Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

Supporting Guidance (WAT-SG-67)

Assessing the significance of impacts – Social, Economic, and Environmental

August 2021

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Update summary

Version	Description
v1.0	Unpublished draft document with temporary access available via the *Crosstube* folder.
v2.0	First published version of document, based on: *WAT-SG-67 (v3) 2009-06.doc*
v3.0	Expired CMS links reviewed and updated.
v4.0	Updated to reflect new ***Standards Direction 2014***

v4.1	Post-pilot case updates to s1, 5 and tables 22,24
v5.0	Biodiversity/water environment combined, loch guidance added (Table 7).Visual amenity/landscape combined. Economy: revised approach to assessing indirect effects, angling guidance added. 'Nuisance' removed.
v5.1	Ref to example derogations removed (p4), Nature Scot (SNH) links updated

Notes

References: Linked references to other documents have been disabled in this web version of the document. See the References section for details of all referenced documents.

Printing the document: This document is uncontrolled if printed and is only intended to be viewed online.

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Always refer to the online document for accurate and up-to-date information.

Table of contents

Scope and explanation

When should I use this guidance?

You should use this guidance when determining whether or not SEPA should authorise a controlled activity that would breach environmental standards or compromise the achievement of an improvement target set in a river basin management plan. The guidance explains how you should weigh up the positive and negative effects of such proposals.

You should use the guidance alongside *WAT-RM-34: Derogation Determination - Adverse Impacts on the Water Environment* when making the judgements required to apply "Derogation Test C". This balancing test requires you to decide whether or not the benefits to the environment and society of:

- protecting the water environment from deterioration; and
- achieving a relevant river basin management plan improvement objective are outweighed by the benefits of a proposal to one or more of the following:
- human health;
- the maintenance of human safety; or
- sustainable development.

You can also use this guidance to help decide whether or not the benefits of improving the status of a water body are disproportionately expensive. You may need to make this judgement as part of a licence review process. Further information on how to do so is available in *WAT-RM-41: Derogation Determination – Improvements to the Water Environment*.

How do I undertake the balancing test?

To undertake the balancing test, you should carry out the following steps:

Step 1: Identify the positive and negative economic, social and environmental effects, especially the associated greenhouse gas emissions likely to result from the proposal.

Step 2: Assess the magnitude of each identified effect.

Step 3: Assess the importance of each affected economic, social and environmental factor.

Step 4: Taking account of the results of steps 2 and 3, assess the significance of each identified effect.

Step 5: Weigh up all the significant positive and negative effects.

Step 1: Identifying likely effects

What sort of negative effects do I need to consider?

Negative effects are benefits likely to be foregone as a result of a proposal's impact on the water environment. These benefits include:

- the social, environmental and economic benefits that would no longer be provided by the affected part of the water environment in cases where a proposal would result in deterioration of the water environment; and
- the social, environmental[1] and economic benefits that would result if a water body were restored to its target objective (normally good status or good ecological potential) in cases where a proposal would prevent such restoration.

Negative effects include:

- direct effects of controlled activities on the condition of the water environment, in particular on biodiversity; and
- any consequent negative social, environmental and economic effects likely to result from the direct effects on the water environment, including negative effects for other users of the water environment.

You must only consider negative effects resulting from the changes to the water environment caused by the controlled activity.

You **must not** take account of any other potentially negative effects of other aspects of a development project (i.e. effects not resulting directly or indirectly from a controlled activity), such as the effects on the landscape of any roads, buildings and other new infrastructure

[1] Indirect environmental effects include any effects on the biodiversity of the surrounding land resulting from the impact of the activity on the water environment. For example, such effects may be caused by inundation of the surrounding in the case of proposals to create an impoundment or to increase the size of an existing impoundment.

involved in the project. These effects should be taken into account by the relevant local planning authority.

Construction phases of development projects often pose a risk of pollution, in particular by soil and other fine sediments. These risks should be controlled by appropriate authorisation conditions and hence are not relevant to the balancing test.

How do I account for the negative effects of preventing achievement of good status?

You must ensure that the loss of the benefits of improving the water environment is properly accounted for. You should do this by assessing the negative effects of a proposal as if the affected the water body was at its **target restoration objective**. For example, where a water body is at moderate ecological status and has an objective of restoration to good ecological status, you must assess the proposal's negative effects on the basis that, in the absence of the proposal proceeding, the water body would be restored to good ecological status. If the proposal would cause deterioration to poor status, you would assess the impact as if it were deterioration from good to poor status rather than from moderate to poor status.

The **target restoration objective** for the vast majority of water bodies, at least in the long-term, is good status or, for heavily modified and artificial water bodies, good ecological potential. There are differences in the timescales over which these objectives are planned to be achieved for different water bodies. Consideration of timescales is important if a proposal is not expected to have a long-term impact on the water environment. In such cases, the achievement of the target objective may not be compromised by the proposal, or may only be delayed. If the latter, you must still take account of the length of time during which the benefits of achieving the target restoration objective would be forgone.

If in doubt about a target restoration objective, you should seek advice from SEPA's Environmental Quality department.

What sort of positive effects do I need to consider?

Positive effects of proposals include:

- direct social, economic or environmental benefits flowing directly from, and which are reliant on, the proposed activity; and
- indirect social, economic and environmental benefits likely to result from those direct benefits.

For example, a controlled activity (such as water abstraction) may enable a development (e.g. drink manufacture) that has a direct economic benefit through the sale of a product (drinks) and the employment it generates in the business concerned. This may lead to indirect economic benefits via the purchase of goods from suppliers (e.g. drink ingredients) and from the money spent by employees in the economy. It may also have significant indirect social benefits if, for example, the economic beneficiaries of the development (employees or shareholders) are from deprived or disadvantaged communities.

The positive effects that you can consider are those connected with, and stemming from, the controlled activity, including the products that the activity enables the developer to produce. For example, you should **not** treat the following as benefits of a proposed controlled activity:

- any benefit resulting from the way in which a developer might decide (or propose) to use the financial resources available to them, including the profits of the development. For example, this includes benefits that may arise from investments by a developer in local environmental or social projects (i.e. “planning gain” type benefits); and
- any benefit resulting from a part of a development project that is not directly dependent on the controlled activity and could, in principle, be delivered without the controlled activity.

Examples:

Examples	
1	You are considering a proposed abstraction to dewater part of the water environment. The developer is offering to build a community park in the nearby village if authorisation is granted. You should not consider the park to be a benefit of the proposed controlled activity.
2	A developer is proposing to abstract water to provide a geothermal heating system for a community swimming pool. You should take account of the economic benefit, climate change mitigation benefit and potential social benefit to the community of the proposal.
3	A developer is proposing to damage the water environment as part of a development and then restore it to a better condition than it is in currently. You should take account of the social, economic and environmental benefits of the improved condition of the water environment where: ▪ the effects on the water environment of the controlled activity are expected to facilitate the subsequent restoration in some way; and ▪ the river basin management plan does not require the water body's restoration earlier than is being proposed.
If there is a significantly less damaging way of achieving the restoration target than that proposed, your assessment must determine whether the negative effects of the additional damage are offset by other benefits, such as earlier achievement of the restoration target.	

What effects are most likely to result from controlled activities?

The types of social, economic and environmental effects most likely to result from controlled activities are listed below. You can find help in assessing these in the appendix to this guide. However, some proposals may have types of effects that are not covered. You must consider such effects if they are potentially significant.

Appendix A: *Effects on biodiversity*

Appendix B: *Effects on the economy*

Appendix C: *Effects on well-being*

C.1 *Effects on health and safety*

C.2 *Effects on recreation*

C.3 *Effects on visual amenity and landscapes*

C.4 *Effects on economic opportunities for disadvantaged groups*

Appendix D: *Effects on natural resource use*

D.1 *Effects on climate change*

What sources of information should I use?

