination
 - Better understand where the water environment is at risk from toxic pollution;
 - Where it is at risk, identify key sources of the pollutants concerned;
 - Design and prioritise action to reduce the most significant sources.
- Physical condition of the water environment
 - Prioritise water bodies for improvements where it is expected those improvements will deliver the greatest benefits;
 - Work with public bodies, voluntary organisations and businesses to encourage and develop improvement projects;
 - Expand the role of the water environment fund in supporting measures to improve the physical condition of water bodies;
 - Work with managers of artificial structures to ensure they are appropriately maintained or modified to reduce their impacts on the water environment.
- Barriers to fish movement
 - Prioritise work to remove or ease barriers to fish migration where it is expected this will result in the greatest benefits;
 - Work with public bodies and businesses responsible for the management of infrastructure (e.g. culverts and bridges) to ensure appropriate and proportionate measures are taken to restore fish passage;
 - Expand the level of funding and effort focused on enabling fish passage at abandoned structures.
- Flows and levels
 - Prioritise work to improve water bodies affected by Scotland's older hydroelectricity generating schemes according to where it is expected the greatest environmental benefits can be achieved.
- Invasive non-native species
 - Strengthen the legislation governing the introduction and release of non-native species;
 - Give key public bodies responsibilities for managing the risk posed to specific habitat types;
 - Establish a new Statutory Group on Non-Native Species (SGNNS);

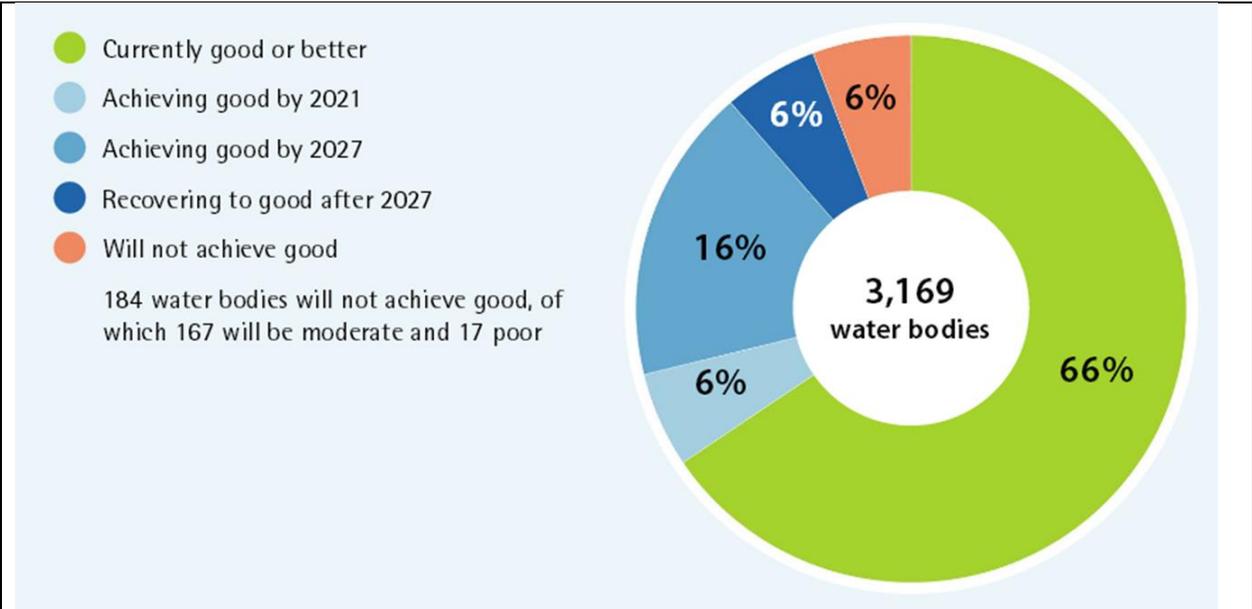


Figure 3a Expected improvements to the condition of the Scotland RBD water bodies as a result of the actions planned for the period 2015-2027 (source: Scottish Government, 2015a)

