Water Use

Supporting Guidance (WAT-SG-71)

Sector-specific Guidance: Canals

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Update Summary

Version	Description
v1.0	First issue for Water Use reference using approved content from the following documents: *British Waterways Scotland canal details- final version 27 10 08.doc*
v2.0	Doc links revised to new website, new template applied
v3.0	Multiple changes: monitoring requirements and canal details updated with new network map; guidance added for 3rd party abstractions, (un)controlled feeders, regulation of eng activities
v4.0	Expired CMS links reviewed and 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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1. Key Points

This document provides specific pre-application and ongoing regulatory guidance for:

- Canals
- Abstractions from canals

This includes background information to the sector, related definitions and supporting information requirements.

2. Background

Canals are part of the water environment as defined in Chapter 1, Section 3 of the *Water Environment and Water Services (Scotland) Act 2003*.

Canals are classed as Artificial Water bodies (AWB). AWBs are bodies of surface water created by man where no water body previously existed. AWBs are required, under WFD, to achieve Good Ecological Potential (GEP) and the default target date is 2015. For AWBs the ecological potential represents the degree to which the quality of the water body's aquatic ecosystem approaches the maximum it could achieve, given the artificial characteristics of the water body that are necessary for the use or for the protection of the wider environment.

In practice for the first river basin planning cycle (2009-2015), GEP will be assessed by reference to checklists of mitigation measures appropriate to the activity for which the AWB has been created. In the case of canals this is inland navigation. GEP also requires water bodies to achieve good surface water chemical status.

For further details, refer to *Guidance for defining Good Ecological Potential* (for HMWBs and AWBs).

3. The Canal Network

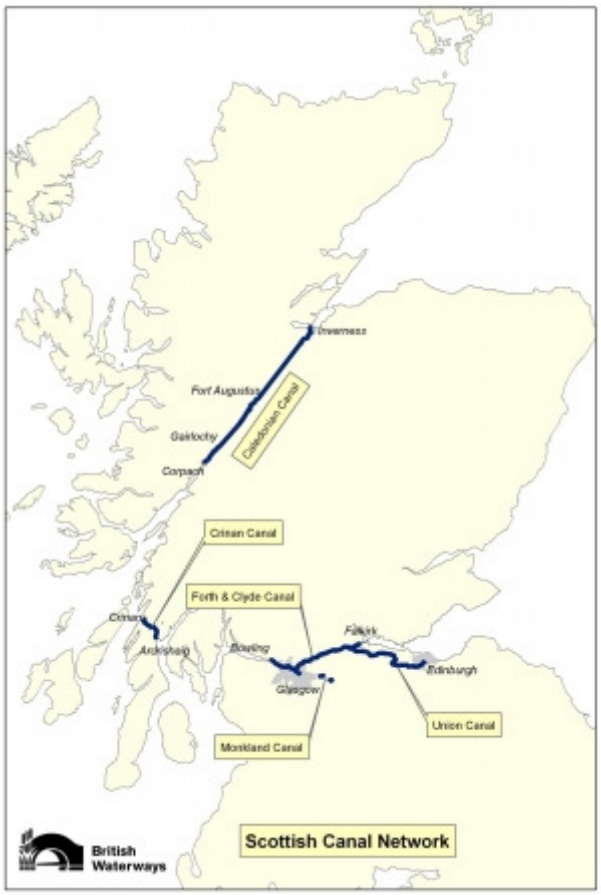
British Waterways Scotland (BWS) receives grant funding from the Scottish Government to ensure that navigation channels remain open and in a safe and well-maintained condition.

There are 3 main canal networks in Scotland namely:

- *Caledonian*
- *Crinan*
- **Lowland** – which is made up of the *Forth & Clyde*, *Union* and *Monkland* Canals.

Together they form a network of inland waterways which is 137 miles (220km) in length and was constructed between 1768 and 1822.

Figure 1 British Waterways Scotland Canal Network



3.1 Caledonian Canal

The Caledonian Canal is 60 miles (96.6 km) in length of which 22 miles (35.4 km) is man-made, stretching from Inverness to Corpach near Fort William. The canal was constructed between 1804 and 1822. The navigation includes 4 natural lochs, Oich, Ness, Dochfour and Lochy which also provide the water supply. In total there are 29 locks along the length of the canal.