Most proposals that adversely affect the condition of the water environment will have a significant effect on only a few social, economic and environmental factors. To help identify the relevant factors, you should take account of the following sources of information:

- the information accompanying the new application or variation, including any subsequent information provided by the applicant in response to requests for further information;
- responses from any relevant public bodies that you have consulted about the proposal;
- representations from the wider public in response to advertisements of the proposal or made at any meetings that SEPA or the applicant have organised to discuss the proposal;

- any environmental impact assessment that has been undertaken with respect to the proposal (eg in support of an associated planning application); and
- any relevant information SEPA already holds or any relevant in-house expertise.

Remember, you must always consult **other public bodies** if they may have an interest in the proposal and you should do so in any case where you think their advice could help improve your judgement about the significance of any effect.

Step 2: Assess the magnitude of each effect

The magnitude of an effect reflects its **scale** and **duration**. An effect of a particular scale will be of greater magnitude if it is long-lasting than if it is only short-term. Similarly, a beneficial effect that will be produced in due course by other means will be of greater magnitude than it would otherwise be if it happens earlier as a result of the proposed activity.

Before you can assess the magnitude of an effect, you need to decide on its scale. To do so, you need to consider both the quantity/extent and degree of the effect. For example, all else being equal, the effect on river biodiversity of a proposal damaging 1 kilometre of a river is smaller in terms of its extent than that of a proposal damaging 2 kilometres; and the degree of an effect that causes deterioration from good to bad is greater than that of an effect that causes deterioration from good to moderate.

Guidance on assessing the scale of a range of effects is provided in the appendix to this guide. Once you have assessed the scale of the effect, you can use the indicative guide in Table 1 to judge the magnitude of the effect.

Table 1: Indicative guide to assessing the magnitude of an effect

	Scale of effect				
Duration of effect	**V Small**	**Small**	**Medium**	**Large**	**V Large**
Only lasts up to around 1 year	VS	VS	VS	S	M
Only lasts up to around years 6 years	VS	VS	S	M	L
Lasts significantly more than 6 years	VS	S	M	L	VL
Starts up to around 2 to 3 years earlier*	VS	S	M	L	VL

Starts up to 3 to 12 years earlier*	VL	S-M	M-L	L	VL
Starts more than 12 years earlier*	S	M	L	L-VL	VL

Notes:

You should use these rows in the table when you are assessing a benefit that is already expected to be delivered through the implementation of the river basin management plan (RBMP) but which is expected to be realised sooner as a result of the proposal (i.e. the proposal will enable the early achievement of an RBMP improvement objective).

If you have assessed the scale of an effect as being negligible, you should not consider that effect further in your assessments.

Step 3: Assess the importance of each affected factor

The importance of a factor refers to its relative social, economic or environmental value to society. An effect on a very important factor (e.g. one of national importance) will be of much greater significance than the same magnitude of effect on a factor of limited importance (eg one of only local value).

Guidance on assessing the importance of a range of social, economic and environmental factors is provided in the appendix to this guide.

Step 4: Assess the significance of each effect

The significance of an effect (whether positive or negative) is a combination of the **importance** of the factor that is affected and the **magnitude** of the effect on the factor.

Once you have worked out the magnitude of an effect and the importance of the affected factor, you can use Table 2 to help judge the significance of the effect.

Table 2: Indicative guide to assessing the significance of an effect

Importance of affected factor	Magnitude of effect					
	Negligible	**V Small**	**Small**	**Medium**	**Large**	**V Large**
Very low / negligible	N	N	N	N	N	N
Low	N	VL	VL	L	M	M-H
Medium	N	VL	L	M	M-H	H
High	N	VL-L	M	H	H-VH	VH
Very high	N	L	M-H	H-VH	VH	VH

Key:

N = negligible significance; VL = very low significance; L = low significance; M = moderate significance; H = high significance; and VH = very high significance.

Step 5: Weigh up positive and negative effects

How do I decide where the balance between positive and negative effects lies?

Ultimately, SEPA has to make a judgment about where the balance of positive and negative effects lies. It will make this judgement through its normal scheme of delegation. However, SEPA's judgement will be based on your recommendation.

You should use the guide in Table 3 to help make this recommendation. When considering the benefits of a proposal to sustainable development, you must also take account of the guidance on sustainable development in *WATRM-34: Derogation Determination - Adverse Impacts on the Water Environment*.

In making your recommendation, you must set out the reasoning behind your judgment on the balance of positive and negative effects. This reasoning must be recorded in *WAT-FORM-28: CAR Derogation Decision Document*.

Table 3: Indicative guide to determining the overall balance of the positive and negative effects

(a)	Is there a clear difference between the highest significance positive effect and the highest significance negative effect?
(b)	If (a) is not decisive, is there a clear difference in the number of the highest significance positive effects and the number of the highest significance negative effects?
(c)	If neither (a) or (b) is decisive, is there a clear difference between the number of positive and negative effects at the next lowest significance category?
(d)	If neither (a), (b) or (c) is decisive, can the balance of positive and negative effects be distinguished by considering where each effect lies within its significance category? For example, if there are two

	positive and two negative effects in the same significance category, is one or both of the positive effects clearly towards the top end of the significance category whilst both the negative effects are clearly towards the bottom end of the significance category?
(e)	If the balance remains unclear, is one or more of the factors positively impacted clearly of more importance than any of the factors that are negatively impacted or vice versa?

How do I take account of any uncertainties in deciding where the balance lies?

Unless it is clear that the balance lies with the positive effects of the proposal, you should conclude that the proposal has not passed the test and its benefits do not outweigh those of protecting the water environment.

You should always carry out a **sensitivity analysis** before finalising your recommendation. The analysis is an important part of your determination. It enables you to understand the robustness of the judgement and identify where to focus your efforts in improving and double-checking parts of the assessment. It is particularly important when the proposal is contentious or the interests of other users of the water environment could be significantly affected.

A sensitivity analysis simply involves assessing the implications for your recommendation if the effect or effects about which you are uncertain turn out to be more or less significant than your best estimate. To carry out a sensitivity analysis, you should re-run the test assigning a significance to effect or effects based on best case and worst case assumptions in relation to aspects of those effects about which you are uncertain.

If the balance of positive and negative impacts is the same under the different assumptions, you can conclude that your recommendation is insensitive to uncertainties. If the balance differs depending on the assumptions, it means your recommendation is sensitive to uncertainties. If this is the case, you should make sure you:

- have got the best evidence you can on which to base your judgements about the impacts to which the decision is sensitive; and
- detail in your decision document how you decided on the significance to assign to the impacts, given the uncertainties.

You should always describe the outcome of your sensitivity analysis when setting out the reasons for your judgement on the balance of positive and negative effects.

Appendix: Guide to assessing scale and importance in relation to some of the potential effects of controlled activities

APPENDIX A: Effects on biodiversity

What effects on biodiversity should I consider?

Scotland's water environment supports a rich and varied diversity of life. That diversity has been shaped by the differing habitat characteristics of our many rivers, streams, lochs, estuaries and coastal waters.

You should consider the effects on biodiversity of proposals that would:

- result in deterioration of the condition of rivers, lochs, estuaries or coastal waters; or
- lead to deterioration of wetlands that are dependent on groundwater, rivers, lochs, estuaries or coastal waters.

In doing so, you should consider effects on all species that depend on the water environment not just those species used as indicators of ecosystem health by SEPA to classify the status of water bodies. For example, some birds and mammals depend on the water environment but their condition is not used as an indicator of the status of water bodies.

Some proposals may result in impacts on the biodiversity of the land adjacent to the water environment. For example, a proposal to create a new reservoir may inundate important terrestrial wildlife habitats. You should take account of such impacts as well as those on the biodiversity of the water environment.

What importance should I give to effects on biodiversity?

The importance of an effect on biodiversity depends on:

- the relative rarity of the wildlife species or assemblage of species that would be affected; and
- the role played by the affected part of the water environment in the functioning of the wider ecosystem.

