

Parameter	River Upstream Average values	Flow data used	Effluent Discharge concentration	Resulting River concentration (assimilative capacity)	EQS Standard for Good status inland water	Br Of EQ
BOD – see Note	1.482	95%ile	25 mg/l	2.28 mg/l	≤2.6mg/l	No
COD	21 mg/l	95%ile	125 mg/l	24.529 mg/l	N/a	
Ammonia	0.039 mg/l	95%ile	3 mg/l	0.0139 mg/l	≤0.14 mg/l	No
Orthophosphate	0.022	median	4.5 mg/l	0.034 mg/l	≤0.035 mg/l	No
Lead	<20 ug/l	DWF	16.5 ug/l	Increase of 0.38 ug/l	7.2 ug/l	No
Flouride	100 ug/l	DWF	250 ug/l	110 ug/l	500 ug/l	No
pH	7.74 pH units	n/a	9.0	7.66	4.5<pH>9.0	No

Notes

1. The average BOD figure used excludes one reading taken when the river was in flood as this is regarded as an outlier for statistical purposes.

2. The concentrations of lead upstream of the discharge were below the limit of detection for the method used.

\* However as the LOD for the method is <20 ug/l using ICP-OES which is the in house instrumentation and using a level of half this amount the river water would be in breach without any discharge as the standard limit is 7.2 ug/l, For this reason the calculations will not provide an estimation of the impact. It is worth noting however that the increase in Pb concentrations would be of the order of 0.358 ug/l using an average Pb discharge concentration of 16.5 ug/l as previously submitted in the application.

3. The median flow was taken from attached spreadsheet with river water data for Bandon River

4. The calculations used to assess whether different parameters in breach is as follows

(Effluent flow cu.m./s\* Concentration mg/l) + (Background river flow \* concentration)

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Effluent flow + River Flow

Effluent Flow used is taken as the normal flow through the WWTP and is 2370cu.m/day

Flow data submitted for outlet on revised Table E data (attached) would show that this figure is conservative

The flow figure of 2370 cu.m/day takes account of the current PE of 8178 and projected PE due to planning's granted etc. which brings total PE figure to 9948.

Parameter	Temperature	Dissolved O2	pH	BOD	Nitrite	Molybdate	Ammonium	Nitrate	Hardness	Alkalinity	Appearance	Colour	Conductivity
Max.	--	15	Varies	Varies	0.05	Varies	Varies	Varies	--	--	--	Varies	--
Target	--	--	--	--	--	--	--	--	--	--	--	--	--
Min.	--	5	Varies	--	--	--	--	--	--	--	--	--	--

Project	Location	Location Reference	Sample Date	Comments	Degrees C	mg/l	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	Descriptive	Hazen	µS/cm
Bandon	Baxters Br.	20B020700	05-Mar-08		7.4	10.5	7.6	0.5					61	50		clear	17	204
Bandon	Baxters Br.	20B020700	07-May-08		15.3	8.8	7.6	1.3	0.13	0.019			9.7	11	56	clear		211
Bandon	Baxters Br.	20B020700	03-Sep-08		15	9.7	7.6	0.9	0.036	0.022	0.035		12.1	9	58		32	210
Bandon	Baxters Br.	20B020700	05-Nov-08		7.3	11	7.7	0.7	0.028	0.024	0.063		14.6	65	54		24	204
				Sample Count	4	4	4	4	3	3	2		3	4	4	-	3	4
				Maximum	15.3	11	7.7	1.3	0.13	0.024	0.063		14.6	65	58	-	32	211
				Minimum	7.3	8.8	7.6	0.5	0.028	0.019	0.035		9.7	9	50	-	17	204
				Mean	11.2	10	7.62	0.85	0.065	0.022	0.049		12.1	36.5	54.5	-	24.3	207
				Median	11.2	10.1	7.6	0.8	0.036	0.022	0.049		12.1	36	55	-	24	207
				Std. Deviation	4.51	0.963	0.05	0.342	0.057	0.003	0.02		2.45	30.7	3.42	-	7.51	3.79
Bandon	Bridewell Rv. in Bandon		02-Jul-08		14.1	9.8			0.049	0.054	0.035							
				Sample Count	1	1	0	0	1	1	1		0	0	0	-	0	0
				Maximum	14.1	9.8			0.049	0.054	0.035					-		
				Minimum	14.1	9.8			0.049	0.054	0.035					-		
				Mean	14.1	9.8			0.049	0.054	0.035					-		
				Median	14.1	9.8			0.049	0.054	0.035					-		
				Std. Deviation	0	0			0	0	0					-		
Bandon	bridge in bandon town		07-May-08		15.1	9	7.7		0.131	0.024					52	clear		206
Bandon	bridge in bandon town		04-Jun-08						0.072	0.024	< 0.026							
Bandon	bridge in bandon town		02-Jul-08		15	9.3			0.045	0.046	0.078							
Bandon	bridge in bandon town		03-Sep-08		14.8	10.1			0.033	0.018	0.037							
				Sample Count	3	3	1	0	4	3	0		0	0	1	-	0	1
				Maximum	15.1	10.1	7.7		0.331	0.046	0.078				52	-		206
				Minimum	14.8	9	7.7		0.033	0.018	< 0.026				52	-		206
				Mean	15	9.47	7.7		0.07	0.027	0.043				52	-		206
				Median	15	9.3	7.7		0.058	0.022	0.037				52	-		206
				Std. Deviation	0.158	0.569	0		0.044	0.013	0.033				0	-		0
Bandon	Foot Br.Ban	20B020770	01-Oct-08		13.3	10.1			0.021	0.01	0.028							
Bandon	Foot Br.Ban	20B020770	05-Nov-08		10	11			0.024	0.023	0.038							
Bandon	Foot Br.Ban	20B020770	10-Dec-08		7	12.6			0.031	0.02								
				Sample Count	3	3		0	3	3	2		0	0	0	-	0	0
				Maximum	13.3	12.6			0.031	0.023	0.038					-		
				Minimum	7	10.1			0.021	0.01	0.028					-		
				Mean	10.1	11.2			0.025	0.018	0.033					-		
				Median	10	11			0.024	0.02	0.033					-		
				Std. Deviation	3.15	1.27			0.005	0.007	0.007					-		

Bandon Baxters Br. 0.022 0.049  
 Bandon bridge in bandon town 0.027 0.035  
 Bandon Foot Br.Ban 0.018 0.033  
 Mean average of 3 locations **0.022 0.039**

Note Mean average from adjacent upstream locations is a value of 0.02233mg/l for Orthophosphate as P

Note Mean average from adjacent upstream locations is a value of 0.039mg/l for total Ammonia

# Attachment E4 Bandon Upstream- Revised Bandon Table E

Sample Date	7/2/2008	6/3/2008	03/04/2008	22/05/2008	17/07/2008	21/08/2008	Average	17/11/2007	7/2/2007	12/4/2007	3/5/2007	13/6/2007	4/7/2007	9/8/2007	6/9/2007	14/11/2007	Average
Sample	River	River	River	River	River	River	2008	river	river	river	river	river	river	river	river	river	2007
Flow M <sup>3</sup> /Day			*	*	*		*	*	*	*	*	*	*	*	*	*	
pH	7.5	8.1	*	7.5	7.9	7.7	7.74	7.6	7.6	*	*	8	*	7.7	8.2	7.8	7.816667
Temperature °C			*	*	*	*		*	*	*	*	*	*	*	*	*	
Cond 20°C		211	210	163.5	239	*	205.875	*	*	*	*	*	*	*	*	*	
SS mg/L	5	1.25	5	23	1.25	1.25	6.125	6	7	13	74	6	5	1.25	1.25	1.25	12.75
NH <sub>3</sub> mg/L	0.05	0.05	0.05	0.1	0.05	*	0.06	0.05	0.3	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.077778
BOD mg/L	2.03	1.36	1.42	4.78	2.1	0.5	2.0316667	0.5	0.5	1.2	6	2	1.8	1.8	1.5	2.06	1.928889
COD mg/L	<21	*	*	*	<21	*		*	*	*	*	<21	*	*	*	<21	
TN mg/L	3.1	3.58	*	*	*	*	3.34	4.1	13.5	5.4	5.2	*	0.5	5.3	3.5	2.8	5.0375
Nitrite mg/L	*	*	*	*	0.0047	*	0.0047	*	*	*	*	*	*	*	*	*	*
Nitrate mg/L	*	*	*	*	2.86	*	2.86	*	*	*	*	*	*	*	*	*	*
TP mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.1	0.1	0.1	0.28	0.1	0.1	0.1	0.1	0.1	0.12
O-PO <sub>4</sub> -P mg/L	0.025	0.025	0.025	0.05	0.025	*	0.03	*	*	*	*	*	<0.05	<0.05	<0.05	<0.05	<0.05
SO <sub>4</sub> mg/L	<30	*	*	*	<30	*	<30	*	*	*	*	*	<30	<30	<30	<30	<30
Phenols µg/L	*	*	*	*	<0.1	*	<0.1	*	*	*	*	*	*	*	*	*	*
Atrazine µg/L	*	*	*	*	<0.01	*	<0.01	*	*	*	*	*	*	*	*	*	*
Dichloromethane	*	*	*	*	<1.0	*	<1.0	*	*	*	*	*	*	*	*	*	*
Simazine µg/L	*	*	*	*	<0.01	*	<0.01	*	*	*	*	*	*	*	*	*	*
Toluene µg/L	*	*	*	*	<1.0	*	<1.0	*	*	*	*	*	*	*	*	*	*
Tributyltin µg/L	*	*	*	*	not required	*	not required	*	*	*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	<1.0	*	<1.0	*	*	*	*	*	*	*	*	*	*
Arsenic µg/L	*	*	*	*	<0.96	*	<0.96	*	*	*	*	*	*	*	*	*	*
Chromium ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Copper ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Cyanide µg/L	*	*	*	*	<5	*	<5	*	*	*	*	*	*	*	*	*	*
Fluoride ug/l	*	*	*	*	<100	*	<100	*	*	*	*	*	*	*	*	*	*
Lead ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Nickel ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Zinc ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Boron ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	*	<20	<20
Cadmium ug/L	<20	<20	<20	*	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Mercury µg/L	*	*	*	*	<0.2	*	<0.2	*	*	*	*	*	*	*	*	*	*
Selenium µg/L	*	*	*	*	1	*	1	*	*	*	*	*	*	*	*	*	*
Barium ug/L	10	10	10	*	22	27	15.8	*	*	*	*	*	*	*	<20	<20	<20

