

## Catchment nutrient budget of Meikle and Cotehill Lochs, Aberdeenshire Executive Summary

Meikle (23.6ha) and Cotehill (2.7ha) Lochs are located on the edge of the Ythan river catchment area. The plant communities of both lochs appear to be changing and it is thought that this is in response to increasing levels of nutrients in the loch waters. A study was therefore commissioned by the Ythan Project in 2004 to investigate the potential sources of these nutrients. Possible sources identified included atmospheric deposition, wastewater from septic tanks and farm steading run off, faecal matter from over wintering geese and run off from the surrounding farmland. There were a number of potential problems with quantifying the potential amounts from these sources, including some difficulties establishing an exact catchment area for the lochs (i.e. working out the exact amount of land which drains into the lochs). However, the tables below show a comparison of potential amounts of Phosphorous entering the lochs under various scenarios. The second table shows the amounts as percentage proportions of the total.

A comparison of phosphorus loadings ( $\text{kg year}^{-1}$ ) to Meikle and Cotehill Lochs for various scenarios.

	Meikle Loch				Cotehill Loch			
	626.4 ha		311.4 ha		97.3 ha		36.3 ha	
Loss coefficient	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Diffuse	232	608	115	302	36	94	13	35
Geese (140 mg)	131	131	131	131	13	13	13	13
Atmospheric	2.7	2.7	2.7	2.7	0.3	0.3	0.3	0.3
Septic	18	18	18	18	6	6	6	6
<b>Total</b>	<b>383.7</b>	<b>759.7</b>	<b>266.7</b>	<b>453.7</b>	<b>55.3</b>	<b>113.3</b>	<b>32.3</b>	<b>54.3</b>
Diffuse	232	608	115	302	36	94	13	35
Geese (240 mg)	226	226	226	226	23	23	23	23
Atmospheric	2.7	2.7	2.7	2.7	0.3	0.3	0.3	0.3
Septic	18	18	18	18	6	6	6	6
<b>Total</b>	<b>478.7</b>	<b>854.7</b>	<b>361.7</b>	<b>548.7</b>	<b>65.3</b>	<b>123.3</b>	<b>42.3</b>	<b>64.3</b>

Phosphorus loading to Meikle and Cotehill Lochs expressed as a proportion (%) of the total loading.

	Meikle Loch				Cotehill Loch			
	626.4 ha		311.4 ha		97.3 ha		36.3 ha	
Loss coefficient	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Diffuse	60.5	80.0	43.1	66.6	65.1	83.0	40.2	64.5
Geese (140 mg)	34.1	17.2	49.1	28.9	23.5	11.5	40.2	23.9
Atmospheric	0.7	0.4	1.0	0.6	0.5	0.3	0.9	0.6
Septic	4.7	2.4	6.7	4.0	10.8	5.3	18.6	11.0
Diffuse	48.5	71.1	31.8	55.0	55.1	76.2	30.7	54.4
Geese (240 mg)	47.2	26.4	62.5	41.2	35.2	18.7	54.4	35.8
Atmospheric	0.6	0.3	0.7	0.5	0.5	0.2	0.7	0.5
Septic	3.8	2.1	5.0	3.3	9.2	4.9	14.2	9.3