To assess the relative rarity of wildlife species or assemblage of species, you should consider:

- whether the site supports species recognised as requiring special protection because of their conservation status (referred to in Table 4 below as a "high biodiversity interest site"); and
- the relative rarity of the characteristics of the part of the water environment concerned and hence the likely rarity of the particular assemblage of species it supports.

You should use the guides in Table 4 and Table 5 to help assess the importance of effects on biodiversity. When using Table 4, only treat the water environment as important in terms of its high biodiversity interest if the proposed activity is likely to have a significant impact on that interest. You should then only use that importance for assessing the significance of impacts on the biodiversity interest concerned: You should not use it in assessing impacts on any other components of the affected part of the water environment's biodiversity.

Examples:

	Examples
1	The biodiversity of the part of the water environment concerned is of low importance based solely on its type and status but of high biodiversity interest by reason of being part of a river designated as a special area of conservation for Atlantic salmon. You conclude that a proposed activity is not likely to have a significant impact on salmon populations in the SAC. Because the proposal will not affect the high biodiversity interest, you only have to consider the proposal's effects on other elements of the waters' biodiversity. You should assess the significance of these effects based on that biodiversity being of low importance.

2	A proposal will affect a part of the water environment that is of medium importance in relation to a species of high biodiversity interest but, for other elements of biodiversity, is of low importance based on its type and status. The magnitude of the proposal's impact on the high biodiversity interest is small and hence of low significance whereas the magnitude of the impact on other elements of biodiversity is large and hence of medium significance.

Table 4: Indicative guide to assessing importance of an effect on biodiversity

Low importance	The part of the water environment concerned is a: ▪ loch that is locally rare or otherwise locally important based on its type and condition. To assess this, you should consider the frequency (locally, regionally and nationally) of lochs of the same or similar type and status to the loch concerned; or ▪ river or stream of low importance as identified according to Table 5 based on its type and condition; or ▪ high biodiversity interest site designated as a *Local nature reserve* or a *Local nature conservation site*.
Medium importance	The part of the water environment concerned is a: ▪ loch that is regionally rare or otherwise regionally important based on its type and condition. To assess this, you should consider the frequency (locally, regionally and nationally) of lochs of the same or similar type and status to the loch concerned; or ▪ river or stream of medium importance as identified according to Table 5 based on its type and condition; or

	▪ high biodiversity interest site because it plays an ecologically significant role in maintaining the ecological health of a large (regional-scale) river basin; or ▪ high biodiversity interest site because it supports a significant proportion of a habitat or a significant population of a species on the *Scottish Biodiversity List*. ▪ high biodiversity interest site because it supports a significant population of a species for which there is an *ICES* emergency plan (eg European eel).
High importance	The part of the water environment concerned is a: ▪ loch that is nationally rare or otherwise nationally important based on its type and condition. To assess this, you should consider the frequency (locally, regionally and nationally) of lochs of the same or similar type and status to the loch concerned; or ▪ river of high importance as identified according to Table 5 based on its type and condition; or ▪ high biodiversity interest site designated as such (eg *Sites of Special Scientific Interest*; *National Nature Reserves*) because of its national importance for the conservation of a species it supports; a habitat it contains; or the rarity or quality of its geomorphological characteristics; or; or; ▪ high biodiversity interest site because it supports a nationally important assemblage of *Oceanic bryophytes*.

Very high importance	The part of the water environment concerned is a: ■ high biodiversity interest site designated as such because of its international importance for the conservation of a species it supports or a habitat it contains (ie *Special Areas of Conservation*, *Special Protection Areas* or *Ramsar sites*); or ■ high biodiversity interest site because it supports a significant population of a globally threatened species (ie an *IUCN Red List of Threatened Species* species such as freshwater pearl mussel); or ■ high biodiversity interest site because it supports an internationally important assemblage of *Oceanic bryophytes*.

Notes:

Parts of the water environment not meeting any of the criteria in this table should be treated as of very low importance.

You will find some but not all the high biodiversity interest sites referred to above on SEPA's GIS. Sites at which species on the Scottish Biodiversity List are known to be present can be found on the *National Biodiversity Network* website.

You should always contact the Senior Policy Officer (Conservation) in Ecology or the Principal Policy Officer in Ecology for advice about high interest biodiversity sites.

Table 5: Indicative guide to assessing the importance of a river type

River type*	Current ecological status of river**			
	High	**Good**	**Moderate**	**Poor/bad**
1. Part of a river with a catchment area of < 5 km^2	Very low	Very low	Very low	Very low
2. Part of a watercourse with a catchment area of 5 to < 10 km^2	Low	Low	Very low	Very low
3. Small, low alkalinity, dominant morphological type = braided/wandering/plane-riffle	Medium	Low	Negligible [Low if type locally[2] rare]	Negligible
4. Small, low alkalinity, dominant morphological type = steppool/plane-bed	Medium	Low	Low	Negligible
5. Small, low alkalinity, dominant morphological type = bedrock cascade	Medium	Low	Low	Negligible
6. Small, high alkalinity, dominant morphological type = braided/wandering/plane-riffle	Medium [High if altitude > 200 metres]	Medium [High if altitude > 200 metres]	Medium	Low
7. Medium, low alkalinity, dominant morphological type = braided/wandering/plane-riffle	High	Medium	Medium	Low

[2] i.e. in Area Advisory Group

8. Small, high alkalinity, dominant morphological type = step-pool/plane-bed	Medium [High if altitude > 200 metres]	Medium [High if altitude > 200 metres]	Medium	Low
9. Medium, high alkalinity, dominant morphological type = braided/wandering/plane-riffle	High	High	Medium	Medium
10. Small, high alkalinity, dominant morphological type = bedrock cascade	High	Medium [High if altitude > 200 metres]	Medium	Medium
11. Medium, low alkalinity, bedrock cascade	High	High	Medium	Medium
12. Medium, low alkalinity, dominant morphological type = meandering	High	High	High	Medium
13. Large, low alkalinity, braided/wandering/plane-riffle	High	High	High	Medium
14. Medium, low alkalinity, dominant morphological type = step-pool/plane-bed	High	High	High	Medium
15. Small, low alkalinity, dominant morphological type = meandering	High	High	High	High
16. Large, high alkalinity, dominant morphological type = meandering	High	High	High	High
17. Medium, high alkalinity, dominant morphological type = meandering	High	High	High	High

18. Large, low alkalinity, dominant morphological type = meandering	High	High	High	High
19. Small, high alkalinity, dominant morphological type = meandering	High	High	High	High
20. Medium, high alkalinity, dominant morphological type = bedrock cascade	High	High	High	High
21. Medium, high alkalinity, dominant morphological type = step-pool/plane-bed	High	High	High	High

Notes:

"Small" means rivers with a catchment area of 10 - 100 km2 ;

"Medium" means rivers with a catchment area of >10 - 1,000 km2;

"Large" means rivers with a catchment area of >1,000 km2; "Low alkalinity" means <50 mg/l CaCO3; and

"High alkalinity" means ≥50 mg/l CaCO3.

**For heavily modified water bodies, you should consider the ecological status that the water body would have if it were not designated as heavily modified (rather than its ecological potential).

How do I assess the scale of an effect on biodiversity?

The scale of an effect on biodiversity depends on the:

- the severity of the impact on the plants and animals that are directly affected;
- the spatial extent over which this direct impact occurs; and
- the consequences of the direct impact for the wider conservation of the affected species or assemblage of species.

For example, the scale of the effect on biodiversity of modifications to a small length of a river could be large if that length is critical for the conservation of a species or assemblage of species. You can use the guide in Table 6 to help categorise the scale of effects on the biodiversity of watercourses and Table 7 for effects on freshwater lochs.

In all cases, you should apply the relevant environmental standards as normal to help you assess the scale of the direct effect of a proposal on water environment biodiversity.