river in flood

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Attachment E4 Bandon Inlet- Revised									Attachment E4 Bandon Storm Overflow- Revised				
Sample Date	9/8/2007	7/2/2008	6/3/2008	03/04/2008	04/06/2008	17/07/2008	21/08/2008		Sample Date	19/06/2008			
Sample	influent	Influent	Influent	Influent	influent	Influent	Influent	Average	Sample	storm Overflow			
Flow M <sup>3</sup> /Day	*	*	*	*	1574	*	*	1574	Flow M <sup>3</sup> /Day	*			
pH	*	*	*	*	*	7.6	*	7.6	pH	*			
Temperature °C	*	*	*	*	*	*	*		Temperature °C	*			
Cond 20°C	*	*	*	633	493	723	*	616.3333	Cond 20°C	533			
SS mg/L	*		88	*	*	276	*	182	SS mg/L	103			
NH <sub>3</sub> mg/L	*	18.3	*	*	20.5	46.8	*	28.53333	NH <sub>3</sub> mg/L	24.8			
BOD mg/L	*	*	*	*	*	261	*	261	BOD mg/L	147			
COD mg/L	428	294	363	510	472	233	358	379.7143	COD mg/L	339			
TN mg/L	*	33	*	*	*	64	*	48.5	TN mg/L	55			
Nitrite mg/L	*	*	*	*	*	<0.004	*	<0.004	Nitrite mg/L	*			
Nitrate mg/L	*	*	*	*	*	<0.405	*	<0.405	Nitrate mg/L	*			
TP mg/L	*	4.7	2.98	6.43	5.15	8.75	*	5.602	TP mg/L	2.2			
O-PO <sub>4</sub> -P mg/L	4.32	2.85	3.82	3.34	2.87	5.78	*	3.83	O-PO <sub>4</sub> -P mg/L	*			
SO <sub>4</sub> mg/L	*	51.4	*	*	*	48.4	*	49.9	SO <sub>4</sub> mg/L	*			
Phenols µg/L	*	*	*	*	*	<0.1	*	<0.1	Phenols µg/L	*			
Atrazine µg/L	*	*	*	*	*	<0.01	*	<0.01	Atrazine µg/L	*			
Dichloromethane µg/L	*	*	*	*	*	<1.0	*	<1.0	Dichloromethane	*			
Simazine µg/L	*	*	*	*	*	<0.01	*	<0.01	Simazine µg/L	*			
Toluene µg/L	*	*	*	*	*	<1.0	*	<1.0	Toluene µg/L	*			
Tributyltin µg/L	*	*	*	*	*	not required	*	*	Tributyltin µg/L	*			
Xylenes µg/L	*	*	*	*	*	<1.0	*	<1.0	Xylenes µg/L	*			
Arsenic µg/L	*	*	*	*	*	<0.96	*	<0.96	Arsenic µg/L	*			
Chromium ug/L	<20	*	*	*	<20	<20	*	<20	Chromium mg/L	*			
Copper ug/L	45	*	*	*	21	50	*	38.66667	Copper mg/L	*			
Cyanide µg/L	*	*	*	*	*	<5	*	<5	Cyanide µg/L	*			
Fluoride ug/l	*	*	*	*	*	430	*	430	Fluoride	*			
Lead ug/L	10	*	*	*	10	21	*	13.66667	Lead mg/L	*			
Nickel ug/L	<20	*	*	*	<20	<20	*	<20	Nickel mg/L	*			
Zinc ug/L	107	*	*	*	139	86	*	110.6667	Zinc mg/L	*			
Boron ug/L	*	*	*	*	175	10	*	92.5	Boron mg/L	*			
Cadmium ug/L	<20	*	*	*	<20	<20	*	<20	Cadmium mg/L	*			
Mercury µg/L	*	*	*	*	*	0.4	*	0.4	Mercury µg/L	*			
Selenium µg/L	*	*	*	*	*	1	*	1	Selenium µg/L	*			
Barium ug/L	10	*	*	*	35	10	*	18.33333	Barium mg/L	*			

**Attachment E4 Bandon outlet - Revised Bandon Table E**

Sample Date	7/2/2008	6/3/2008	03/04/2008	22/05/2008	04/06/2008	17/07/2008	21/08/2008	2008	2008	2008	17/1/2007	7/2/2007	12/4/2007	3/5/2007	13/6/2007	4/7/2007	9/8/2007	6/9/2007	14/11/2007	Average	
Sample	Effluent	Effluent	Effluent	effluent	effluent	Effluent	Effluent	Average	Kg/Day	Kg/Year	effluent	effluent	effluent	effluent	effluent	effluent	effluent	effluent	effluent	2007	
Flow M <sup>3</sup> /Day	*	*	1587	963	1535	1253	3710	1809.6	*	*	*	*	*	*	*	*	2475	*	*	*	
pH	7.4	7.6	*	7.0	7.3	7.0	7.4	7.283333	*	*	7.2	7.2	7.4	7	7.2	7.1	6.9	6.8	7.1	7.1	
Temperature °C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Cond 20°C	*	714	475	432	537	549	*	541.4	*	*	*	*	*	*	*	*	*	*	*	*	*
SS mg/L	5	9	13	129	8	9	8	25.85714	46.79108571	17078.746	8	13	10	8	14	5	16	11	17	11.333	
NH <sub>3</sub> mg/L	0.5	0.5	*	0.2	0.2	0.5	*	0.38	0.687648	250.99152	*	*	*	*	*	0.5	1	1	1.7	1.05	
BOD mg/L	5.7	7.2	12.1	24.1	7.81	7.7	8.5	10.44429	18.89997943	6898.4925	2.3	16	7.4	6.6	7.4	7.45	10	13	11.94	9.121111	
COD mg/L	10.5	45	57	134	37	41	44	52.64286	95.26251429	34770.818	23	40	37	43	<21	34	46	35	58	39.5	
TN mg/L	16.3	40.6	24.3	95	*	27.5	*	40.74	73.723104	26908.933	6.8	24.1	18	31.6	19	*	36	*	56	27.3571	
Nitrite mg/L	*	*	*	*	*	0.32	*	0.32	0.579072	211.36128	*	*	*	*	*	*	*	*	*	*	*
Nitrate mg/L	*	*	*	*	*	28.5	*	28.5	51.5736	18824.364	*	*	*	*	*	*	*	*	*	*	*
TP mg/L	1.37	3.13	1.85	4.3	*	4.23	1.92	2.8	5.06688	1849.4112	0.94	3.58	2.38	2.45	4.5	2.88	4.33	2.44	4.38	3.0978	
O-PO4-P mg/L	1.13	2.54	4.04	3.03	3.64	3.4	*	2.963333	5.362448	1957.2935	*	*	*	*	*	*	3.63	*	4.03	3.83	
SO4 mg/L	15	*	*	*	*	56.4	*	35.7	64.60272	23579.993	*	*	*	*	*	*	44.3	*	57.5	50.9	
Phenols µg/L	*	*	*	*	*	<0.1	*	<0.1	<0.00013345	<0.04870925	*	*	*	*	*	*	*	*	*	*	*
Atrazine µg/L	*	*	*	*	*	<0.01	*	<0.01	<0.000013345	0.00487092	*	*	*	*	*	*	*	*	*	*	*
Dichloromethane	*	*	*	*	*	<1.0	*	<1.0	<0.0013345	<0.4870925	*	*	*	*	*	*	*	*	*	*	*
Simazine µg/L	*	*	*	*	*	<0.01	*	<0.01	<0.000013345	0.00487092	*	*	*	*	*	*	*	*	*	*	*
Toluene µg/L	*	*	*	*	*	<1.0	*	<1.0	<0.0013345	<0.4870925	*	*	*	*	*	*	*	*	*	*	*
Tributyltin µg/L	*	*	*	*	*	not required	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	*	<1.0	*	<1.0	<0.0013345	<0.4870925	*	*	*	*	*	*	*	*	*	*	*
Arsenic µg/L	*	*	*	*	*	2	*	2	0.003619200	1.321008	*	*	*	*	*	*	*	*	*	*	*
Chromium ug/L	<20	*	*	<20	<20	<20	<20	<20	0.036180	13.2057	*	*	*	*	*	*	*	<20	<20	<20	<20
Copper ug/L	<20	*	*	<20	<20	<20	<20	<20	0.036180	13.2057	*	*	*	*	*	*	*	<20	<20	<20	<20
Cyanide µg/L	*	*	*	*	*	<5.0	*	<5.0	<0.0066725	<2.4354625	*	*	*	*	*	*	*	*	*	*	*
Fluoride ug/l	*	*	*	*	*	260	*	260	0.4704960	171.73104	*	*	*	*	*	*	*	*	*	*	*
Lead ug/L	10	*	*	10	23	23	*	16.5	0.029850	10.8947	*	*	*	*	*	*	*	10	81	45.5	
Nickel ug/L	<20	<20	<20	<20	<20	<20	<20	<20	0.036180	13.2057	*	*	*	*	*	*	*	<20	<20	<20	<20
Zinc ug/L	23	*	*	386	73	34	10	105.2	0.19031000	69.462	*	*	*	*	*	*	*	47	61	54	
Boron ug/L	10	*	*	10	38	84	71	42.6	0.077060	28.128	*	*	*	*	*	*	*	10	60	35	
Cadmium ug/L	<20	*	*	<20	<20	<20	*	<20	0.036180	13.2057	*	*	*	*	*	*	*	<20	<20	<20	<20
Mercury µg/L	*	*	*	*	*	0.3	*	0.3	0.000542880	0.1981512	*	*	*	*	*	*	*	*	*	*	*
Selenium µg/L	*	*	*	*	*	2	*	2	0.003619200	1.321008	*	*	*	*	*	*	*	*	*	*	*
Barium ug/L	10	*	*	101	26	10	10	31.4	0.05680000	20.7329	*	*	*	*	*	*	*	<20	<20	<20	