The Caledonian Canal has played a significant role in the development of the Highland economy, fostering trade between East and West, as well as with Germany, Holland and the Scandinavian countries. The canal continues to play a significant role in the economy accounting for 14% of tourism spending in the Highlands. 75% of the canal traffic is for leisure with 25% commercial use. A total of 1300 boats transit the canal each year and 50 hire boats are based on the canal year round.

3.2 Crinan Canal

The Crinan Canal is 9 miles (14.5km) long and rises to 68ft (20.7m) above sea level. Construction of the canal began in 1794 and was completed in 1809. 10 reservoirs and a sea pump supply water to the canal and there are 15 locks in total along its length.

The canal was created to open up the west coast and improve access to the Western Isles, offering a safe transit route from Ardrishaig on Loch Gilp to Crinan, thus avoiding the often difficult sail around the Mull of Kintyre and cutting over 100 miles (160km) off the journey.

The Crinan Canal serves as a still water marina base for cruising yachtsmen. 95% of the canal traffic is for leisure (5% is commercial traffic) with around 1700 boats per annum transiting the canal. The harbour at Ardrishaig is also an important element in Scotland's timber trade. The canal contributes around £4m to the local economy via jobs and direct spending.

3.3 Lowland - Forth & Clyde Canal

The Forth & Clyde Canal is 35 miles (56 km) long extending from Grangemouth on the Firth of Forth to Bowling on the Firth of Clyde with the Glasgow branch another 4.7 km in length. The Forth & Clyde was constructed between 1768 and 1790 and the waterway was extended when the Monkland Canal was joined to the Port Dundas Basin in 1793 and the Union Canal at Camelon in 1822.

Water is supplied to the Forth & Clyde Canal from 5 reservoirs - 2 near Kilsyth (Birkenburn and Townhead) and 3 via the North Calder Water, Monkland Canal and supply pipes under the M8 motorway which follow the original route of the Monkland Canal (Hillend Reservoir, Black Loch and Lily Loch). In total, there are 39 locks on the Forth & Clyde Canal.

Following completion of Millennium Link restoration work, the Forth & Clyde Canal re-opened again in the spring of 2001, providing coast-to-coast navigation. The link with the Union Canal, allowing navigation from the centre of Glasgow to the centre of Edinburgh was achieved following the opening of The Falkirk Wheel on 24 May 2002.

3.4 Lowland - Union Canal

The Union Canal, or to give the waterway its full name, the Edinburgh and Glasgow Union Canal, was constructed between 1818 and 1822.

A 32 mile (52 km) contour canal, it runs from Edinburgh to Falkirk where it joins the Forth & Clyde Canal. The connection between the Union Canal and the Forth & Clyde Canal, a flight of 11 locks, was severed in the 1930s and was re-established via the construction of a 2 km extension of the Union Canal and the Falkirk Wheel in 2002.

There are 3 locks on the Union Canal, 2 just above and 1 just below the Falkirk Wheel. Water is supplied to the canal from Cobbinshaw Reservoir via the Almond feeder at Almondell & Calderwood Country Park.

3.5 Lowland - Monkland Canal

The Monkland Canal was constructed between 1770 and 1793 and although no longer available for navigation it is, nevertheless a vital part of the system. It acts as a conduit for the main supply of water to the western end of the Forth & Clyde Canal and is locally important as an amenity for the community.

When the M8 motorway was built it followed the route of the Monkland Canal which was filled in. The water supply from the 3 reservoirs (Hillend Reservoir, Black Loch and Lily Loch) near Coatbridge now flows via a set of twin pipes under the motorway and enters the Forth & Clyde Canal at Port Dundas in Glasgow.

2 open water channel sections of the Monkland Canal remain (in Coatbridge and Woodhall, east of Coatbridge) but there are no locks on these sections.

4. British Waterways Scotland Licences

BWS has 3 multiple water use licences to cover their canal network. These licences contain details of abstraction, impoundment, engineering activities and their associated conditions. The licences are:

- CAR/L/1010718 for the Caledonian Canal
- CAR/L/1011179 for the Crinan Canal
- CAR/L/1011140 for the Lowland Canals (incorporating the Forth & Clyde, Union and Monkland canals).

