

SEPA's guidance for authorising water source heat pumps

1. Introduction

In order to achieve the Scottish Climate Change ambitions, including decarbonisation of the energy system, it is important that low carbon energy generation can develop. The Scottish Government is promoting the potential of Water Source Heat Pump Heat Maps (WSHPHM) to help identify suitable areas to supply renewable energy at a district level within Scotland. However, while energy is fundamental to the economy its production, transmission and use can have environmental impacts.

This position statement is to clarify the regulatory requirements where developers want to install a surface water Water Source Heat Pump (WSHP). The requirements will depend on the type of system - open or closed loop. The primary regulation will be an abstraction authorisation, with potentially point source and engineering controls.

For open and closed loop systems for **groundwater** geothermal energy from boreholes see guidance document ([SEPA's requirements for activities related to geothermal energy](#)).

2. Environmental risks to be mitigated

The risks posed by WSHPs will depend on the activities involved. Surface water WSHPs are likely to involve one or more of the following activities:-

- abstraction of water from the water environment [WAT-RM-01](#)
- construction of the intake/infrastructure [WAT-SG-28](#) and
- changes to the temperature of the receiving water environment [WAT-SG-85](#)

SEPA would address WSHPs as per our guidance, but extra mitigation may be required for thermal discharges into lochs where the flow of water may be low which could lead to hot spots. Additional care will also be needed to assess cumulative impact if these systems were in close proximity to each other or other large abstractions.

3. Open loop systems

For inland surface water open loop systems the **abstraction** volume would determine the level of authorisation required under the [Water Environment \(Controlled Activities\) \(Scotland\) Regulations 2011](#) (CAR):

- GBR – <10m³/day
- Registration – ≥10 - ≤50m³/day
- Simple Licence – ≥50 - ≤2000m³/day
- Complex Licence - >2000m³/day

SEPA recognises the importance of promoting the development of renewable energy generation as a contribution to reducing global warming. We therefore do not want our charges to be a disincentive for small-scale energy generation.

There is currently no activity description for this type of activity in the [Environmental Regulation \(Scotland\) Charging Scheme 2018](#). Therefore, the application activity is “any other CAR activity subject to a Registration or of Registration scale”.

For water source heat pumps which return water immediately adjacent¹ to the abstraction and have no significant thermal impact (within 3°C of the ambient temperature of the receiving water) a registration fee will apply to the abstracted water. No fee is payable for the abstraction return and there will be no annual subsistence fees.

For inland waters if a developer cannot meet the return criteria above, the charging incentives would not apply and the return would be dealt with as a point source discharge registration level activity and included in the authorisation.

SEPA would allow the discharge temperature to be within 3°C of the ambient temperature of the receiving water. You can find more information on thermal discharges in [WAT-SG-85](#). A **point source** simple licence (thermal effluents) would be required if the temperature change would have the potential to breach environmental standards.

The **engineering** aspect of the intake and discharge would be included in the authorisation without the need for a separate authorisation (as per hydro intakes and returns).

4. Closed loop systems

Surface water closed loop systems will not have an abstraction or discharge. Therefore, these systems will be authorised based on:

- Engineering authorisation required where there is an impact on the bank or beds (as per CAR Practical Guide);
- Point source simple licence required if ambient temperature difference is >3°C.

5. Coastal and Transitional systems

A number of organisations regulate WSHPs in Coastal and Transitional waters:

- SEPA:
 - Abstraction registration for all Coastal and Transitional abstractions; ○ Point source simple licence required if ambient temperature difference is >3°C. Unlikely for WSHPs.
- Marine Scotland:
 - Marine licence for engineering activities such as construction of WSHP in, on or under the seabed.
- Other organisations:
 - Approval or consent may be required from other consenting bodies such as the Crown Estate or the Harbour/Port authority.

¹ The water should be returned as close as possible to the abstraction so as not to cause a breach of Environmental Flow Standards (EFS) as per [The Scotland River Basin District \(Standards\) Directions 2014](#) Schedule 2 Environmental Standards Part B.