Table 6: Indicative guide to assessing the scale of an effect on the biodiversity of watercourse

Length of watercourse affected (km)		< 0.1	0.1 < 0.5	0.5 to < 1.5	1.5 to < 5	5 to < 10	10 to < 20	≥ 20
Extent of any relevant habitat or species population affected as a proportion the total relevant habitat or species population of the "high biodiversity interest site" (%)		< 0.1	0.1 < 1	1 to < 2	2 to < 10	10 to < 20	20 to < 30	≥30
Change in condition								
H → G	Minor or slight	N	N	VS	VS - S	S - M	M	M - L
P ↔ B **M ↔ P** **G ↔ M** **H → M**	Slight or moderate	N	N - VS	VS - S	S - M	M	M - L	L
G ↔ P **H → P**	Major	N	VS	S	M	M - L	L - VL	L - VL
M ↔ B **G ↔ B** **H → B**	Major or severe	N - VS	VS - S	S - M	M - L	L	L - VL	VL

Notes:

"High biodiversity interest site" means one of such sites referred to in Table 4.

To assess the likely change in condition, you should apply the appropriate environmental standards. In this context, "change in condition" includes changes that do not affect the status of the water body as a whole (e.g. because the spatial extent over which the change occurs is too limited, etc).

The scale of an effect on a high biodiversity interest site should only be assessed if the change in condition is expected to affect the particular biodiversity interest of that site. Where the particular interest is likely to be affected, you should assess the likely change in its condition. This scale of change in its condition may differ substantially from that of other aspects of the ecological quality of the affected part of the watercourse.

N = negligible; VS = very small; S = small; M = medium; L = large; and VL = very large H = high; G = good; M = moderate; P = poor; and B = bad.

Table 7: Indicative guide to assessing the scale of an effect on the biodiversity of freshwater lochs

Area of loch affected (ha)	< 0.5	0.5 < 2.5	2.5 to < 7.5	7.5 to < 50	50 to < 100	100 to < 500	≥ 500
Length of loch shore affected (km)	<0.1	0.1 < 0.5	0.5 to < 1.5	> 1.5 to < 5	> 5 to < 10	> 10 to < 20	≥ 20
Extent of any relevant habitat affected as a proportion the total relevant habitat of the "high	< 0.1	0.1 < 1	1 to < 2	2 to < 10	10 to < 20	20 to < 30	≥30

biodiversity interest site" (%)								
Change in condition								
H → G	Minor to slight	N	N	VS	VS - S	S - M	M	M - L
P ↔ B **M ↔ P** **G ↔ M**	Slight to moderate	N	N - VS	VS - S	S - M	M	M - L	L
H → M **↔ P** **→ P**	Major	N	VS	S	M	M - L	L - VL	L - VL
M ↔ B **G ↔ B** **H → B**	Major to severe	N - VS	VS - S	S - M	M - L	L	L - VL	VL

Notes:

Depending on the proposed activity, the effects may be concentrated along the shore of the loch or extend across the body of the loch. You should refer to the most relevant of the first two rows of the table when assessing the scale of the effect.

"High biodiversity interest site" means one of such sites referred to in Table 4.

To assess the likely change in condition, you should apply the appropriate environmental standards. In this context, "change in condition" includes changes that do not affect the status of the water body as a whole (e.g. because the spatial extent over which the change occurs is too limited, etc).

The scale of an effect on a high biodiversity interest site should only be assessed if the change in condition is expected to affect the particular biodiversity interest of that site. Where the particular interest is likely to be affected, you should assess the likely change in its condition. This scale of change in its condition may differ substantially from that of other aspects of the ecological quality of the affected part of the watercourse.

N = negligible; VS = very small; S = small; M = medium; L = large; and VL = very large H = high; G = good; M = moderate; P = poor; and B = bad.

A proposal may affect a number of different parts of the water environment. If this is the case, your assessment should reflect the cumulative scale of the proposal's effect on biodiversity.

Important

All the indicative guides in this document, including the guides above on assessing the scale of an effect on biodiversity, are ONLY guides. They are designed to help you make the judgements required but you should not use them blindly. For example, in assessing the scale of an impact on biodiversity, you need to think about:

- Is the scale of the effect close to one or other end of a scale category?
- How bad will the deterioration be? Is it likely to be just into the lower status class or right to the bottom of that lower class?
- Will mitigation mean that impacts on some elements of biodiversity (e.g. fish) will be significantly less than on impacts on others?

Suppose a proposal would cause flows in a river to deteriorate from high to moderate. Mitigation designed to protect migratory fish means that, for around one third of the year, flows will be no worse than good. The length of river

affected would be 3.5 km. However, some recovery from run-off from the surrounding land is expected such that flows in the last 600 metres are likely to be good for most of the time. Table 6 indicates that a high to moderate deterioration in over 3.5 km of river would be a small to medium scale impact. The length affected (3.5 km) appears in the upper half of the scale category, which might suggest a medium scale impact. However, taking account of the recovery and the mitigation, the scale of the impact is more likely to be small or even very small, given that the mitigation may be enough to keep biodiversity in a good condition or, at worst, at the top end of moderate.

How do I work out the significance of an effect on biodiversity?

Once you have an estimate of the scale of an effect on biodiversity and of the importance of the affected part of the water environment to biodiversity, you should use the guide in the main of the guidance to assess the magnitude and significance of the effect.

Where the proposal would affect different parts of the water environment and those parts are not of equivalent importance for biodiversity, you should consider how the effects on the different parts contribute to the overall significance of the proposal's effect. The combined significance will never be less than the significance of the individually most significant effect. However, it may be greater. For example, if the significance of an effect on one part of the water environment is close to the upper end of moderate significance and an effect on another part is of moderate significance, you may consider that the overall significance is high.

APPENDIX B: Effects on the economy

What economic effects should I consider?

You should assess economic effects of a proposal on the Scottish economy, taking into account the:

- direct effects of the sale of products and of the employment generated by a new development;
- effects of building/installing the new development;
- effects from the purchase of inputs and supplies by the new development; and
- effects of employees spending money in the Scottish economy.

What importance should I give to economic effects?

Economic growth is a key national priority. You should treat positive economic effects on the Scottish economy as of national (i.e. high) importance.

How do I assess the scale of economic effects?

To assess the scale of economic effects, you need to work out the Gross Value Added (GVA) contributed by the proposed activity. GVA is a measure of Gross Domestic Product (GDP) at basic prices without taking taxes or subsidies into account. Scottish GVA was £155 billion in the financial year, 2020/21[3]. To estimate the scale of a proposal's contribution to GVA, you should:

1. Estimate the direct economic effects (GVA in £/year) of the proposed activity. The information in Table 8 will normally be sufficient to enable you to do this. If not, you should seek advice from one of SEPA's economists.

[3] GDP Quarterly National Accounts: 2021 Quarter 1 (January to March) – Gov.Scot (www.gov.scot)

2. Apply the appropriate multiplier to the GVA estimated in step 1 to account for indirect and induced economic effects. If you cannot find the appropriate multiplier in Table 9, you should seek advice from SEPA's Water Unit.

3. Using the scheme in Table A7, categorise the scale of the GVA per year calculated at step 2 above in proportion to the size of the GVA of the Scottish economy as a whole. You should obtain the most recent estimate of annual Scottish GVA from the Scottish Government quarterly national accounts[4].

Table 8: Estimated direct contribution to Gross Value Added of different business sectors

Business sector	Units	Approximate annual GVA per unit (£/year)
Aquaculture	Number of employees at site	£70,000
Agriculture	Number of employees at site	£28,000
Electricity generation	Giga Watt hours power generated/year at site	£52,000
Manufacture of beverages	Number of employees at site	£227,000
Manufacture of chemicals and chemical products	Number of employees at site	£106,000
Manufacture of food products	Number of employees at site	£51,000
Manufacture of paper and paper products	Number of employees at site	£58,000
Mining and quarrying	Number of employees at site	£71,000

[4] Ibid.