### Attachment E4 Bandon Downstream- Revised Bandon Table E

Sample Date	7/2/2008	6/3/2008	03/04/2008	22/05/2008	17/07/2008	21/08/2008	Average	17/1/2007	7/2/2007	12/4/2007	3/5/2007	13/6/2007	4/7/2007	9/8/2007	6/9/2007	14/11/2007	Average
Sample	River	River	River	River	River	River	2008	river	river	river	river	river	river	river	river	river	2009
Flow M <sup>3</sup> /Day			*	*	*		*	*	*	*	*	*	*	*	*	*	*
pH	7.4	8.0	*	7.4	7.9	76	21.34	7.4	7.5	*	*	8.2	*	7.7	8.6	7.8	7.8667
Temperature °C			*	*	*		*	*	*	*	*	*	*	*	*	*	*
Cond 20°C		212	209	147.8	237		201.45	*	*	*	*	*	*	*	*	*	*
SS mg/L	3	1.25	5	42	1.25	1.25	8.958333	*	*	*	*	*	*	*	*	<2.5	*
NH <sub>3</sub> mg/L	0.05	0.05	0.05	0.1	0.05		0.06	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.0556
BOD mg/L	1.19	1.35	2.33	5.86	0.5	0.5	1.955	0.5	0.5	1.2	2	2	2.7	0.5	1.1	1.74	1.36
COD mg/L	<21		*	*	<21	*		*	*	*	*	*	*	*	*	<21	
TN mg/L	2.1	4.13	*	15	6.4	*	6.9075	4.6	10.6	5.2	4.5	*	*	9.8	5.1	4.1	6.2714
Nitrite mg/L	*	*	*	*	0.0135	*	0.0135	*	*	*	*	*	*	*	*	*	*
Nitrate mg/L	*	*	*	*	3.22	*	3.22	*	*	*	*	*	*	*	*	*	*
TP mg/L	0.1	*	0.2	0.1	0.1	0.1	0.12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
O-PO <sub>4</sub> -P mg/L	0.025	0.025	0.025	0.06	0.025		0.032	*	*	*	*	*	<0.05	<0.05	<0.05	<0.05	<0.05
SO <sub>4</sub> mg/L	<30		*	*	<30	*	<30	*	*	*	*	*	<30	<30	<30	<30	<30
Phenols µg/L	*	*	*	*	<0.1	*	<0.1	*	*	*	*	*	*	*	*	*	*
Atrazine µg/L	*	*	*	*	<0.01	*	<0.01	*	*	*	*	*	*	*	*	*	*
Dichloromethane	*	*	*	*	<1.0	*	<1.0	*	*	*	*	*	*	*	*	*	*
Simazine µg/L	*	*	*	*	<0.01	*	<0.01	*	*	*	*	*	*	*	*	*	*
Toluene µg/L	*	*	*	*	<1.0	*	<1.0	*	*	*	*	*	*	*	*	*	*
Tributyltin µg/L	*	*	*	*	not required	*	not required	*	*	*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	<1.0	*	<1.0	*	*	*	*	*	*	*	*	*	*
Arsenic µg/L	*	*	*	*	<0.96	*	<0.96	*	*	*	*	*	*	*	*	*	*
Chromium ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Copper ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Cyanide µg/L	*	*	*	*	<5	*	<5	*	*	*	*	*	*	*	*	*	*
Fluoride ug/l	*	*	*	*	50	*	50	*	*	*	*	*	*	*	*	*	*
Lead ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Nickel ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Zinc ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Boron ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	*	<20	<20
Cadmium ug/L	<20	<20	<20	<20	<20	<20	<20	*	*	*	*	*	*	*	<20	<20	<20
Mercury µg/L	*	*	*	*	<0.2	*	<0.2	*	*	*	*	*	*	*	*	*	*
Selenium µg/L	*	*	*	*	1	*	1	*	*	*	*	*	*	*	*	*	*
Barium ug/L	10	10	10	10	10	32	13.66667	*	*	*	*	*	*	*	<20	<20	<20

river in flood

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Report ref 561/09  
 Innishannon Abstraction 2009

				Project	Innishannon	Innishannon	Innishannon	Innishannon
				Sample Date	21-Jan-09	01-Apr-09	06-May-09	01-Jul-09
Parameter		Max.	Min.	Unit				
Total Coliforms		25000	--	MPN/100mls	12000		5475	<b>51700</b>
Faecal Coliforms				cfu/100mls				
E. coli		5000	--	MPN/100mls	3255		663	<b>9208</b>
Faecal Streptococci		2000	--	cfu/100mls	580			
pH		9	Varies	pH units	7.3	8.4	8.1	7.7
Conductivity @ 20 oC		Varies	--	µS/cm	178	238	224	232
BOD	O2	Varies	--	mg/l	< 1	< 1		
Dissolved Oxygen	O2	15	5	mg/l	10.4	12.9		
Phosphorous	P2O5	Varies	--	mg/l	0.067	0.016		
Nitrite	NO2	Varies	--	mg/l	0.027	0.036		
Ammonium	NH4	Varies	--	mg/l	0.084	< 0.026		
Nitrate	NO3	--	--	mg/l	14.88			
Suspended Solids		--	--	mg/l	5.1			
Colour	Hz	--	--	Hazen	36	16	28	80
Manganese	Mn	300	--	µg/l	< 20			
Sulphate	SO4	200	--	mg/l	6.6			
Chloride	Cl	250	--	mg/l	19.2			
Dissolved Iron	Fe	2000	--	µg/l	< 40			
Dissolved Oxygen % Satur		150	50	% O2	85	116		
Appearance		--	--	Descriptive	clear	good		
Temperature		--	--	Degrees C	6	10.9		
Copper	Cu	2	--	mg/l	0.002			
Zinc		--	--	µg/l	< 20			
Total Organic Carbon	C	--	--	mg/l				5.57
Turbidity		--	--	NTU			1.53	5.71