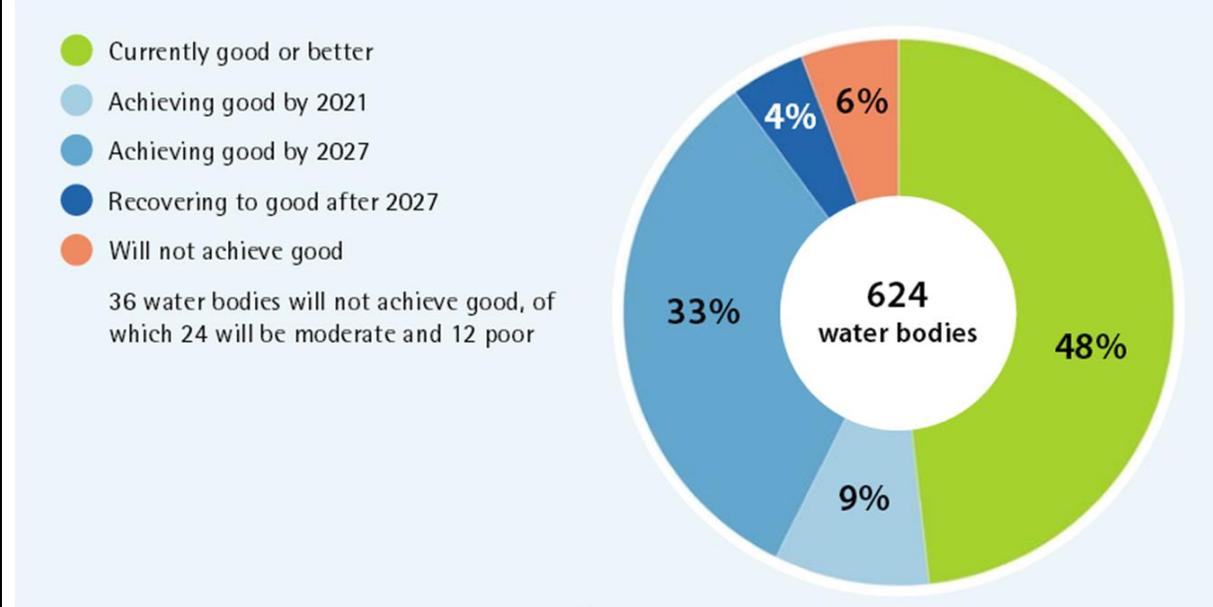


Figure 3b Expected improvements to the condition of the Solway RBD⁵ water bodies as a result of the actions planned for the period 2015-2027 (source: Scottish Government & Environment Agency, 2015a)

It is also important to look even further than the targets for 2027 in order to identify potential future challenges that may impact on the sustainable management of the water environment in the long term. Climate change is projected to impact on both temperature and the amounts and frequency of rainfall, with consequential impacts upon the water environment e.g.

- By 2050, SEPA estimates that approximately 8% of water bodies in the Scotland RBD are unlikely to support current water abstraction rates without deterioration of their ecological status;

⁵ Includes data for all water bodies in the Solway RBD including those not in Scotland

- Shifts in agricultural land uses (e.g. conversion of grassland to arable farming) along with seasonal changes in rainfall and temperature may increase pressure from diffuse pollution (SEPA, 2013a).

The latest RBMPs include a 'climate check' of planned actions to assess to what extent they may help to prepare Scotland for the future climate as well as identify whether the action will continue to be effective under a changed climate (Scottish Government, 2015b; Scottish Government & Environment Agency, 2015b)

Although there have been major improvements in understanding of the water environment over the course of the first RBMP, gaps in knowledge still remain (Scottish Government, 2015b):

- Impacts on plant and animal communities and on water quality for which the pressures responsible still need to be identified
- Pressures on water quality, physical condition and flows/levels where the extent of the impacts needs to be fully understood
- Pressures likely to increase over the period 2015 to 2027 due to climate change and/or expansion of aquaculture

SEPA have outlined their commitment to continue to expand the knowledge base over the period 2015 to 2027, in order to "ensure efforts to protect and improve the water environment are always targeted to best effect" (Scottish Government, 2015b).

Patterns of change

It is currently not possible to identify any significant patterns of real change due to the increase in levels of understanding of the water environment and changes in methodology (see **What has happened in the past?** section)

Interpretation of indicator trends

There has been considerable progress made to implement the measures generated by the first cycle RBMPs. Figure 4 sets out the general framework for the delivery of the programme and planned reduction of pressures on the water environment. Notable successes include the large body of work delivered through Scottish Water's Quality and Standards programme; extensive licence reviews to control irrigation pressures; removal of fish barriers and projects to improve the physical condition of beds, banks and shores; focus on priority catchments and a coordinated partnership approach (SEPA, 2013c).

