Inchigeelagh Appropriate Treatment Assessment

The assessments below demonstrate that the combination of Septic Tank providing Primary Treatment to the smaller Southern sub-catchment and New Secondary Treatment serving the larger Northern Sub-catchment provides Appropriate Treatment. The combined discharges will not prevent the receiving water from achieving Good Status.

The projected 10 year load is 345 PE of which 53 PE associated with the existing septic tank and 292 PE associated with the proposed new Secondary Treatment WWTP.

The 95%ile and mean river flows have been estimated from the EPA Hydrotool at Inchigeelagh Bridge as 0.452m^3/s and as 3.047m^3/s respectively. Based on these flows and the PEs above, the table below sets out the number of dilutions as;

Existing Loads	**Septic Tank Load 53 PE**	**WWTP Load 274 PE**	**Total Septic Tank + WWTP Load 327 PE**
Dilutions @ 95%ile Flows	3,275:1	633:1	531:1
Dilutions @ Mean Flows	22,076:1	4,270:1	3,578:1

Projected 10 year Loads	**Septic Tank Load 53 PE**	**WWTP Load 292 PE**	**Total Septic Tank + WWTP Load 345 PE**
Dilutions @ 95%ile Flows	3,275:1	594:1	503:1
Dilutions @ Mean Flows	22,076:1	4,007:1	3,391:1

Based on SEPA guidelines and the approach taken in the NCAP assessments the target number of dilutions for considering Primary Treatment as potential Appropriate Treatment is >400:1. The number of dilutions available is > 400:1. In addition, secondary treatment will be provided for northern catchment which accounts for 85% of the effluent load.

A further assessment is carried out using the u/s background concentrations in the receiving water (River Lee) given by the EPA of 0.83 mg/l BOD, 0.011 mg/l Ammonia and 0.005 mg/l Ortho-P. These values have been calculated as the average concentration values based on the monthly samples taken by the EPA between June 2020 and May 2021 (the most recent available data).

Applying typical municipal influent concentrations of 300 mg/l BOD, 35 mg/l Ammonia and 7 mg/l Ortho-P with a 20% BOD reduction in Primary Treatment and no reduction in Ammonia and Ortho-P to give a Primary Treated effluent of 240 mg/l BOD, 35 MG/L Ammonia and 7 mg/l Ortho-p with expected Secondary Treated Effluent concentrations of 25 mg/l BOD, 15 mg/l Ammonia and 7 mg/l Ortho-P gives the following WAC assessment downstream concentrations

95%ile River Flows WAC

Current PE	U/S Background Concentration	U/S Background Load (kg/d)	Contribution from 53 PE Septic Tank Load (kg/d)	Contribution from 274 PE Secondary Treatment WWTP (kg/d)	Resultant D/S Load from 327 PE Load (kg/d)	Resultant D/S Concentration from 327 PE Load (mg/l)	EQS
BOD	0.83	32.4	3.58	1.54	37.53	0.96	2.6
Ammonia	0.011	0.4	0.42	0.92	1.77	0.05	0.14
Ortho- P	0.005	0.2	0.08	0.43	0.71	0.02	0.075
10 year PE	**U/S Background Concentration (mg/l)**	**U/S Background Load (kg/d)**	**Contribution from 53 PE Septic Tank Load (kg/d)**	**Contribution from 292 PE Secondary Treatment WWTP (kg/d)**	**Resultant D/S Load from 345 PE Load (kg/d)**	**Resultant D/S Concentration from 345 PE (mg/l)**	**EQS**
BOD	0.83	32.4	3.58	1.64	37.63	0.96	2.6
Ammonia	0.011	0.4	0.42	0.99	1.83	0.05	0.14
Ortho- P	0.005	0.2	0.08	0.46	0.74	0.02	0.075

Mean River Flows WAC

Current	U/S Background Concentration	U/S Background Load (kg/d)	Contribution from 53 PE Septic Tank Load (kg/d)	Contribution from 274 PE Secondary Treatment WWTP (kg/d)	Resultant D/S Load from 327 PE Load (kg/d)	Resultant D/S Concentration from 327 PE Load (mg/l)	EQS
BOD (Actual)	0.83	218.51	3.58	1.54	223.63	1.5	1.5
Ammonia	0.011	2.90	0.42	0.92	4.24	0.02	0.065
Ortho- P	0.005	1.32	0.08	0.43	1.83	0.01	0.035

10 year PE	U/S Background Concentration (mg/l)	U/S Background Load (kg/d)	Contribution from 53 PE Septic Tank Load (kg/d)	Contribution from 292 PE Secondary Treatment WWTP (kg/d)	Resultant D/S Load from 345 PE Load (kg/d)	Resultant D/S Concentration from 345 PE (mg/l)	*EQS*
BOD (Actual)	0.83	218.51	3.58	1.64	223.73	0.85	1.5
Ammonia	0.011	2.90	0.42	0.99	4.30	0.02	0.065
Ortho- P	0.005	1.32	0.08	0.46	1.86	0.01	0.035