FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

APPENDIX 2

Assimilative Capacity Assessment Calculations

New Inn Tier 3 Assimilative Capacity Assessment

Assimilative capacity = (Cmax – Cback) x F95 x 86.4 kg/day

Ammoniacal Nitrogen

Where:

C_{max} = maximum permissible concentration (EQS – 95%ile value) (mg/l)	0.14
C_{back} = background upstream concentration (mg/l mean value)	0.048
Q95 = the 95%ile flow in the river (m^3/s)	0.0148

Note: (60x60x24)/1000 = 86.4

AC kg/d	=	**(Cmax**	**-**	**Cbak)**	**x**	**F95**	**x**	**86.4**
	=	0.14	-	0.048	x	0.0148	x	86.4
	=		0.092		x	0.0148	x	86.4
AC kg/d	=	**0.12**	**kg/day**					

Emission Concentration (mg/l)		22			
m3/sec	l/s	**Flow (m3/day)**	**Daily Mass Emission (kg/day)**	**%-age of AC**	
0.00003	0.02546302	2.2	0.048	41.1%	
0.00005	0.05092604	4.4	0.097	82%	
0.00006	0.06076403	5.3	0.116	98.2%	
0.00001	0.00601853	0.52	0.011	9.7%	

Mass balance Equation:

$$T = \frac{FC + fc}{F + f}$$

$$f(m^3/sec) = \frac{f\left(\frac{m^3}{day}\right) \div 24hours}{3600\ seconds}$$

F =	0.0148	m^3/sec
C =	0.048	mg/l
f =	2.2	m^3/day
	0.000	m^3/sec
c =	22.000	mg/l

where:

- F is the river flow upstream of the discharge (95%ile flow m^3/sec);
- C is the concentration of pollutant in the river upstream of the discharge (mean concentration in mg/l);
- f is the flow of the discharge (m^3/sec);
- c is the maximum concentration of pollutant in the discharge (mg/l);
- T is the concentration of pollutant downstream of the discharge.

T =	**F**	**x**	**C**	**+**	***f***	**x**	**c**		
	F	**+**	***f***						
1	0.0148	x	0.048	+	0.000	x	22.000		
	0.0148	+	0.000						
2	0.0007104			+	0.000				
	0.0148								
3	0.001								
	0.015								
4	**T =**	**0.057**	**mg/l**						

EQS (mg/l)

0.14 *Good' Status 95%-ile EQS*

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