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Description	Cork Code	DCC code	Date sampled	Crypto Oocysts/L	Giardia Cysts/L
Innishannon Raw	005/03/09	201198	05/01/2009	0	0
Innishannon Treated	006/03/09	201196	05/01/2009	0	0
Innishannon Raw	011/03/08	203685	12/01/2009	0	0
Innishannon Treated	012/03/08	203682	12/01/2009	0	0
Innishannon Raw	017/03/08	206940	19/01/2009	0	0.04 (1 cyst)
Innishannon Treated	018/03/08	206939	19/01/2009	0	0
Innishannon Raw	023/03/08	209411	26/01/2009	0	0
Innishannon Treated	024/03/08	209412	26/01/2009	0	0
Innishannon Raw	035/03/08	215000	09/02/2009	0	0
Innishannon Treated	036/03/08	215001	09/02/2009	0	0
Innishannon Raw	/03/08	212711	02/02/2009	0	0
Innishannon Treated	/03/08	212712	02/02/2009	0	0
Innishannon Raw	/03/08	215000	09/02/2009	0	0
Innishannon Treated	036/03/08	215001	09/02/2009	0	0
Innishannon Raw	041/03/08	221535	22/02/2009	0	*0.021/L (2 cysts)
Innishannon Treated	042/03/08	221536	22/02/2009	0	0
Innishannon Raw	053/03/08	228818	09/03/2009	0	0
Innishannon Treated	054/03/08	228819	09/03/2009	0	0
Innishannon Raw	059/03/08	231233	16/03/2009	0.008/L (1 oocyst)	0.008/L (1 cyst)
Innishannon Treated	060/03/08	231234	16/03/2009	0	0
Innishannon Raw	No sample				
Innishannon Treated	No sample				
Innishannon Raw	067/03/09	237515	30/03/2009	0	0
Innishannon Treated	068/03/09	237516	30/03/2009	0	0
Innishannon Raw	073/03/09	241352	06/04/2009	0	0.022 /L (2 cysts)
Innishannon Treated	074/03/09	241353	06/04/2009	0	0
Innishannon Raw	079/03/09	243288	14/04/2009	0	0
Innishannon Treated	080/03/09	243289	14/04/2009	0	0
Innishannon Raw	No sample				
Innishannon Treated	086/03/09	245819	20/04/2009	0	0
Innishannon Raw	091/03/09	248904	27/04/2009	0	0
Innishannon Treated	092/03/09	248905	27/04/2009	0	0
Innishannon Raw	067/03/09	237515	30/03/2009	0	0
Innishannon Treated	068/03/09	237516	30/03/2009	0	0
Innishannon Raw	073/03/09	241352	06/04/2009	0	0.022 /L (2 cysts)
Innishannon Treated	074/03/09	241353	06/04/2009	0	0
Innishannon Raw	079/03/09	243288	14/04/2009	0	0
Innishannon Treated	080/03/09	243289	14/04/2009	0	0
Innishannon Treated	086/03/09	245819	20/04/2009	0	0
Innishannon Raw	091/03/09	248904	27/04/2009	0	0
Innishannon Treated	092/03/09	248905	27/04/2009	0	0
Innishannon Raw	097/03/09	251946	05/05/2009	0	0.005 (1 cyst)
Innishannon Treated	098/03/09	251947	05/05/2009	0	0
Innishannon Raw	109/03/09	261193	25/05/2009	0	0.009 (1 cyst)
Innishannon Treated	110/03/09	261192	25/05/2009	0	0
Innishannon Raw	097/03/09	251946	05/05/2009	0	0.005 (1 cyst)
Innishannon Treated	098/03/09	251947	05/05/2009	0	0
Innishannon Raw	103/03/09	254289	11/05/2009	0	0
Innishannon Treated	104/03/09	254288	11/05/2009	0	0

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Innishannon Raw	109/03/09	261193	25/05/2009	0	0.009 (1 cyst)
Innishannon Treated	110/03/09	261192	25/05/2009	0	0

Innishannon Raw	115/03/09	265354	02/06/2009	0	0
Innishannon Treated	116/03/09	265353	02/06/2009	0	0
Innishannon Raw	127/03/09	271274	15/06/2009	0	0
Innishannon Treated	128/03/09	271273	15/06/2009	0	0
Innishannon Raw	133/IS/09	274617	22/06/2009	0	0.007 (1 cyst)
Innishannon Treated	134/IS/09	274616	22/06/2009	0	0

Description	Cork Code	DCC code	Date sampled	Oocysts/L	Cysts
Innishannon Raw	115/03/09	265354	02/06/2009	0	0
Innishannon Treated	116/03/09	265353	02/06/2009	0	0
Innishannon Raw	121/03/09	267914	08/06/2009	0	0.005 (1 cyst)
Innishannon Treated	122/03/09	267913	08/06/2009	0	0
Innishannon Raw	127/03/09	271274	15/06/2009	0	0
Innishannon Treated	128/03/09	271273	15/06/2009	0	0
Innishannon Raw	133/IS/09	274617	22/06/2009	0	0.007 (1 cyst)
Innishannon Treated	134/IS/09	274616	22/06/2009	0	0
Innishannon Raw	141/IS/09	277691	29/06/2009	0	0
Innishannon Treated	142/IS/09	277690	29/06/2009	0	0

Innishannon Raw	151/IS/09	280223	06/07/2009	0	0
Innishannon Treated	152/IS/09	280222	06/07/2009	0	0
Innishannon Raw	169/IS/09	286239	20/07/2009	0	0
Innishannon Treated	170/IS/09	286238	20/07/2009	0	0
Innishannon Raw	175/IS/09	289214	27/07/2009	0	0
Innishannon Treated	176/IS/09	289213	27/07/2009	0	0

Innishannon Raw	183/IS/09	293611	10/08/2009	0	0
Innishannon Treated	184/IS/09	293610	10/08/2009	0	0
Innishannon Raw	191/IS/09	296783	17/08/2009	0	0
Innishannon Treated	192/IS/09	296782	17/08/2009	0	0
Innishannon Raw	201/IS/09	300780	24/08/2009	0	0
Innishannon Treated	202/IS/09	300781	24/08/2009	0	0
Innishannon Raw	211/IS/09	304017	31/08/2009	0	0
Innishannon Treated	212/IS/09	304016	31/08/2009	0	0

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This is a draft document and is subject to revision.



# Waste Water Discharge Licence Application Form

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<b>EPA Ref. N<sup>o</sup>:</b> <i>(Office use only)</i>	<input type="text"/>
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**Environmental Protection Agency**  
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Lo Call: 1890 335599 Telephone: 053-9160600 Fax: 053-9160699  
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**Tracking Amendments to Draft Application Form**

Version No.	Date	Amendment since previous version	Reason
V. 1.	11/10/07	N/A	
V. 2.	18/10/07	Inclusion of a Note 1 superscript for Orthophosphate in Tables D.1(i)(b) & D.1(ii)(b).	To highlight the requirement for filtered samples in measurement of O-Phosphate for waste water discharges.
V.3.	13/11/07	Amend wording of Section F.2 to include 'abstraction'.  Amend wording of Checklist in Annex to reflect wording of Regulation 16(5) of S.I. No. 684 of 2007.  Inclusion of unique point code for each point of discharge and storm water overflow.	To accurately reflect the information required  To accurately reflect the Regulations and to obtain the application documentation in appropriate format.  To aid in cross-referencing of application documentation.
V.4	18/04/08	Inclusion of requirement to provide name of agglomeration to which the application relates.  Amend wording of Section B.7. (iii) to reflect the title of Water Services Authority.  Addition of new Section B.9 (ii) in order to obtain information on developments yet to contribute to the waste water works.  Addition of sub-sections C.1.1 & C.1.2 in order to clarify information required for Storm water overflow and pumping stations within the works.  Amend Section D.1 to include a requirement for monitoring data for influent	To accurately determine the agglomeration to be licensed.  To accurately reflect the Water Services Act, 2007.  To obtain accurate population equivalent figures for the agglomeration.  To obtain accurate information on design and spill frequency from these structures.  To acquire information on the population loading onto the plant and to provide information on performance rates within

		to waste water treatment plants, where available. Amend wording of Section E.1 to request information on composite sampling/flow monitoring provisions.	the plant. To acquire accurate information on the sampling and monitoring provisions for discharges from the works.
V.5	07/07/2008	Amend wording of B.7 (iii) to include reference to Water Services Authorities.  Amend Section G.1 to include Shellfish Waters Directive.	To accurately reflect the Water Services Act, 2007 requirements.
V.6	26/08/2007	Amendments to Section D to reflect new web based reporting.  Amended requirements for reporting on discharges under E.1 Waste Water Discharge Frequency and Quantities.  Amendment to Section F.1 to specify the type of monitoring and reporting required for the background environment.  Removal of Annexes to application form.	To clarify the reporting requirements.  To streamline reporting requirements.  To clarify the reporting requirements for ambient monitoring.  To reflect the new web based reporting requirements.

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Environmental Protection Agency  
Application for a Waste Water Discharge Licence  
Waste Water Discharge (Authorisation) Regulations 2007.

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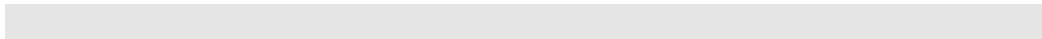
**ANNEX 1: TABLES/ATTACHMENTS**

**ANNEX 2: CHECKLIST**

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B.2	MAP 2	BANDON WWTP SITE LOCATION PLAN
B.2	MAP 3	BANDON WWTP SITE LAYOUT PLAN PRELIMINARY TREATMENT AT GLASSLINN ROAD
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G.2	TEXT	PHOSPHORUS REGULATIONS IMPLEMENTATION PROGRAMME FOR THE RIVER BANDON

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## ABOUT THIS APPLICATION FORM

This form is for the purpose of making an application for a Waste Water Discharge Licence under the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) or for the review of an existing Waste Water Discharge licence.