Notes: GVA = Gross Value Added

Table 9: GVA multipliers for different business sectors

Business sector	GVA multiplier
Aquaculture	1.8
Agriculture	1.9
Beverage manufacture	1.4/1.7
Chemicals manufacturing (listed as 'other chemicals)	1.8/1.2-1.8
Electricity generation	2.1
Food manufacturing	1.8 – 3.3
Mining and quarrying (average of coal and lignite and other mining and quarrying)	2.2 Coal 1.9 other extraction
Paper and paper products manufacture	2.0
The Scottish Government has produced estimates of the *Multipliers* associated with all industrial sectors. This Table reproduces only a sub-set of multipliers.	

Table 10: Categorising the scale of an activity's GVA

	Scale of economic impact				
	Very Small	Small	Medium	Large	Very Large
% of Scottish GVA	≤ 0.002%	0.002 – 0.01%	0.01 - 0.04%	0.04 – 0.2%	> 0.2%
GVA based on the Scottish economy's GVA in 2015/16 (£/year) (rounded)	≤ £3m	£3 - £100m	£100-£500m	£500-£3,000m	>£3,000m

How do I estimate the scale of the economic benefit of flood defence schemes?

The local authority should be able to provide you with the estimate of the economic value of a proposed flood defence scheme that it obtained as part of its cost-benefit analysis. This value will have been calculated using guidance contained in the "Multicoloured Manual" Before using the value, you need to check that it is:

- a discounted benefit value and that the discount rate used to calculate it was 3.5% per annum. If not, you should contact one of SEPA's economists for advice; and
- a yearly benefit value. In most cases, the value given in the local council's cost-benefit analysis will be total benefits, expressed as a Net Present Value (NPV). To estimate the annual benefit from an NPV, divide the (discounted) NPV figure by the lifetime of the scheme (100 years in most cases).

How do I estimate the scale of potential economic effects on angling?

Some proposals may affect the number of fish available to a rod and line fishery. For example, damage to salmon and sea trout habitats in rivers may result in reductions in the number of smolts produced and so reduce the number of adults subsequently available to the fishery.

To assess the scale of the potential economic effect on sea trout and salmon angling, you should ask Evidence and Flooding to estimate the impact of the proposal on smolt production or on the number of adults likely to return to the river system as a whole. You should then use the guide below to estimate the potential economic effect.

Indicative economic value of salmon and sea trout per individual (£)[5]	
Smolt	Adult fish
30	650

How do I work out the significance of the economic effect?

You should use the guidance in the main part of the guidance to assess the magnitude and significance of the economic effect of the proposed activity.

The vast majority of developments that you are likely to encounter will have a very low significance positive effect on the Scottish economy.

[5] Values based on recorded average annual catch of salmon and sea trout between 2011 to 2015 (102,000); an assumed spawning escapement of 50%; an assumed smolt survival of 5%; and total economic value of rod and line salmon and sea trout angling per year of £134 million.

APPENDIX C: Effects on well-being

C1: Effects on health & safety

What effects on human health and safety should I consider?

You should consider effects that increase or decrease:

- the risk of ill-health or disease;
- the risk of injury; or
- human well-being more generally.

Controlled activities can affect human health and well-being in a variety of ways. For example:

- People can be injured during floods and people whose homes have been affected by floods can suffer ill-health through stress. Flood defence schemes can thus benefit human health and safety by reducing the risk of such effects[6].
- Poor quality drinking water supplies or failures in water supply can adversely affect people's health. Developments designed to improve the quality or reliability of water supplies benefit human health. Similarly, developments that improve the quality of bathing waters can reduce risks to human health.
- Recreation is important for health and well-being because it involves exercise and provides a break from stress. Developments that reduce recreational opportunities can have a negative effect on health whilst those that increase recreational opportunities or improve the quality of existing opportunities have a positive effect on health and well-being.
- Deprivation[7] and disadvantage can adversely affect health.

[6] *Exploring the Social Impacts of Flood Risk and Flooding in Scotland*

[7] See *Scottish Index of Multiple Deprivation* for information on relative deprivation of different neighbourhoods in Scotland (includes interactive map)

Developments that affect the level of deprivation or disadvantage, for example, by changing the economic opportunities of deprived or disadvantaged communities, can thus affect health.

Specific guidance is provided in subsequent sections on assessing the effects of proposed activities on **recreation** and on the **economic opportunities for deprived and disadvantaged communities**. You should only use this section to assess other effects on human health and safety.

What importance should I give to effects on health and safety?

The importance of an effect on human health and safety depends on the seriousness of the potential effect were it to occur and the degree of control people have over their exposure to a risk. You can use the guidance in Table 11 to help judge the importance of an effect on human health or safety.

Table 11: Indicative guide to assessing the importance of effects on human health or safety

Low importance	▪ The effect would be to produce or remove a health or safety issue that would not be (or is) not very serious; people are unlikely to notice the change; and people are easily able to control their exposure to the risk to their health or safety.
Medium importance	▪ The effect would be to produce or remove a health or safety issue that would not be (or is) not life-threatening, not particularly debilitating and not long-lasting. ▪ Effective treatments/alternatives are readily available and full recovery would be likely in a few days; and with care, people are able to avoid exposure to the risk to their health or safety.
High importance	▪ The effect would change the status of a Bathing Water; or ▪ The effect would be to produce or remove a health or safety issue of significant concern and that would be (or is) debilitating at least for a short period. ▪ Effective treatments/alternatives exist but recovery may take several weeks.

	people are unlikely to be able to completely avoid exposure to the risk to their health or safety but may have some control over exposure; and the people affected will tend to include those from vulnerable or disadvantaged groups.
Very high importance	▪ The effect would be to produce or remove a health or safety issue that would be (or is) very serious, life-threatening or very debilitating. ▪ Completely effective treatments/alternatives may not available and recovery is likely to require a lengthy period of time; people are not able to avoid their exposure to the risk to their health or safety; and the effect is likely to be particularly concentrated on vulnerable or disadvantaged groups.
Notes: To use this guide, you need to decide if a proposal would remove or create effects falling within a particular importance category.	

How do I assess the scale of effects on health and safety?

The scale of an effect on human health or human safety depends on:

- the degree to which risks to health and safety are altered; and
- the number of people likely to be affected.

You should use the guide in Table 12 below to help categorise the scale of effect.

Table 12: Indicative guide to assessing the scale of an effect on human health or human safety

Increase or decrease in risk, or benefit, to health and well-being	**Number of people likely to be affected**					
	< 10	10 to < 100	100 to < 1,000	1,000 to < 10,000	> 10,000	*General population; or*
			10 to < 100	100 to < 1,000	> 1,000	*Disadvantaged groups*
Very small *(perhaps imperceptible)*	N	VS	VS - S	S	S - M	
Small	VS	VS - S	S	S - M	M	
Modest	S	S - M	M	M	M - L	
Large	S - M	M	M - L	L	L - VL	
Very large *(eg a risk to health completely, or nearly completely, eliminated)*	M	M - L	L	L - VL	VL	

Key:

N = negligible; VS = very small; S = small; M = medium; L = large; and VL = very large

How do I work out the significance of an effect on human health and safety?

Once you have an estimate of the scale of an effect on human health and safety and the importance of the effect, you should use the guidance in the main part of this guidance to assess the magnitude and significance of that effect.

C2: Effects on recreation

What effects on recreation should I consider?

You should consider effects likely to increase or decrease opportunities for recreation or the quality of a recreational experience. Such effects may result from:

- the direct effect on the water environment of the proposed controlled activity; or
- the establishment or improvement of recreational facilities provided that establishment or improvement is directly dependent on the proposed controlled activity.

What importance should I give to effects on recreation?

To assess the importance of an effect on recreation, you need to consider:

- the uniqueness or rarity of the recreational resource in local, regional, national and international contexts;
- the accessibility of the resource and travel distances for likely users of the resource;
- the qualities offered by the resource to users of different abilities;
- the level of use of the resource compared with other similar resources; and
- whether or not the resource is a recognised sporting or training venue

You can use the guidance in Table 13 to help judge the importance of an effect on recreation.