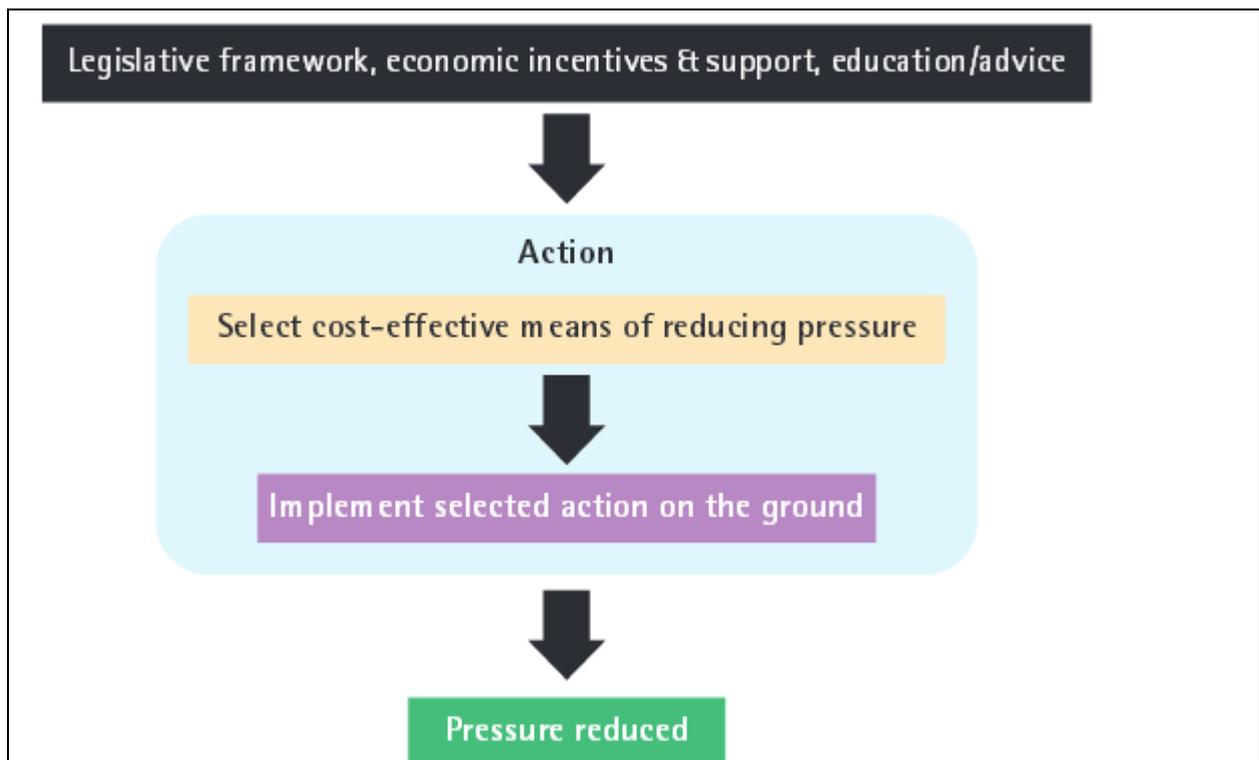


Figure 4 Process of achieving objectives by reducing pressures on the water environment (Source: SEPA, 2009b)

Assessment midway through the first RBMP identified a number of key reasons for potential failure in reaching set targets in all areas (SEPA 2013a; 2013b; 2013c):

- Rural diffuse pollution- contributing farming practices were more numerous and widespread than had been originally estimated, with multiple sources often on single farms. It therefore took longer than anticipated to improve understanding and to work with land managers to reduce these risks.
- Physical condition- a lack of a structured delivery framework to achieve the needed improvements and recognition that the extent of physical alterations was greater than originally assessed. It took a greater amount of time to design effective improvements at catchment level, as well as to identify and negotiate the necessary partnership projects.
- Toxic substances- risk assessments post the establishment of the RBMP targets indicated that monitoring programme results may have significantly underestimated the number of waters at risk from certain toxic pollutants.
- Land contamination- in the Scotland RBD, only four sites were assessed as being impacted by contaminated land. However it is estimated that there may be about 65,000 contaminated sites across Scotland and it is reasonable to assume that some of these may well impact on the water environment.
- Invasive non-native species- although legislation now provides supporting powers which underpin management on the ground, once invasive species are established it is always very difficult to eradicate them and for some species it is currently impossible with currently available techniques