The Application Form **must** be completed in accordance with the instructions and guidance provided in the *Waste Water Discharge Licensing Application Guidance Note*. The Guidance Note gives an overview of Waste Water Licensing, outlines the licence application process (including the number of copies required) and specifies the information to be submitted as part of the application. The Guidance Note and application form are available to download from the Licensing page of the EPA's website at [www.epa.ie](http://www.epa.ie).

A valid application for a Waste Water Discharge Licence must contain the information prescribed in the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007). Regulation 16 of the Regulations sets out the statutory requirements for information to accompany a licence application. The application form is designed in such a way as to set out these questions in a structured manner and not necessarily in the order presented in the Regulations. In order to ensure a legally valid application in respect of Regulation 16 requirements, please complete the Regulation 16 Checklist provided in Annex 2.

This Application Form does not purport to be and should not be considered a legal interpretation of the provisions and requirements of the Waste Water Discharge (Authorisation) Regulations, 2007. While every effort has been made to ensure the accuracy of the material contained in the Application Form, the EPA assumes no responsibility and gives no guarantee, or warranty concerning the accuracy, completeness or up-to-date nature of the information provided herein and does not accept any liability whatsoever arising from any errors or omissions.

Should there be any contradiction between the information requirements set out in the Application Form and any clarifying explanation contained in the accompanying Guidance Note, then the requirements in this Application Form shall take precedence.



## PROCEDURES

The procedure for making and processing of applications for waste water discharge licences, and for the processing of reviews of such licences, appear in the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) and is summarised below. The application fees that shall accompany an application are listed in the Third Schedule to the Regulations.

Prior to submitting an application the applicant must publish in a newspaper circulating in the area, and erect at the point nearest to the waste water treatment plant concerned or, if no such plant exists, at a location nearest the primary discharge point, a notice of intention to apply. An applicant, not being the local authority in whose functional area the relevant waste water discharge, or discharges, to which the relevant application relates, takes place or is to take place, must also notify the relevant Local Authority, in writing, of their intention to apply.

An application for a licence must be submitted on the appropriate form (available from the Agency) with the correct fee, and should contain relevant supporting documentation as attachments. The application should be based on responses to the form and include supporting written text and the appropriate use of tables and drawings. Where point source emissions occur, a system of unique reference numbers should be used to denote each discharge point. These should be simple, logical, and traceable throughout the application.

The application form is divided into a number of sections of related information. The purpose of these divisions is to facilitate both the applicant and the Agency in the provision of the information and its assessment. **Please adhere to the format as set out in the application form and clearly number each section and associated attachment, if applicable, accordingly.** Attachments should be clearly numbered, titled and paginated and must contain the required information as set out in the application form. Additional attachments may be included to supply any further information supporting the application. Any references made should be supported by a bibliography.

**All questions should be answered. Where information is requested in the application form, which is not relevant to the particular application, the words "not applicable" should be clearly written on the form. The abbreviation "N/A" should not be used.**

Additional information may need to be submitted beyond that which is explicitly requested on this form. Any references made should be supported by a bibliography. The Agency may request further information if it considers that its provision is material to the assessment of the application. Advice should be sought from the Agency where there is doubt about the type of information required or the level of detail.

Information supplied in this application, including supporting documentation will be put on public display and be open to inspection by any person.

Applicants should be aware that a contravention of the conditions of a waste water discharge licence is an offence under the Waste Water Discharge (Authorisation) Regulations, 2007.

**The provision of information in an application for a waste water discharge licence which is false or misleading is an offence under Regulation 35 of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007).**

*Note: Drawings. The following guidelines are included to assist applicants:*

- *All drawings submitted should be titled and dated.*
- *All drawings should have a unique reference number and should be signed by a clearly identifiable person.*
- *All drawings should indicate a scale and the direction of north.*
- *All drawings should, generally, be to a scale of between 1:20 to 1:500, depending upon the degree of detail needed to be shown and the size of the facility. Drawings delineating the boundary can be to a smaller scale of between 1:1000 to 1:10560, but must clearly and accurately present the required level of detail. Drawings showing the waste water treatment plant location, if such a plant exists, can be to a scale of between 1:50 000 to 1:126 720. All drawings should, however, be A3 or less and of an appropriate scale such that they are clearly legible. Provide legends on all drawings and maps as appropriate.*
- *In exceptional circumstances, where A3 is considered inadequate, a larger size may be requested by the Agency.*

**It should be noted that it will not be possible to process or determine the application until the required documents have been provided in sufficient detail and to a satisfactory standard.**

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## SECTION A: NON-TECHNICAL SUMMARY

*Advice on completing this section is provided in the accompanying Guidance Note.*

A non-technical summary of the application is to be included here. The summary should identify all environmental impacts of significance associated with the discharge of waste water associated with the waste water works. This description should also indicate the hours during which the waste water works is supervised or manned and days per week of this supervision.

The following information must be included in the non-technical summary:

A description of:

- the waste water works and the activities carried out therein,
- the sources of emissions from the waste water works,
- the nature and quantities of foreseeable emissions from the waste water works into the receiving aqueous environment as well as identification of significant effects of the emissions on the environment,
- the proposed technology and other techniques for preventing or, where this is not possible, reducing emissions from the waste water works,
- further measures planned to comply with the general principle of the basic obligations of the operator, i.e., that no significant pollution is caused;
- measures planned to monitor emissions into the environment.

Supporting information should form **Attachment N° A.1**

### **Waste Water Works**

The waste water works for the agglomeration of Bandon includes all the sewers, their accessories and all structural devices for the collection, storage, treatment or discharge of waste water.

The original WWTP in Bandon was constructed in the 1960s and provided preliminary treatment and primary/secondary treatment. The WWTP was upgraded in 1993 and was designed to treat a P.E. of 20,000.

The majority of the agglomeration is served by a combined sewerage system. At present, Stage 2 of the Bandon Sewerage Scheme is under construction and consists of upgrading of the existing combined sewer network, extension of the existing storm network and the construction of new storm sewers in some areas.

There are four pump stations within the catchment: O'Mahony Avenue and Bridge Lane are local pump stations; Watergate Street pump station pumps waste water flows from the north of the catchment across the river to Glaslinn Road pump station. Preliminary treatment is provided at the Glaslinn Road pump station consisting of coarse screening, fine screening and grit removal. From Glaslinn Road waste water is pumped to the WWTP.

All flows arriving at the WWTP receive primary treatment which consists of primary settlement. Flows of up to 3 DWF receive secondary treatment which is carried out in an activated sludge treatment process which operates in parallel with an upgraded percolating filter system. Nutrient removal and tertiary treatment are not provided at the WWTP.

## Sources, Nature and Quantity of Emissions

The primary discharge is the treated effluent from the WWTP which is discharged to the River Bandon via an open pipe and the average discharge volume between August 2007 to August 2008 was 2370m<sup>3</sup>/day. Storm Overflows occur to the River Bandon from the WWTP overflow, Glaslinn Road pump station overflow and Watergate Street pump station overflow. The overflow from the Bridge Street pump station is to the Bridewell River. There is no overflow at O' Mahony Avenue pump station. There are ten combined sewer overflows to the River Bandon.

An Environmental Impact Statement was not completed for the WWTP as this has been operational since the 1960s. Water quality upstream and downstream of the WWTP is monitored by Cork County Council and the EPA. Water quality in this section of the River Bandon has improved in recent years from a Q value of 3 in 1997 to Q 4 in 2006. However, elevated phosphorus levels were recorded in 2007 downstream of the discharge point. Downstream of the discharge the River Bandon is designated as sensitive water under the Urban Waste Water Treatment Regulations and the Upper Bandon Estuary has been classified as eutrophic by the EPA.

The sources of the emissions from the WWTP are mostly domestic effluent but leachate from outside of the agglomeration (Derryconnell landfill) is also treated in the WWTP. On average the volume of leachate imported is approximately 80m<sup>3</sup>/day.

Currently the WWTP is treating a P.E. of 8178 (this includes the agglomeration and imported leachate) and has the capacity to deal with the pending developments within the agglomeration, which is estimated as a PE of 1765 based on approved planning applications for the agglomeration.

## Treatment Standards for Reducing Emissions

The effluent is treated to the following standards: BOD<sub>5</sub> – 25 mg/l O<sub>2</sub>; COD – 125mg/l O<sub>2</sub> and Total Suspended Solids - 35mg/l. Monitoring of the primary discharge is conducted by Cork County Council under the requirements of the Urban Waste Water Treatment Regulations and is conducted at a minimum of 6 times per year. The Bandon WWTP complied with the standards for 2007. The average discharge volume between August 2007 to August 2008 was 2370m<sup>3</sup>/day.