Where effects on recreation may be a deciding factor in the balancing test, you should consider consulting Sportscotland, the local authority and the relevant governing or representative body for the sport or recreational interest (eg Scottish Canoe Association, Ramblers Association, Royal Yachting Association etc) to help you assess the importance of the recreational resource.

Table 13: Indicative guide to assessing the importance of an effect on recreation

Low importance	▪ The part of the water environment is frequently used for recreation but does not meet any of the other criteria listed in this Table.
Medium importance	▪ The part of the water environment is among the most popular locations regionally for a particular form of recreation or type of experience/challenge within that form; and the qualities of the part of the water environment (including its landscape qualities) place it amongst the best sites in the region for a particular form of recreation or type of experience/challenge within that form. Similar sites are likely to be rare to very rare in the region; or the site is used by clubs in the region as a venue for training or competitions; or the site is particularly important regionally because its location means that it is particularly accessible to recreational users in the region; or the site is a recreational resource for deprived or otherwise disadvantaged communities or groups.
High importance	▪ The part of the water environment is regularly used by people from all over Scotland; and ▪ The qualities of the part of the water environment place it amongst the best sites in Scotland for a particular form of recreation or type of experience/challenge within that form. Similar sites are likely to be rare to very rare in Scotland; or the site is one of the top sites regionally for a particular form of recreation and its location means that it is particularly accessible from a number of Scotland's major population centres - so making it of national importance; or ▪ The site is a recreational resource for one or more of the most deprived or otherwise disadvantaged communities in Scotland; or the site may host national competitions or events or be an important training site for such events.
Very high importance	▪ The part of the water environment specifically attracts overseas visitors interested in this form of recreation; and the qualities of the part of the water environment make it one of the most renowned sites for this form of recreation or type of experience/challenge within the form in the UK; or the site is a venue for international competitions or events or an important training venue for such events.

How do I assess the scale of effects on recreation?

The scale of an effect on recreation depends on the size of the increase or decrease in opportunity for recreation or the quality of the recreational experience. You can use the general guide in Table 14 to help categorise the scale of an effect on recreation.

Table 15 provides more specific guidance for assessing effects on canoeing and kayaking.

Table 14: Indicative guide to assessing the scale of an effect on recreation

Very small	Very small effects less than around a 5% increase in: ▪ the availability of the recreational resource (within a time period); or ▪ the usage of the resource (numbers of people).
Small	Small effects:- around a 6% to 15% reduction or increase in: ▪ the availability of the recreational resource; or ▪ the usage of the resource. If effects are concentrated at low usage times (e.g. week days) then a greater than 15% reduction or increase in the availability of the resource at these times may still be small. If effects are concentrated at high usage times (e.g. weekends), then reductions or increases in availability of less than 15% may be medium scale
Medium	Moderate effects:- around a 16% to 40% reduction or increase in: ▪ the availability of the recreational resource; or ▪ the usage of the resource. If effects are concentrated at low usage times (e.g. week days) then a greater than 40% reduction or increase in the availability of the resource at these times may still be small. If effects are concentrated at high usage times (e.g. weekends), then reductions or increases in availability of less than 40% may be medium scale
Large	Large effects:- around a 41% to 80% reduction or increase in: ▪ the availability of the recreational resource; or ▪ the usage of the resource.

Very Large	Very large scale effects:- more than an 80% reduction or increase in: ▪ the availability of the recreational resource; or ▪ the usage of the resource.

Table 15: Indicative guide assessing the scale of an effect on canoeing/kayaking

Very small	▪ No more than 5% of potential canoe days completely lost or gained; and/or ▪ less than a 5% reduction or increase in number of potential canoe-able days on which flows are better than scrape-able Aesthetic impacts would be expected to be minor.
Small	▪ Between 6% - 15% of potential canoe days completely lost or gained; and/or ▪ between a 6 % - 15% reduction or increase in number of potential canoe-able days on which flows are better than scrape-able If the availability, quality and extent of the recreational resource on weekends is largely unaffected and there is evidence that weekday use is much less important than weekend use, the scale of the impact may be considered small even if the overall reduction in the availability and quality of the resource is as high as 20 - 30 %.
Medium	▪ Between 16% – 40% of potential canoe days completely lost or gained; and/or ▪ between a 16% - 40% reduction or increase in the number of potential canoe-able days on which flows are better than scrape-able. If the availability, quality and extent of the recreational resource on weekends is only subject to a very small reduction and there is evidence that weekday use is much less important than weekend use, the scale of the effect overall

	may be considered medium even if the overall reduction in the availability and quality of the resource is as high as 45 - 55 %.
Large	▪ Between 41% - 80% of potential canoe days completely lost or gained; and/or ▪ between a 41% - 80% reduction or increase in the number of potential canoe-able days on which flows are better than scrape-able.
Very Large	▪ More than 80% of potential canoe days completely lost or gained; and/or ▪ more than an 80% reduction or increase in number of potential canoe-able days on which flows are better than scrape-able.

How do I work out the significance of an effect on recreation?

Once you have an estimate of the scale of an effect on recreation and of the importance of the affected recreational resource, you should use the guidance in the main part of this guide to assess the magnitude and significance of the effect.

C3: Effects on visual amenity and landscape

What effects on visual amenity and landscape character should I consider?

You should only consider effects of the proposed controlled activity on the appearance of:

- watercourses and that part of their riparian zone on which their physical condition and ecological health depends. The latter will include the corridor of land along the bank top and any adjacent land directly shaped by its connection with the river, such as floodplain wetlands and oxbow lakes;
- lochs and their shore zones; and
- wetlands

What importance should I give to effects on visual amenity and landscapes?

The importance of the appearance of the water environment depends on the:

- prominence of, or role played by, the water environment in the landscape or visual amenity concerned;
- local, regional, national or international conservation value of the landscape. Some of Scotland's landscapes are unique or otherwise culturally important even though few people may see them. The conservation of these landscapes can be of high importance for future generations; and
- social and economic value of water environment features in visual amenity terms. If the water environment is a prominent feature of a visual amenity that attracts large numbers of overseas visitors, it is likely to be of high or very high importance. Improvements to degraded parts of the water environment can also be of high importance, for example, where they significantly improve visual amenity for deprived and disadvantaged communities.

You can use the guidance in Table 16 to help judge the importance of an effect on visual amenity and landscapes. In using the table, you should assess the importance of the water environment as:

- a visual amenity; and
- a landscape feature of a locally, regionally, nationally or internationally important landscape.

The water environment may be important in one or both these respects. If the latter, you should consider whether or not this should increase the importance you assign to the water environment. For example, where the water environment is of high importance as a visual amenity and a prominent feature of the landscape character of a landscape of high conservation importance (e.g. a national scenic area), the overall importance of the water environment is likely to be very high.

You should seek advice (via the local Nature Scot office) from specialist landscape advisors in Nature Scot where a proposal is likely to affect a site designated for its landscape importance or a site identified as a Wild Land Area.

When using Table 16, you should only treat the water environment as a landscape feature of local, regional, national or international importance for the purpose of your assessment if the proposed activity is likely to have a significant effect on that landscape's character.

An activity may affect the visual amenity of the water environment without affecting the water environment's wider landscape importance. Where this is the case, you should only take account of the water environment's visual amenity importance when assessing the significance of visual amenity effects.

Table 16: Indicative guide to assessing the importance of landscapes and viewpoints

Negligible	**Visual amenity – types of viewpoints** ▪ Minor transport routes not meeting the criteria for medium importance. ▪ Formal outdoor recreation facilities not meeting the criteria for low or medium importance. ▪ Workplaces.
Low importance	**Visual amenity – types of viewpoints onto the water environment** ▪ Informal recreational routes and areas not meeting the criteria applicable for medium, high or very high importance. ▪ Formal outdoor recreation facilities (swimming pools; golf courses; etc) acting as regional centres or regularly hosting regional sporting events). ▪ Residences and residential areas not meeting the criteria for medium, high or very high importance.