It takes time both to begin to implement changes on the ground and also for those changes to begin to be reflected in monitoring, as changes in plant and animal communities may have lengthy response times, which also contributes to the slow progress shown up until 2012 (SEPA, 2013a). Over the course of the first RBMPs, SEPA has also improved the baseline knowledge of the pressures and impacts on the water environment which has resulted in changes in classification unrelated to any

measures that have been implemented on the ground (SEPA, 2013a). The formal directions on the classification of water bodies also changed for 2013 onwards. Prior to the 2013 classification, the 2009 Directions were in force, and results were calculated according to those rules (SEPA, 2015a).

Limitations

SEPA has been progressively improving the understanding of the state of the water environment in Scotland, and since 2009 a number of changes have occurred to the way data is collected and analysed:

- increasing the amount of environmental data on which the assessments are based;
- developing and refining the models used to interpret data and make assessments;
- and refining the delineation of bodies of groundwater and surface water to ensure there are not significant differences in environmental quality in different parts of the same water body (SEPA, 2013a)

There are therefore some changes within the data over this period that reflect a change in understanding rather than an actual change in the water bodies. The formal directions on the classification of water bodies also changed for 2013 onwards. Prior to the 2013 classification, the 2009 Directions were in force, and results were calculated according to those rules (SEPA, 2015a).

The indicator is based on progress towards targets for overall condition only. Condition classification is based on the status of a number of factors and it is therefore possible that improvements can be made to one element but overall condition classification remains unchanged due to the lack of improvement or deterioration of another.

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SEPA (2016) Personal email communication with Janine Hensman

Further information

SEPA have collated their RBMP (and related) documents together into a single location. This provides detail of the RBMPs, progress reports, supplementary plans and consultation documents:

<https://www.sepa.org.uk/environment/water/river-basin-management-planning/publications/>

Acknowledgements

Stuart McGowan (SEPA): provision of update data on licence reviews

Janine Hensman (SEPA): review and advice regarding the 2nd RBMP

Appendix One: Indicator metadata and methodology

Table 1: Indicator metadata

	Metadata
Title of the indicator	NB33 Progress towards the environmental objectives of the 1st River Basin Management Plans
Indicator contact: Organisation or individual/s responsible for the indicator	Anna Moss (CXC, University of Dundee)
Indicator data source	<ul style="list-style-type: none"> SEPA: RBMP data Scotland’s Environment Web: WFD data from 2010-2014. This data provides comparison data for status for 2010-14 against RBMP objectives (2015, 2021, 2027)
Data link: URL for retrieving the indicator primary indicator data.	SEPA: http://gis.sepa.org.uk/rbmp/Data_Download.aspx SEWeb: http://www.environment.scotland.gov.uk/get-interactive/data/water-body-classification/

Table 2: Indicator data

	Indicator data
Temporal coverage: Start and end dates, identifying any significant data gaps.	The indicator data is currently restricted to 2010-2014
Frequency of updates: Planned or potential updates	Annual
Spatial coverage: Maximum area for which data is available	Scotland
Uncertainties: Uncertainty issues arising from e.g. data collection, aggregation of data, data gaps	See section on ‘Limitations’. The following sites (with data present on SEWeb) were excluded from calculations due to lack of targets set for RBMP: Rivers: 6914 Upper Allt Girnaig 6915 Lower Allt Girnaig 6916 Keltney Burn / Allt Coire Pheiginn 6917 Allt Mor 6918 Allt Ghlas downstream of diversion to Loch Ericht 6919 Allt Ghlas source to sluice 10932 Medwin Water

	<p>10933 South Medwin 10934 Upper Douglas Water 10935 Lower Douglas Water 10936 Ladykirk Burn 10939 Saddell Water/Ifferdale Burn 23900 Upper Allt nan Caorach 23901 Allt nan Caorach to confluence with River Glass 23902 Abhainn Srath Chrombaill 23903 Abhainn Gleann na Muice 23904 Abhainn Gleann Tanagaidh 23905 Abhainn Mhor Ceann Reasoirt 23906 Abhainn Thabhsaigh 23907 Crombie Water 23908 River Livet / Blye Water 23909 River Luineag 23910 Am Beanaidh 23911 Water of Dye / Water of Charr 23912 Water of Dye / Spital Burn Modified channel between Spey Reservoir and Loch 23913 Crunachdan 23914 Allt Crunachdain 23915 River Tarff / Allt Lagan a'Bhainne 23916 River Tarff inflow to Glen Doe Reservoir</p> <p>Lochs: 100585 Loch Awe 100640 Glen Doe Reservoir</p>
Spatial resolution: Scale/unit for which data is collected	Water bodies as defined by SEPA. These are associated with a river basin district, Area Advisory Group and catchment.
Categorical resolution: Potential for disaggregation of data into categories	River basin district (Scotland or Solway) Water body type (river, loch, estuary, coastal, groundwater)
Data accessibility: Restrictions on usage, relevant terms & conditions	No restrictions