## Bandon Sewerage Scheme Programme of Works

A programme of works has been prioritised for the development of infrastructure to collect and convey waste water from Bandon to the existing WWTP. The scheme involves three contracts:

1. Advance Works Contract 1 – foul and storm pump station at Watergate Street with a river crossing and associated pipework. This contract is substantially complete and the total cost of the Civil and M&E works is €1.3m (incl. VAT).
2. Advance Works Contract 2 - foul and storm sewers to serve northern environs. The cost of the contract is approx. €800K (incl. VAT) and is being funded directly by Cork County Council and developers (not WSIP)
3. Main Contract – upgrading of the existing combined sewer network, extension of existing storm network. Contract documents awaiting approval from DEHLG – current estimate €7.55M (incl. VAT)

The 2007 – 2009 Water Services Investment Programme published by the Department has set aside €14.29M for the Bandon SS Stage 2 works which includes Advance Contract 1 and the Main Contract. This higher figure comes from the earlier Planning Stage Budget submitted for approval while current lower estimates are based on more competitive recent tenders.

**Monitoring Programme**

Cork County Council monitors the discharge from the WWTP on a 6 times per year basis to measure compliance with the requirements of the Urban Waste Water Treatment Directive. Ambient water quality upstream and downstream of the discharge point is also conducted. The River Bandon is also monitored in terms of the Freshwater Fish Directive, the Phosphorus Regulations and the Water Framework Directive.

Samples from the treatment plant discharge and upstream and downstream ambient samples are analysed for BOD,COD, Ammonia, pH, Suspended Solids, Total Nitrogen, Total Phosphorus, Sulphate, Ortho phosphate (in recent times) and metals (in recent times).

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**SECTION B: GENERAL**

Advice on completing this section is provided in the accompanying Guidance Note.

**B.1 Agglomeration Details**

**Name of Agglomeration:** BANDON

**Applicant's Details**

**Name and Address for Correspondence**

Only application documentation submitted by the applicant and by the nominated person will be deemed to have come from the applicant.

Provide a drawing detailing the agglomeration to which the licence application relates. It should have the boundary of the agglomeration to which the licence application relates clearly marked in red ink.

<b>Name*:</b>	Cork County Council (South)
<b>Address:</b>	Floor 5
	County Hall
	Cork
<b>Tel:</b>	021 4276891
<b>Fax:</b>	021 4276321
<b>e-mail:</b>	corporate.affairs@corkcoco.ie

\*This should be the name of the water services authority in whose ownership or control the waste water works is vested.

\*Where an application is being submitted on behalf of more than one water services authority the details provided in Section B.1 shall be that of the lead water services authority.

<b>Name*:</b>	Patricia Power
<b>Address:</b>	Director of Services
	Cork County Council
	Area Operations South
	Floor 5, County Hall
	Cork
<b>Tel:</b>	021 - 4285304
<b>Fax:</b>	021 - 4342098
<b>e-mail:</b>	Patricia.power@CorkCoCo.ie

\*This should be the name of person nominated by the water services authority for the purposes of the application.

**Co-Applicant's Details**

<b>Name*:</b>	Not Applicable
<b>Address:</b>	
<b>Tel:</b>	
<b>Fax:</b>	
<b>e-mail:</b>	

\*This should be the name of a water services authority, other than the lead authority, where multiple authorities are the subject of a waste water discharge (authorisation) licence application.

**Design, Build & Operate Contractor Details**

<b>Name*:</b>	Not Applicable
<b>Address:</b>	
<b>Tel:</b>	
<b>Fax:</b>	
<b>e-mail:</b>	

\*Where a design, build & operate contract is in place for the waste water works, or any part thereof, the details of the contractor should be provided.

**Attachment B.1** should contain appropriately scaled drawings / maps ( $\leq A3$ ) of the agglomeration served by the waste water works showing the boundary clearly marked in red ink. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g., ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. These drawings should be provided to the Agency on a separate CD-Rom containing sections B.2, B.3, B.4, B.5, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
	✓	

**B.2 Location of Associated Waste Water Treatment Plant(s)**

Give the location of the waste water treatment plant associated with the waste water works, if such a plant or plants exists.

<b>Name*:</b>	Raymond Crowley
<b>Address:</b>	Senior Executive Engineer
	Glasslynn Road
	Bandon
	Co. Cork
<b>Grid ref (6E, 6N)</b>	150425E 055700N
<b>Level of Treatment</b>	Secondary Treatment
<b>Primary Telephone:</b>	023 41181
<b>Fax:</b>	023 29792
<b>e-mail:</b>	Raymond.Crowley@CorkCoCo.ie

\*This should be the name of the person responsible for the supervision of the waste water treatment plant.

**Attachment B.2** should contain appropriately scaled drawings / maps ( $\leq A3$ ) of the site boundary and overall site plan, including labelled discharge, monitoring and sampling points. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g., ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. These drawings should be provided to the Agency on a separate CD-Rom containing sections B.1, B.3, B.4, B.5, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
	✓	

**B.3 Location of Primary Discharge Point**

Give the location of the primary discharge point, as defined in the Waste Water Discharge (Authorisation) Regulation, associated with the waste water works.

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW1BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	150411 E 055785N

**Attachment B.3** should contain appropriately scaled drawings / maps ( $\leq A3$ ) of the discharge point, including labelled monitoring and sampling points associated with the discharge point. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing the drawings and tabular data requested in sections B.1, B.2, B.4, B.5, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
		✓

**B.4 Location of Secondary Discharge Point(s)**

Give the location of **all** secondary discharge point(s) associated with the waste water works. Please refer to Guidance Note for information on Secondary discharge points.

**Attachment B.4** should contain appropriately scaled drawings / maps ( $\leq A3$ ) of the discharge point(s), including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.5, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
		✓



**B.5 Location of Storm Water Overflow Point(s)**

Give the location of **all** storm water overflow point(s) associated with the waste water works.

<b>Type of Discharge</b>	Storm Overflow at Treatment plant
<b>Unique Point Code</b>	SW02BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	150368E 055690N

<b>Type of Discharge</b>	Overflow pipe at Glasslinn PS
<b>Unique Point Code</b>	SW03BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	150074E 055292N

<b>Type of Discharge</b>	Storm Overflow (Non Return Flap Valve) at Watergate St PS
<b>Unique Point Code</b>	SW04BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149316E 055106N

<b>Type of Discharge</b>	Non Return Flap Valve Bridge St PS
<b>Unique Point Code</b>	SW05BAND
<b>Location</b>	Bridewell River
<b>Grid ref (6E, 6N)</b>	149265E 054933N

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW06BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149542E 055150N

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW07BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149145E 055124N

<b>Type of Discharge</b>	Non-Return Flap Valve
<b>Unique Point Code</b>	SW08BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149732E 055124N

<b>Type of Discharge</b>	Non-Return Flap Valve
<b>Unique Point Code</b>	SW09BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149281E 055040N

<b>Type of Discharge</b>	Non-Return Flap Valve
<b>Unique Point Code</b>	SW10BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149244E 055045N

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW11BAND
<b>Location</b>	Bandon River
<b>Grid ref (6E, 6N)</b>	149951E 054996N

<b>Type of Discharge</b>	Non-Return Flap Valve
<b>Unique Point Code</b>	SW12BAND
<b>Location</b>	Bridewell River
<b>Grid ref (6E, 6N)</b>	149293E 054948N

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW13BAND
<b>Location</b>	Bridewell River
<b>Grid ref (6E, 6N)</b>	149116E 054830N

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**(6E, 6N)**

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW14BAND
<b>Location</b>	Bridewell River
<b>Grid ref (6E, 6N)</b>	148819E 054459N

<b>Type of Discharge</b>	Open Pipe
<b>Unique Point Code</b>	SW15BAND
<b>Location</b>	Bridewell River
<b>Grid ref (6E, 6N)</b>	148552E 054267N

**Attachment B.5** should contain appropriately scaled drawings / maps ( $\leq A3$ ) of storm water overflow point(s) associated with the waste water works, including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, C.1, D.2, E.3 and F.2.

<b>Attachment included</b>	<b>Yes</b>	<b>No</b>
	✓	

**B.6 Planning Authority**

Give the name of the planning authority, or authorities, in whose functional area the discharge or discharges take place or are proposed to take place.

<b>Name:</b>	Cork County Council
<b>Address:</b>	County Hall
	Cork
<b>Tel:</b>	021 4276891
<b>Fax:</b>	021 4276321
<b>e-mail:</b>	

Planning Permission relating to the waste water works which is the subject of this application:- (tick as appropriate)

<b><i>has been obtained</i></b>		<b><i>is being processed</i></b>	
<b><i>is not yet applied for</i></b>		<b><i>is not required</i></b>	✓

**Local Authority Planning File Reference No:**

**Attachment B.6** should contain *the most recent* planning permission, including a copy of *all* conditions, and where an EIS was required, copies of any such EIS and any certification associated with the EIS, should also be enclosed. Where planning permission is not required for the development, provide reasons, relevant correspondence, etc.

The Part 10 Planning process was introduced by the 1994 Planning & Development Regulations. The Bandon WWTP was constructed / upgraded in the early 1990s and commissioned in 1993 and did not require planning permission.

Attachment included	Yes	No
		✓

**B.7 Other Authorities**

B.7 (i) Shannon Free Airport Development Company (SFADCo.) area

The applicant should tick the appropriate box below to identify whether the discharge or discharges are located within the Shannon Free Airport Development Company (SFADCo.) area.