	▪ Listed buildings, ancient monuments and other built heritage sites not meeting the criteria for medium or high importance. **Landscapes** ▪ The water environment is a feature of the landscape of a *Country park*.
Medium importance	**Visual amenity – types of viewpoints onto the water environment** ▪ Informal recreational routes, and other areas, that are amongst the most visited locally. ▪ Major transport routes not meeting the criteria for high importance. ▪ Minor transport routes used frequently by visitors to Scotland or people from other parts of Scotland. ▪ Residences and residential areas in neighbourhoods that are amongst the most deprived regionally. ▪ Extensive residential areas in villages, towns or cities. ▪ Formal recreation facilities regularly hosting national or international sporting events. Listed buildings, ancient monuments and other built heritage sites that are amongst the most visited regionally. **Landscapes** ▪ The water environment is a feature of a designated *Local Landscape Area*. ▪ The water environment is a feature of a *Regional park*.

High importance	**Visual amenity – types of viewpoints onto the water environment** ▪ Informal recreational routes and areas that are amongst the most visited regionally and in which the water environment is a major component of the visual amenity. ▪ Major transport routes used extensively by visitors to Scotland as well as people from throughout Scotland. ▪ Residences and residential areas in neighbourhoods that are amongst the most deprived nationally. ▪ Residential areas in villages, towns or cities with an historic association with the part of the water environment concerned. ▪ Listed buildings, ancient monuments and other built heritage sites attracting large numbers of visitors from across Scotland and beyond. **Landscapes** ▪ The water environment is a feature of the landscape character of *National Scenic Areas*; *National Parks*; and areas listed in *Scotland's Inventory of Gardens & Designed*
	Landscapes and Wild Land Areas.
Very high importance	**Visual amenity – types of viewpoints onto the water environment** ▪ Informal recreational routes and areas attracting especially large numbers of visitors from across Scotland and beyond and in which the water environment is the dominant component of the visual amenity. ▪ Residences and residential areas that are within a national priority area for regeneration.

	Landscapes ▪ The water environment is a feature of the landscape character of a world heritage site for which landscape was an important factor in its designation

How do I assess the scale of an effect on visual amenity and landscapes?

The scale of an effect on visual amenity and landscapes depends on:

- the reduction or increase in people's opportunity to experience the visual amenity;
- the degree of change to the quality/character of the visual amenity or character of the landscape.

You can use the general guide in Table 17 to help categorise the scale of an effect on landscapes and visual amenity.

Table 18 and Table 19 provide more specific guidance for assessing effects on the visual amenity provided by waterfalls.

Table 17: Determining the scale of an effect on visual amenity

Very small	**Viewpoints** ▪ Small change in the quality of the view for a small or moderate proportion of viewpoints. **Landscapes** ▪ Only features that play a minor role in creating the distinctiveness and character of the landscape would be altered and the changes would be virtually imperceptible and/or within the capacity of the landscape to absorb.

Small	**Viewpoints** ▪ Small degree of change in the quality of the view for a large or very large proportion of viewpoints; or ▪ Moderate change in the quality of the view for a small proportion of viewpoints; and/or **Landscapes** ▪ Features that contribute to the distinctiveness and character of the landscape would be altered slightly but noticeably in a localised area.
Medium	**Viewpoints** ▪ Moderate change in the quality of the view for a moderate or large proportion of viewpoints; ▪ Large change in the quality of the view for a small or moderate proportion of viewpoints; or ▪ Very large change in the quality of the view for a small proportion of viewpoints; and/or **Landscapes** ▪ Features that contribute to the distinctiveness and character of the landscape would be altered to a medium extent over a wide area or altered substantially in a localised area.
Large	**Viewpoints** ▪ Large change in the quality of the view for a large or very large proportion of viewpoints; or ▪ Very large change in the quality of the view for a moderate or large proportion of viewpoints; and/or

	Landscapes ▪ Features that contribute significantly to the distinctiveness and character of the landscape would be moderately altered over a wide area or altered very substantially over a limited area.
Very Large	**Viewpoints** ▪ Very large change in the quality of the view for a very large proportion of viewpoints; and/or **Landscapes** ▪ Features that contribute significantly to the distinctiveness and character of the landscape would be lost or very substantially altered over a wide area.

Assessing the scale of effects on the visual amenity provided by waterfalls and similar water features

The visual amenity experience provided by water features, such as waterfalls, varies depending on water levels. A proposed activity may affect some water levels and hence some visual amenity experiences more than others. To assess effects on the different experiences, you should estimate the average number of days per year that water levels would be in each of the flow classes described in Table 18:

- currently; and
- if the proposed activity were to be authorised.

Table 18: Different visual amenity experiences of waterfalls and cascades

Very low flows	Low flows	Mid flows	Full flows	Very full flows
≤ Qn95	> Qn95 ≤ Qn70	> Qn70 < Qn30	≥ Qn30 ≤ Qn5	> Qn5

You can use Table 19 to categorise the scale of the change in opportunity to view the water feature at each of the different water levels.

Table 19: Scale of effect on the visual amenity provided by waterfalls and other similar water features

Negligible	≤ 20% reduction in the number of days per year on which the water feature can be experienced in any amenity class
Very small	> 20 and < 40% reduction in the number of days per year on which the water feature can be experienced in any amenity class
Small	≥ 80 % reduction in the number of days per year on which the water feature can be experienced in one of the amenity classes; and/or > 40 and < 80 % change in the number of days per year on which the water feature can be experienced in two of the amenity classes
Medium	≥ 80 % reduction in the number of days per year on which the water feature can be experienced in two of the amenity classes; and/ or > 40 and < 80 % reduction in the number of days per year on which the water feature can be experienced in three of the amenity classes
Large	≥ 80 % reduction in the number of days per year on which the water feature can be experienced in three of the amenity classes; and/or > 40 and < 80 % reduction in the number of days per year on which the water feature can be experienced in four of the amenity classes
Very Large	≥ 80% reduction in the number of days per year on which the water feature can be experienced in four or more of the amenity classes

How do I work out the significance of an effect on visual amenity?

Once you have an estimate of the scale of an effect on visual amenity and of the importance of the effect, you should use the guidance in the main part of this guidance to assess the effect's magnitude and significance.

C4: Effects on the economic opportunities of disadvantaged groups

What effects on the economic opportunities of disadvantaged groups should I consider?

You should consider effects likely to have a direct effect on the economic opportunities available to disadvantaged groups, in particular effects on the availability of employment. Disadvantaged groups tend to have limited opportunities to move or travel long distances for work. Consequently, effects on the local availability of employment opportunities may be significant

Disadvantaged groups include people in the lowest deciles of the Scottish Index of Multiple Deprivation[8], people with disabilities and people who otherwise have significantly less opportunity than the majority of the population to participate in, and benefit from, economic activity in Scotland.

What importance should I give to effects on the economic opportunities of disadvantaged groups?

The importance of an effect on the economic opportunities of a disadvantaged group depends on the degree of disadvantage of the group. You can use the guide in Table 20 to help assess the importance of an economic effect on a disadvantaged group.

Table 20: Indicative guide to assessing the social importance of an economic effect

Low importance	The affected community is, or would be, in the most deprived >20% to 30 % of neighbourhoods in Scotland

[8] See *Scottish Index of Multiple Deprivation* for information on relative deprivation of different neighbourhoods in Scotland (includes interactive map)

Medium importance	The affected community is, or would be, in the most deprived >10% to 20% of neighbourhoods in Scotland
High importance	The affected community is, or would be, in the most deprived > 5% to 10% of neighbourhoods in Scotland
Very high importance	The affected community is, or would be, in the most deprived 5% of neighbourhoods in Scotland

How do I assess the scale of an effect on the economic opportunities of a disadvantaged group?