Table 3 Contributing data sources

<p>Contributing data sources</p> <p>Data sets used to create the indicator data, the organisation responsible for them and any URLs which provide access to the data.</p>
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- SEPA: RBMP data http://gis.sepa.org.uk/rbmp/Data_Download.aspx
- Scotland’s Environment Web: WFD data from 2010-2014. This data provides comparison data for status for 2010-14 against RBMP objectives (2015, 2021, 2027)
<http://www.environment.scotland.gov.uk/get-interactive/data/water-body-classification/>

Table 4 Indicator methodology

Indicator methodology
The methodology used to create the indicator data
<p>RBMP data downloaded from SEPA site WFD data downloaded from SEWeb: This data provides comparison data for status for 2010-14 against RBMP objectives (2015, 2021, 2027)</p> <p>Analysis: Classifications were given a numerical value (both for objectives as well as status)- 1 to 5 with Bad being 1 and High being 5. This enabled comparison between columns to ascertain if a recorded status was equal to or better than the objective</p>

Appendix Two

Table A1 Comparison of baseline overall condition classification and 2015 target in the first RBMPs (Scotland and Solway RBDs combined) a) Rivers; b) Lochs; c) Estuaries; d) Coastal

a) Rivers		RBMP 2015 target				
		Bad	Poor	Mod.	Good	High
Overall condition class. 2008	Bad	149	20	15	17	1
	Poor	0	236	50	60	1
	Mod.	0	3	453	93	0
	Good	0	0	2	1089	6
	High	1	0	1	80	112

b) Lochs		RBMP 2015 target				
		Bad	Poor	Mod.	Good	High
Overall condition class. 2008	Bad	7	6	1	8	0
	Poor	0	28	9	6	0
	Mod.	0	0	53	8	0
	Good	1	0	0	143	3
	High	0	0	0	26	35

c) Estuaries		RBMP 2015 target				
		Bad	Poor	Mod.	Good	High
Overall condition class. 2008	Bad	0	0	0	0	0
	Poor	0	1	0	0	0
	Mod.	0	0	6	0	0
	Good	0	0	0	24	0
	High	0	0	0	10	9

d) Coastal		RBMP 2015 target				
		Bad	Poor	Mod.	Good	High
Overall condition class. 2008	Bad	0	0	0	0	0
	Poor	0	0	0	0	0
	Mod.	0	0	15	15	0
	Good	0	0	0	267	3
	High	0	0	0	28	129

Table A2 Progress toward the overall condition objectives of the first River Basin Management Plans. 2015 targets for good or better status in brackets.

		River Basin Districts	2010	2011	2012	2013	2014
Rivers	Proportion meeting 2015 objective	Scotland	85	84	84	77	75
		Solway	83	80	79	78	71
		All	85	84	83	77	75
	Proportion good or better status	Scotland (63%)	56	56	59	56	55
		Solway (52%)	43	43	44	49	46
Lochs	Proportion meeting 2015 objective	Scotland	81	80	79	80	84
		Solway	84	84	84	80	64
		All	81	81	80	80	82
	Proportion good or better status	Scotland (71%)	66	65	66	70	70
		Solway (52%)	32	28	28	28	16
Estuaries	Proportion meeting 2015 objective	Scotland	92	92	87	79	79
		Solway	100	100	100	90	90
		All	94	94	90	82	82
	Proportion good or better status	Scotland (85%)	85	85	85	85	90
		Solway (83%)	90	90	90	100	90
Coastal	Proportion meeting 2015 objective	Scotland	90	90	88	79	83
		Solway	100	100	100	100	100
		All	90	90	88	79	83
	Proportion good or better status	Scotland (97%)	96	97	98	95	97
		Solway (100%)	88	88	88	100	100