**Attachment B.7(i)** should contain details of any or all discharges located within the SFADCo. area.

Within the SFADCo Area	Yes	No
		✓

B.7 (ii) Health Services Executive Region

The applicant should indicate the **Health Services Executive Region** where the discharge or discharges are or will be located.

<b>Name:</b>	Health Service Executive South
<b>Address:</b>	Aras Sláinte
	Wilton Road
	Cork
<b>Tel:</b>	021 4545011
<b>Fax:</b>	021 4545748
<b>e-mail:</b>	

B.7 (iii) Other Relevant Water Services Authorities

Regulation 13 of the Waste Water Discharge (Authorisation) Regulations, 2007 requires all applicants, not being the water services authority in whose functional area the relevant waste water discharge or discharges, to which the relevant application relates, takes place or is to take place, to notify the relevant water services authority of the said application.

<b>Name:</b>	Not Applicable
<b>Address:</b>	
<b>Tel:</b>	
<b>Fax:</b>	
<b>e-mail:</b>	

<b>Relevant Authority Notified</b>	<b>Yes</b>	<b>No</b>
		✓

**Attachment B.7(iii)** should contain a copy of the notice issued to the relevant local authority.

<b>Attachment included</b>	<b>Yes</b>	<b>No</b>
		✓

**B.8 Notices and Advertisements**

Regulations 10 and 11 of the Waste Water Discharge (Authorisation) Regulations, 2007 require all applicants to advertise the application in a newspaper and by way of a site notice. See *Guidance Note*.

**Attachment B.8** should contain a copy of the site notice and an appropriately scaled drawing ( $\leq A3$ ) showing its location. **The original application must include the original page of the newspaper in which the advertisement was placed.** The relevant page of the newspaper containing the advertisement should be included with the original and two copies of the application.

<b>Attachment included (with original application)</b>	<b>Yes</b>	<b>No</b>
	✓	

**B.9 (i) Population Equivalent of Agglomeration**

**TABLE B.9.1 POPULATION EQUIVALENT OF AGGLOMERATION**

The population equivalent (p.e.) of the agglomeration to be, or being, served by the waste water works should be provided and the period in which the population equivalent data was compiled should be indicated.

The Population Equivalent (PE) for Bandon was calculated based on one recorded concentration (17/7/08) of BOD at the inlet of 261mg/l. On the day of measurement the effluent flow from the WWTP was not recorded, however, based on the effluent flow records for the 16/7/08 and the 18/7/08, the average flow over the 2-day period (17/8/08 and 18/8/08) was calculated as 1880m<sup>3</sup>/day. These figures were used to calculate the BOD loading to the plant per day. Based on a typical load of 0.06kg BOD/person/day the PE of 8178 was calculated.

<b>Population Equivalent</b>	<b>8178</b>
<b>Data Compiled (Year)</b>	<b>2008</b>
<b>Method</b>	<b>Measured BOD concentration at the WWTP</b>

**B.9 (ii) Pending Development**

Where planning permission has been granted for development(s), but development has not been commenced or completed to date, within the boundary of the agglomeration and this development is being, or is to be, served by the waste water works provide the following information;

- information on the calculated population equivalent (p.e.) to be contributed to the waste water works as a result of those planning permissions granted,
- the percentage of the projected p.e. to be contributed by the non-domestic activities, and
- the ability of the waste water works to accommodate this extra hydraulic and organic loading without posing an environmental risk to the receiving water habitat.

Attachment B.9(ii) Map 13 illustrates the agglomeration of Bandon and the approved planning permissions to date. 706 dwellings have approved planning permission in the agglomeration. Based on an average of 2.5 persons per dwelling, the calculated PE which will contribute to the works in the future is 1765.

The approved planning permissions are for domestic dwellings only.

Bandon WWTP was designed to treat a PE of 20,000 and is currently treating a PE of 8178. The Bandon WWTP has the capacity to accommodate the expected increase in load (PE of 9943) as a result of the planned developments.

**B.9 (iii) FEES**

State the relevant Class of waste water discharge as per Column 1 of the Second Schedule, and the appropriate fee as per Columns 2 or 3 of the Third Schedule of the Waste Water Discharges (Authorisation) Regulations 2007, S.I. No. 684 of 2007.

<b>Class of waste water discharge</b>	<b>Fee (in €)</b>
Discharges from agglomeration with a population equivalent of 2,001 to 10,000	€ 25,000

<b>Appropriate Fee Included (with original application)</b>	<b>Yes</b>	<b>No</b>
	✓	

**B.10 Capital Investment Programme**

State whether a programme of works has been prioritised for the development of infrastructure to appropriately collect, convey, treat and discharge waste water from the relevant agglomeration. If a programme of works has been prioritised provide details on funding, (local or national), allocated to the capital

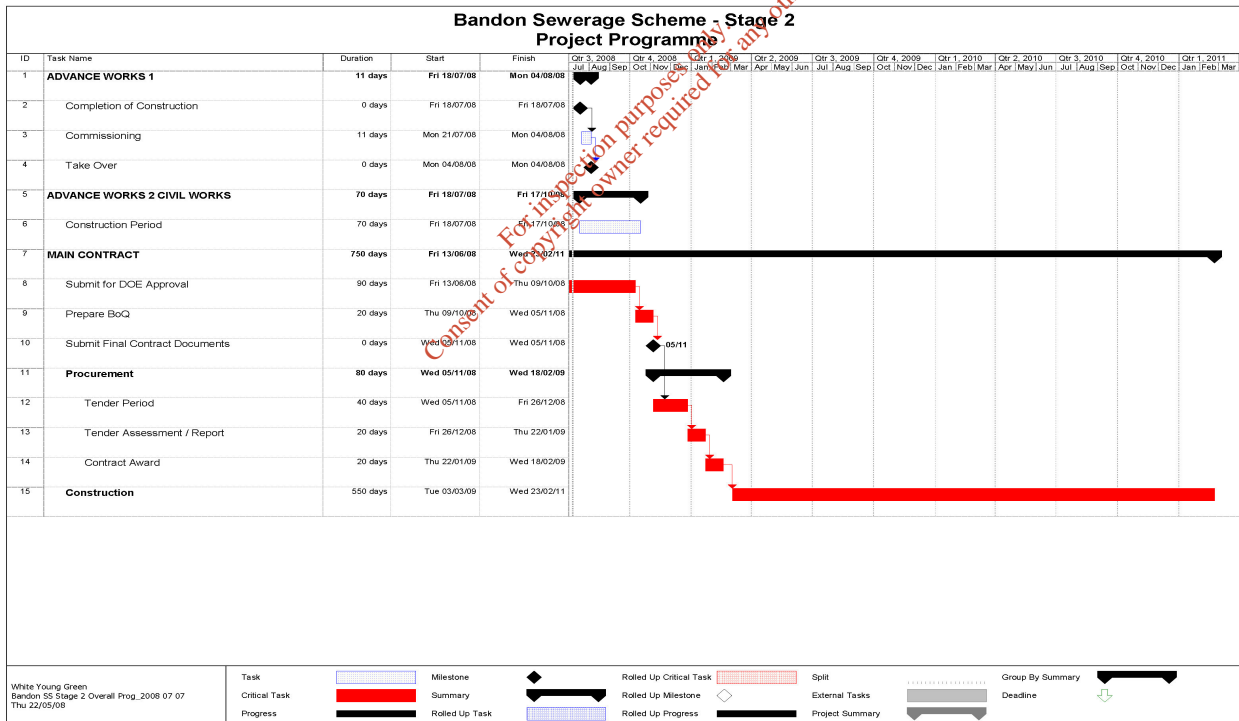
project. Provide details on the extent and type of work to be undertaken and the likely timeframes for this work to be completed.

A programme of works has been prioritised for the development of infrastructure to collect and convey waste water from Bandon to the existing waste water treatment plant.

The scheme involves 3 main contracts:

1. Advance Works Contract 1 – foul & storm pump station at Watergate Street/river crossing/associated pipework – substantially complete – total cost of civil & M&E €1.3M (incl. VAT)
2. Advance Works Contract 2 – foul and storm sewers to serve northern environs – cost approx. €800K(incl. VAT) but being funded directly by Cork Co Co and developers (not WSIP)
3. Main Contract – upgrading of the existing combined sewer network, extension of existing storm network. Contract documents awaiting approval from DEHLG – current estimate €7.55M (incl. VAT)

The 2007 – 2009 Water Services Investment Programme published by the Department has set aside €14.29M for the Bandon SS Stage 2 works which includes Advance Contract 1 and the Main Contract. This higher figure comes from the earlier Planning Stage Budget submitted for approval while current lower estimates are based on more competitive recent tenders.



**Attachment B.10** should contain the most recent development programme, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

<b>Attachment included</b>	<b>Yes</b>	<b>No</b>
----------------------------	------------	-----------

		✓
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**B.11 Significant Correspondence**

Provide a summary of any correspondence resulting from a Section 63 notice issued by the Agency in relation to the waste water works under the Environmental Protection Agency Acts, 1992 and 2003, as amended by Section 13 of Protection of the Environment Act, 2003.

