Note of Catchment meeting – 9:45 to 1pm Friday 8 November 2019, Green Hotel, Kinross

Action Points
- SEPA (Ashley Clunie)/Scottish Water (Jarred Stewart) lead with SNH (Karen Mitchell) /CEH (Linda May) to draw up a CREW application to consider climate change impacts on loch water quality. To include; the effect of potentially increasing Phosphorus (P) contributions from combined sewer overflow (CSO), and whether current SEPA P loading licencing limits are appropriate or should be reviewed. Also given that rising water temperatures as a result of climate change effects are leading to recycling of P from loch sediments, could flushing of the loch through manipulation of the sluice gates be one mitigation option without having a detrimental effect downstream. This could in due course lead to a re-fresh of the Catchment Management Plan.
- PKC Environmental Health (Kirsty Paton)/SNH (Neil Mitchell) and CEH (Laurence Carvalho) to take forward revised algal bloom temporary and permanent signage around loch.
- SNH (Neil Mitchell) to respond to citizen science letter in November Kinross newsletter via SNH regular feature.

Fishing season
- Kinross Estate Company Fishing report – Trout catch was good this year with some very large fish. Return rate continues to be upwards of 80%. Pike fishery is becoming more established and dependant on weather can be an all year round activity as opposed to the shorter brown trout fishing season.
- Due to budget cuts the 2019 CEH fish (perch and trout) hydroacoustic survey was funded by William Grant Foundation

Water quality
- The 2017 Loch Leven nutrient load and source apportionment study identified diffuse pollution as the largest source of phosphorus loading to the loch, as the study found increased levels of particulate phosphorus (which attaches to particles such as soil) showing in recent years the balance of P loading to the loch has changed from point source to diffuse. South Queich and Pow Burn showed highest contributions.
- 2018 and 2019 have seen higher occurrences of blue-green algae which appears to correlate with higher summer water temperature levels (greater than 17 degrees) and a release of P from within the loch sediments. The increased occurrence of algal blooms over the last 2 summers has also happened in other CEH lake studies around the world, although Loch Leven does show one of the highest negative effects from the factors affecting algal blooms (nutrient availability, temperature and summer rainfall)
- When this happens there is a far higher release of P from –within the loch sediments over a short space of time (e.g. 2-3 week period) than that over a longer time period from diffuse sources but what can we do about that? We could look at whether flushing of the loch, through controlled release of sluice gates by River Leven Trustees will dilute the P and prevent it developing into algal blooms. Need to be careful not to have a detrimental effect downstream.
- Scottish Government guidance on handling algal blooms is due to be re-published shortly (current version published 2012)

Targets for phosphorus loading
- Although Source Apportionment study shows diffuse pollution is the greatest contributor of P in recent years we should still consider inputs from sewage treatment, especially as wetter weather and increased storm events in recent years

could be resulting in more CSO overflow events, and is this being measured? Although the problems of existing CSO systems are well known and not easy to resolve, additional temporary holding tank capacity could be a partial solution.

- A high proportion (86%) of the P going into the loch now is from diffuse sources. South Queich remains high and notably it is particulate P rather than dissolved, so is coming from land/run-off sources rather than septic tanks.
- Brian D'Arcy argued for a maximum P limit to be set for WWT plants. Currently there are concentration thresholds, but those are of limited benefit if there volume of throughput continues to increase.

Priority catchment work

- A farmer's meeting is being held in the Kinross hotel on 14 November to introduce priority catchment work which is due to commence spring 2020. Will Dryburgh (SEPA) will be working with his team (3.5 staff) and starting in the upper catchment will visit all farmers (aiming to visit 2 farms/day). There are approximately 160 farms over the whole catchment (both upstream and downstream of the loch). A steading audit will be done, and a visit using soils risk map, then farmers given a year to remedy any breaches, and SGRPID informed if also relating to cross compliance. Enforcement action taken if no improvement at the follow up visit.

Citizen science

- CEH have current project planned with Kinross High school and Levenmouth Academy pupils for 2020 under a William Grant Foundation grant. This will include river health monitoring and nutrient and algal bloom analysis.
- Citizen science training undertaken as part of MONOCLE campaign hasn't resulted in any practical water quality monitoring project as there is no resource to analyse the data. This has raised expectation, resulting in a letter to the Editor of the Kinross newsletter from a disappointed volunteer.

Comms

- Algal blooms this year and last have lead to flurry of public interest and concern re public safety and dog walking. Current signage which is put up by PKC environmental health when SEPA alert them to a bloom is sometimes removed or lost as it's a laminated sheet and not very durable. Permanent interpretative material along with updated news bulletins on status of loch may be more effective, but permanent signs can also become 'invisible' to the eye. A traffic light system could be applied to give indications of risk level of blooms.
- There have been 2 recent articles in Kinross newsletter (October and November 2019 issues), one about algal blooms, and the other about who does what in the Loch Leven catchment. A pro-active item in the newsletter in spring or early summer would be good to maintain public awareness of the issues around algal blooms.