The scale of an effect on economic opportunity depends on the degree of change in economic opportunity and the numbers of people affected by the change. You can use the guide in Table 21 to help categorise the scale of an effect on a disadvantaged group.

Table 21: Indicative guide to assessing the scale of an effect on a disadvantaged group

Very small	There would be a very small change to the economic opportunities of the group as a whole. A very small number of individuals may benefit more significantly
Small	There would be a small change to the economic opportunities of the group as a whole. A small number individuals may benefit more significantly
Medium	There would be a moderate change to a moderate proportion of the affected group
Large	There would be a large change to a moderate proportion of the affected group or a moderate change to a very large proportion of the group
Very Large	There would be a very large change to the economic opportunities available to a very large proportion of the affected group. The size of the affected group or groups is large (e.g. several 1,000s of people)

How do I work out the significance of an effect on the economic opportunities of a disadvantaged group?

Once you have an estimate of the scale of an effect on economic opportunities for a disadvantaged group and of the importance of the effect, you should use the guidance in the main part of this guidance to assess the effect's magnitude and significance.

APPENDIX D: Effects on natural resource use[9]

D1: Effects on climate change

What climate change effects should I consider?

You should consider the direct effects on greenhouse gas emissions resulting from the activity. These effects include:

- reducing reliance on fossil fuel energy by enabling the generation of renewable energy or the replacement of one operation or process with a more energy efficient one;
- increasing reliance on fossil fuel energy by increasing energy demand;
- directly generating greenhouse gases;
- Carbon consequence of excavation/disturbance of peat soils or aggregates, from in-house development;
- release of carbon from disturbing soils especially peat soils; if no remediation action is taken; or
- Impacts of drainage and resultant erosion with release of carbon, loss of habitat and subsequent water pollution.

You should not consider greenhouse gas emissions that may result from the subsequent uses in the economy of products arising from the carrying out a controlled activity. For example, you should not take into account greenhouse gas emissions from the use of coal even where the mining of that coal was enabled by a controlled activity.

[9] Take care to avoid double counting as much activity has an impact on natural resources and may have already been considered (or be more appropriately considered) under previous headings.

You should however, consider what alternatives could be considered and if they would result in lower greenhouse gas emissions. If the chosen activity does not have the lowest greenhouse gas emissions, its's use should be justified.

What importance should I give to climate change effects?

Making sure Scotland plays its part in tackling climate change is a national policy priority. Accordingly, you should normally treat decreases or increases in greenhouse gas emissions as of high importance. However, depending on the potential benefits, projects to develop and test novel and internationally transferrable techniques for renewable energy generation may be of very high importance.

How do I assess the scale of climate change effects?

To assess the scale of a climate change effect, you need an estimate of the additional:

- renewable energy generated in giga Watt hours per year;
- non-renewable energy consumed in giga Watt hours per year;
- greenhouse gases emitted in tonnes of carbon equivalents per year; or
- greenhouse gases emissions saved in tonnes of carbon equivalents per year.

You can then use the guide in Table 22 to categorise the scale of the effect.

Table 22: Indicative guide to assessing the scale of a climate change effect

	Scale					
	Negligible	Very Small	Small	Medium	Large	Very Large
Average net increase in renewable energy generated or non-renewable energy consumed per year (GWh)	≤ 0.25	> 0.25 to < 20	20 to < 120	120 to < 150	150 to < 200	≥ 200
Carbon equivalents[10] (t/year)	≤ 108	> 108 to < 8,600	8,600 to < 51,600	51,600 to < 65,000	65,000 to < 86,000	≥ 86,000

Note: You should treat effects on greenhouse gas emissions that are smaller than those in the "very small" category as non-significant effects. You should ignore such effects when weighing up the positive and negative effects of the proposed activity.

How do I work out the significance of a climate change effect?

Once you have an estimate of the scale of the climate change effect, you should use the guidance in the main part of this guidance to assess the magnitude and significance of that effect.

[10] Carbon conversion factor used – 430tCequivalent/GWh

References:

NOTE: Linked references to other documents have been disabled in this web version of the document.

See the Water >Guidance pages of the SEPA website for Guidance and other documentation (*www.sepa.org.uk/regulations/water/guidance/*).

All references to external documents are listed on this page along with an indicative URL to help locate the document. The full path is not provided as SEPA cannot guarantee its future location.

Key documents

- *WAT-RM-34: Derogation Determination - Adverse Impacts on the Water Environment*
- *WAT-RM-41: Derogation Determination – Improvements to the Water Environment*
- *WAT-FORM-28: CAR Derogation Decision Document* **External Publications**
- *Exploring the Social Impacts of Flood Risk and Flooding in Scotland* Chapter 5 (www.gov.scot/Publications/)
- Greenhouse Gas Reporting: Conversion Factors 2021 (https://assets.publishing.service.gov.uk/government/uploads/system/attachment_data/file/990661/conversion-factors-2021-condensed-set-most-users.xlsm
- *ICES* International Council for the Exploration of the Sea (www.ices.dk)
- *IUCN Red List of Threatened Species* (including Freshwater Pearl Mussel) (www.iucnredlist.org/)
- *Multipliers* associated with all industrial sectors (www.gov.scot)
- *National Biodiversity Network*
- *Quarterly National Accounts Scotland 2021* Quarter 1

  (GDP Quarterly National Accounts for 2021 Quarter 1 – gov.scot (www.gov.scot))

- Oceanic bryophytes, see *Hydro electric development planning tool* (www.nature.scot))

- *Ramsar sites* (www.nature.scot) Scottish Biodiversity List (www.biodiversityscotland.gov.uk/)
- Scottish Index of Multiple Deprivation (www.gov.scot)
- *Nature Scot National Designations* (www.nature.scot)
    - *National Nature Reserves*
    - *National Parks*
    - *National Scenic Areas*
    - *Sites of Special Scientific Interest*
- *Nature Scot Local Designations* (www.nature.scot)
    - *Country parks*
    - *Local Landscape Areas*
    - *Local nature conservation sites*
    - *Local nature reserves*
    - *Regional parks*
- *Special Protection Areas* (www.nature.scot)
- Special Areas of Conservation (www.nature.scot)
- *Wild Land Areas* map 2014 (www.nature.scot)
- *Scotland's Inventory of Gardens & Designed Landscapes* HES (www.historicenvironment.scot) **Legislation**
- *Electricity Act 1989* (Section 36 applications) (www.opsi.gov.uk/acts/acts1989a)
- European Directives (http://eur-lex.europa.eu/homepage.html)
    - *Birds Directive 79/409/EEC* (CELEX: 31979L0409)
    - *Groundwater Directive 2006/118/EC* (CELEX: 32006L0118)
    - *Groundwater Directive 1980/68/EC* (CELEX: 31980L0068)
    - *Habitats Directive 92/43/EEC* (CELEX: 31992L0043)
- *Policy Statement on Development of Environmental Standards and Conditions* (30/03/2007) (www.gov.scot/Publications/)

- *Policy Statement on Third Party Representations* (14/12/2006) (www.gov.scot/Publications/)
- *Standards Directions 2014*
  - The Scotland River Basin District (Surface Water Typology, Environmental Standards, Condition Limits and Groundwater Threshold Values) Directions 2014
  - The Solway Tweed River Basin District (Surface Water Typology, Environmental Standards, Condition Limits and Groundwater Threshold Values) (Scotland) Directions 2014

NOTE: This link provides access to the documents via a managed SEPA intranet page. The full set of Standards Directions for each river basin district in Scotland can also be found via the Publications page of the Scottish Government website (www.gov.scot/Publications/)

- *Water Environment (Controlled Activities)(Scotland) Regulations 2011* (www.sepa.org.uk/water/water_regulation.aspx)
- *Water Environment and Water Services (Scotland) Act 2003* NetRegs (www.netregs.gov.uk)
- *Water Framework Directive 2000/60/EC* (CELEX: 32000L0060)

- End of document -

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http://contactscotland-bsl.org/

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