

POW OF INCHAFFRAY DRAINAGE COMMISSION (SCOTLAND) BILL

Written submission received by The Scottish Environment Protection Agency

Thank you for providing the Scottish Environment Protection Agency with the opportunity to provide written evidence to the Committee with regard to the above Bill.

We have no comments on the Bill other than those relating specifically to SEPA's flood risk maps. These comments are as follows:

The area referred to in the Pow of Inchaffray Drainage Commission (Scotland) Bill Committee is artificially drained, the channel has been realigned significantly from its natural course and it appears partially embanked.

In producing national scale flood hazard maps we have to make a range of assumptions, however some of these may not hold true for this type of watercourse.

In summary, this means that there is a high level of uncertainty in our assessment of how frequently land may be expected to flood from the Pow, and SEPA's flood maps cannot be used to assess the areas benefitting from the Pow. Assessing the economic benefit of the Pow to adjacent properties would require a detailed local study.

Notwithstanding this, there are some areas where the discrepancy between the areas shown to be at risk of flooding in SEPA's hazard maps and the areas shown on the plans as benefitting from the Pow, are likely to be due to SEPA's maps being based on more accurate and up to date topographic data (LIDAR) than the 1846 map of the Pow.

The area at risk in SEPA's maps generally follows topographic contours e.g. Inchaffray Abbey, and the hill to the east of south lodge between the Red Burn and the Pow are on higher ground and not shown to be at risk of flooding in SEPA's maps, but are shown to be within the benefitted area according to the supplied plans. SEPA's maps also do not show the Balgowan estate to be at risk of flooding from the Pow. The LIDAR shows this area to be higher, but ground levels in LIDAR may be affected by the way in which the LIDAR is processed to remove buildings, so this would need to be confirmed with ground based topographic survey. There is also low confidence in the representation of Cowgask Burn in our maps due to the ground model resolution here.

Some technical details on the assumptions made in the national hazard mapping and how they relate to the uncertainty in the flood mapping for the Pow of Inchaffray are provided below.

- A 50% Annual Exceedance Probability (2 year return period) event is assumed to remain 'in-bank'. This is based on the reported average channel capacity for UK rivers, and may not apply for managed watercourses.
- The peak flow rather than the volume of a flood event is assumed to be the main factor in determining the flood extent and depths. SEPA's flood maps show the flood extent which would result from a constant flow equal to the

peak flow during a flood event. This is an appropriate assumption for most areas however in other artificially drained areas we know that this assumption has led to the flood extent being overestimated for more frequent flood events.

- A 5m resolution ground model is used to model the Pow of Inchaffray. This is the maximum resolution used in our national hazard mapping, but only watercourses greater than 10m wide will be well represented at this resolution and the Pow and the drainage ditches draining into it are narrower than this in places.

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