Note that Registration level sewage discharges from BWS properties are not included within these licences even though it would be possible under CAR to include them as part of a multiple water use licence. As agreed with BWS, these authorisations remain as separate Registrations in order to facilitate the potential future sale of BWS properties where required.

5. Abstractions into a Canal

Abstractions from rivers, lochs and reservoirs are made by BWS in order to supply water to canals to maintain a navigable depth.

Canals have been in situ for a considerable amount of time and will therefore have established their own habitats for a wide and diverse number of plants and animals. Under the Water Framework Directive, canals are considered as artificial water bodies (AWB) and will therefore be expected to meet Good Ecological Potential (GEP).

Any proposals for additional abstractions **into** the canal by BWS should be dealt with as licence variation applications, following the procedures in *WAT-RM-01: Regulation of Abstractions and Impoundments*.

Generally speaking, canals operate within narrow volume limits with the principle that flood water (termed 'waste water overflows') is spilled back to the natural water environment. These amounts totalled account for the gross abstraction volume, however what should be authorised and included in the licence is the **net** volume used in the operation of the canal.

5.1 'Controlled' and 'Uncontrolled' Feeders

Controlled feeders are inputs where BWS can control the volume entering the canal using weirs and sluices etc. Such inputs can be readily monitored (see Section 6 '*Monitoring Requirements*').

Uncontrolled feeders are inputs where BWS does not have control over the volume entering the canal system (i.e. there is no weir controlling the flow into the canal) and where the canal is intercepting natural watercourses which either flow directly into the canal or indirectly via other feeders. Therefore uncontrolled feeders will also channel flows into the canal from high flow and storm events.

Uncontrolled feeders should be authorised according to the 'net inflow' in the canal which is assumed to be the natural Q95 for that watercourse. The level of authorisation is then dependant on that Q95 so authorisation could be by GBR, Registration or Licence. Where the Q95 is at Registration level, the Registration activity should be included within the existing British Waterways Licence.

SEPA Hydrology will need to be contacted to derive the appropriate Q95 acting as the 'net abstraction' The use of the Q95 value as the abstraction rate into the canal is based on the assumption that higher flows exit the canal back to the water environment via the nearest 'waste water' weir in the adjacent pound. It should be noted that the assumption of a net abstraction of Q95 at uncontrolled feeders is not equivalent to stating that the abstraction meets environmental standards. However in most cases it is expected that these uncontrolled feeders would not be having a significant environmental impact. Minor drainage ditches etc into canals should be considered as land drainage and therefore do not require authorisation under CAR.

6. Monitoring Requirements

All sources of water supply will need to be monitored in some format and this will be stated in the licence document or monitoring plan. The type of monitoring that will be appropriate for each source may vary. It may be that certain methods of monitoring will be inappropriate at certain sites.

In some areas it might be necessary to rely on the known capacity of a pipe that feeds the canal through gravity, as long as the pipe runs at full bore all the time. For inputs from 'controlled' feeders, the aim with such abstractions would be to install monitoring at the points where the feeders enter the canal.

There will be cases were there are fixed structures that permit a known quantity to leave the source of supply and enter into the canal. Where these types of structures are in place it will be necessary to carry out calibration tests to ensure the quantities passing through them are in fact the permitted quantities. It will also be necessary for the responsible person to carry out regular maintenance checks to ensure the structures have not become blocked or damaged and therefore impacting on their performance.

Another way to monitor the quantities of water that are entering the canal system is through lockage figures. In the majority of cases it will be possible to work out the capacity of a lock that takes water from the original source and transfers it into the canal. It will then be a matter of recording the number of times that this lock is operated and multiplying it by the known capacity to work out how much water has entered into the canal. Note that other operating practices may need to be taken into account such as that of maintaining flows over the locks.

A potential difficulty with monitoring is where there are inflow monitors picking up the gross volumes entering the canal, including 'storm flows' and unintentional abstractions from tributaries which are outwith BWS's control i.e. uncontrolled abstractions. This may give the impression of licensed volume exceedence. However, in such cases, a method for distinguishing and highlighting unintentional and 'storm flow' events in the submitted data returns will require to be agreed with SEPA via the monitoring plan.

The means of abstraction at each site which feeds into the canal will be noted in a table on the CAR licence associated with the canal, along with the permitted daily and annual quantities to be abstracted for each site. The resulting data will be recorded in accordance with the approved monitoring plan and reported to SEPA.

