

**WAT-G-044**

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**EASR Guidance:**

**Water source heat pumps**

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# 1 Purpose

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 guidance 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. For information see WAT-G-040 EASR Guidance: Permit application guide for abstractions and impoundments
* construction of the intake/infrastructure. For information see WAT-G-036 EASR Guidance: Intakes and Outfalls and
* changes to the temperature of the receiving water environment. For information see WAT-G-072 EASR Guidance: Environmental standards for discharges to surface waters.

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 Environment Authorisation (Scotland) Regulations 2018 (EASR):

* GBR – <10m3/day
* Registration – ≥10 - ≤50m3/day
* Permit - ≥50m3/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 EASR authorisation 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 3oC 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 discharge registration level activity and included in the authorisation.

SEPA would allow the discharge temperature to be within 3oC of the ambient temperature of the receiving water. You can find more information on thermal discharges in WAT-G-072 EASR Guidance: Environmental standards for discharges to surface waters. 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. See the relevant section in the EASR authorisation guide.
* Point source simple licence required if ambient temperature difference is >3oC.

# 5 Coastal and Transitional systems

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

5.1 SEPA

* Abstraction registration for all Coastal and Transitional abstractions.
* Point source simple licence required if ambient temperature difference is >3oC. Unlikely for WSHPs.

# 5.2 Marine Scotland

* Marine licence for engineering activities such as construction of WSHP in, on or under the seabed.

5.3 Other organisations

* Approval or consent may be required from other consenting bodies such as the Crown Estate or the Harbour/Port authority.

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