As required by the CAR licence, BWS has provided SEPA with a monitoring plan for each of the 3 canal networks.

7. Impoundments, Sluices and Locks

Locks within the canal itself are not deemed to be impoundments, will not need to be regulated and therefore do not require an impoundment licence.

Structures on waterbodies that are used to feed the canal which do not fall under GBR 1 will need to be regulated and will require licensing. These could for example include managed weirs incorporating a sluice to facilitate abstraction and which may raise or lower the water level upstream of the impoundment.

Any proposals to alter or add further associated impoundments to the existing canal licence should be done by application for variation from BWS.

8. Abstractions from a Canal

It should be noted that this section applies to abstractions from sections of artificial waterbody only and does not apply to natural lochs which may form part of the canal network. For example, Scottish Water and Scottish & Southern Energy both abstract separately from Loch Ness which is a natural waterbody even though it is included as part of the Caledonian Canal system.

As well as being used as navigation channels, canals themselves can be used as a source of supply for other abstractors and these abstractions are referred to below as '3rd party abstractions'.

All 3rd party abstractions from canals should be included on the BWS licences and so BWS becomes the Responsible Person for all such abstractions. Therefore no separate CAR authorisations should be issued to 3rd parties for abstractions from the canal and if SEPA is approached by a 3rd party they should be advised to contact BWS directly.

If BWS receives any requests from a 3rd party for a new abstraction or a request to increase the volume of an existing 3rd party abstraction then BWS will require to apply to SEPA for a variation of their existing licence.

However, no environmental assessment is required for abstractions from a canal and so all changes to the BWS licence for 3rd party abstractions will be done as administrative variations, regardless of the volumes being abstracted from the canal.

3rd party abstractions will be included in a canal licence as a separate table and for the purpose of regulation, will be treated as 'Registrations', regardless of volume. As the named 'Responsible Person', BWS will be responsible for ensuring that the licence conditions (including volume limits) pertaining to the 3rd party abstractions are complied with.

If, as a result of changes to 3rd party abstractions, BWS require to increase the volume of abstraction into the canal from feeders or other parts of the water environment, then a full technical variation with environmental assessment will be required. In such cases, the procedures in *WAT-RM-01: Regulation of Abstractions and Impoundments* will apply.

9. Engineering in Canals

Engineering works affecting artificial water bodies are controlled activities and as such engineering activities on canals may require to be authorised.

Common maintenance activities undertaken on canals; including weed control, dredging, bank reinforcement and dewatering activities are covered by conditions contained within the existing canal licences issued under the Water Resources Regime. Where any additional engineering activities are proposed and require to be authorised, the existing canal licence should be varied and the relevant conditions included in that licence.

Table 1 summarises the level of authorisation required for common activities.

Table 1 Summary of level of authorisation for common activities

Activity	Authorisation	Comment
Weed control Dredging Bank reinforcement De-watering	Authorisation	Standard conditions included in all existing canal licences
Sediment management	Authorisation	Conditions should be included in existing licence however where absent licence variation required
Structure maintenance	No authorisation	Provided design and footprint of the structure remain the same and the same (or equivalent) materials are used
Construct new canal or new section of canal	No authorisation	No authorisation under engineering regime, may be captured under the water resources regime
Removal Re-alignment Culverting	Authorisation	Where canal deemed to be of ecological value then would require authorisation
New structures	Authorisation	Where activity impacts on the bed of the canal and it is deemed to be of ecological value then would require authorisation

Further clarification and information is contained within *WAT-PS-07-03: Engineering in Artificial Inland Surface Waters*

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/water/water_regulation/guidance.aspx*).

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 can not guarantee its future location.

Key Documents

WAT-PS-07-03: Engineering in Artificial Inland Surface Waters (www.sepa.org.uk)

WAT-RM-01: Regulation of Abstractions and Impoundments

Guidance for defining Good Ecological Potential (for HMWBs and AWBs) Mar 2008 UKTAG (www.wfduk.org)

Water Environment and Water Services (Scotland) Act 2003 (www.netregs.org.uk)

Useful Links

WAT-RM-03: Regulation of Sewage Discharges to Surface Waters

WAT-RM-05: Regulation of Trade Effluent Discharges to Surface Waters

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