**Attachment B.11** should contain a summary of any relevant correspondence issued in relation to a Section 63 notice.

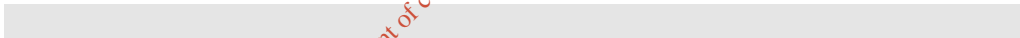
Attachment included	Yes	No
		✓

**B.12 Foreshore Act Licences.**

Provide a copy of the most recent Foreshore Act licence issued in relation to discharges from the waste water works issued under the Foreshore Act 1933.

**Attachment B.12** should contain the most recent licence issued under the Foreshore Act 1933, including a copy of **all** conditions attached to the licence and any monitoring returns for the previous 12-month period, if applicable.

Attachment included	Yes	No
		✓



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## SECTION C: INFRASTRUCTURE & OPERATION

*Advice on completing this section is provided in the accompanying Guidance Note.*

### **C.1 Operational Information Requirements**

Provide a description of the plant, process and design capacity for the areas of the waste water works where discharges occur, to include a copy of such plans, drawings or maps, (site plans and location maps, process flow diagrams), and such other particulars, reports and supporting documentation as are necessary to describe all aspects of the area of the waste water works discharging to the aquatic environment. Maps and drawings must be no larger than A3 size.

The original WWTP in Bandon was constructed in the early 1960s and consisted of preliminary and primary/secondary treatment. Due to overloading and a deterioration in the treated effluent standard, the WWTP was upgraded and extended and was commissioned in 1993.

Preliminary treatment is provided for 480 l/s at the Glaslinn Road pump station which includes coarse screening and fine screening to 5mm in a 'Screezer' unit which also incorporates screening dewatering and compaction. Grit removal is provided for flows up to 200l/s. Screenings and grit are treated on site prior to disposal to landfill. Flows of 156 l/s are pumped to the WWTP for treatment and excess flows are discharged to the River Bandon.

The WWTP in Bandon was designed to treat a PE of 20,000 and is currently treating a PE of 8178. All flows to the WWTP receive primary treatment which comprises primary settlement in two horizontal flow settlement tanks operating in parallel. Settled sewage gravitates to a flow splitter chamber upstream of the secondary treatment system. Flows up to 3 DWF (75 l/s) pass forward to the secondary treatment system with excess flows overflowing to the River Bandon.

The WWTP was constructed in two stages and operates as two parallel systems – a biological treatment plant with primary settlement and a percolating filter system was constructed in the 1960s and an extended aeration activated sludge plant with sludge thickening, partial stabilisation and dewatering facilities was constructed in 1993. A phosphate reduction system was installed in 1993 however is not operational as the system depressed the pH of the waste water which affected biological activity.

Indigenous sludge is partially stabilised and then thickened from 1% to 4% dry solids in a picket fence thickening tank. Thickened sludge is then dewatered in a double belt press. Prior to dewatering, the sludge is pre-conditioned by polyelectrolyte to improve its dewatering ability. The press produces a dewatered cake at 22% dry solids. This is stored in a skip and disposed of to a licenced facility for further treatment.

Supernatant liquors from the gravity sludge thickener and filtrate from the dewatering press are pumped to the oxidation ditch, where they combine with incoming waste water and receive full biological treatment with the main process stream. There is also a facility to enable these flows to be pumped to the primary settlement tanks.

Attachment B.2 contains location/site layout details and Attachment C.2 contains a process flow diagram of the waste water treatment works.

C.1.1 Storm Water Overflows

For each storm water overflow within the waste water works the following information shall be submitted:

- An assessment to determine compliance with the criteria for storm water overflows, as set out in the DoEHLG 'Procedures and Criteria in Relation to Storm Water Overflows', 1995 and any other guidance as may be specified by the Agency, and
- Identify whether any of the storm water overflows are to be decommissioned, and identify a date by which these overflows will cease, if applicable.

There is no information available regarding the operation of the combined sewer overflows in terms of continuation flows or spill frequency. There are no screens on the overflows and it is likely that some (if not all) of the overflows do not comply with the Urban Waste Water Treatment Directive and DoEHLG policy.

C.1.2 Pumping Stations

For each pump station operating within the waste water works, provide details of the following:

- Number of duty and standby pumps at each pump station;
- The measures taken in the event of power failure;
- Details of storage capacity at each pump station;
- Frequency and duration of activation of emergency overflow to receiving waters. Clarify the location where such discharges enter the receiving waters.

Pumping Stations	Permanent Standby Generator	Plug-in Mobile Generator	Storage Capacity [m3]	Duty Pump	Standby Pump	Assist Pump	Screen	Emergency Overflow
Glasslin PS	X	X	155.97*	2	1		yes	✓
Watergate PS	X	✓	313.18	4**		3***	yes	✓
Bridge Lane PS	X	X	no information available					✓
O'Mahonys Avenue PS	X	X	On Line PS – Pumps foul onwards through the foul network					X

\*including storage capacity of pre-treatment works

\*\* 2 storm & 2 foul pumps

\*\*\*2 storm & 2 foul pumps

**Attachment C.1** should contain supporting documentation with regard to the plant and process capacity, systems, storm water overflows, emergency overflows, etc., including flow diagrams of each with any relevant additional information. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, D.2, E.3 and F.2.

<b>Attachment included ( with original application)</b>	<b>Yes</b>	<b>No</b>
	✓	

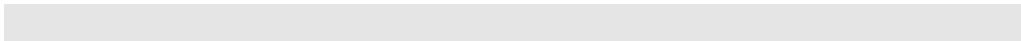
**C.2 Outfall Design and Construction**

Provide details on the primary discharge point & secondary discharge points and storm overflows to include reference, location, design criteria and construction detail.

**Attachment C.2** should contain any supporting documentation on the design and construction of any and all discharge outfalls, including stormwater overflows, from the waste water works.

The original design for the primary outfall SW01 and storm overflow location at the WWTP SW02 was a diffuser type outfall. However, due to blockages, these outfalls were subsequently replaced with open pipes. The outfall length from the WWTP to the discharge point in the River Bandon is approximately 30m.

Attachment included (with original application)	Yes	No
	√	



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**SECTION D: DISCHARGES TO THE AQUATIC ENVIRONMENT**

Advice on completing this section is provided in the accompanying Guidance Note.

Give particulars of the source, location, nature, composition, quantity, level and rate of discharges arising from the agglomeration and, where relevant, the period or periods during which such emissions are made or are to be made.

Details of all discharges of waste water from the agglomeration should be submitted via the following web based link: [http://78.137.160.73/epa\\_wwd\\_licensing/](http://78.137.160.73/epa_wwd_licensing/). The applicant should address in particular all discharge points where the substances outlined in Tables D.1(i), (b) & (c) and D.1(ii), (b) & (c) of Annex 1 are emitted.

Where it is considered that any of the substances listed in Annex X of the Water Framework Directive (2000/60/EC) or any of the Relevant Pollutants listed in Annex VIII of the Water Framework Directive (2000/60/EC) are being discharged from the waste water works or are seen to be present in the receiving water environment downstream of a discharge from the works (as a result of any monitoring programme, e.g., under the Water Framework Directive Programme of Measures) the applicant shall screen the discharge for the relevant substance.

**D.1 Discharges to Surface Waters**

Details of all discharges of waste water from the agglomeration should be supplied via the following web based link: [http://78.137.160.73/epa\\_wwd\\_licensing/](http://78.137.160.73/epa_wwd_licensing/). Tables D.1(i)(a), (b) & (c), should be completed for the primary discharge point from the agglomeration and Tables D.1(ii)(a), (b) & (c) should be completed for **each** secondary discharge point, where relevant. Table D.1(iii)(a) should be completed for **each** storm water overflow. Individual Tables must be completed for each discharge point.

Where monitoring information is available for the influent to the plant this data should also be provided in response to Section D.1.

Supporting information should form **Attachment D.1**

Attachment included	Yes	No
	√	

**D.2 Tabular Data on Discharge Points**

Applicants should submit the following information for each discharge point:

**Table D.2:**

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING
Point Code Provide label ID's	Point Type (e.g., Primary/Secondary/Storm Water Overflow)	Local Authority Name (e.g., Donegal County Council)	Receiving Water Body Type (e.g., River, Lake, Groundwater, Transitional, Coastal)	Receiving Water Body Name (e.g., River Suir)	Protected Area Type (e.g., SAC, candidate SAC, NHA, SPA etc.)	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference
SW01 BAND	Primary Discharge pt	Cork Co Council	River	Bandon River	No Designation at this location	150411	055785

An individual record (i.e. row) is required for each discharge point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at [www.epa.ie](http://www.epa.ie). [http://](http://www.epa.ie)This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, E.3 and F.2.

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**SECTION E: MONITORING**

Advice on completing this section is provided in the accompanying Guidance Note.

**E.1 Waste Water Discharge Frequency and Quantities – Existing & Proposed**

Provide an estimation of the quantity of waste water likely to be emitted in relation to all primary and secondary discharge points applied for. This information should be included in Table E.1(i) via the following web based link: [http://78.137.160.73/epa\\_wwd\\_licensing/](http://78.137.160.73/epa_wwd_licensing/).

Provide an estimation of the quantity of waste water likely to be emitted in relation to all storm water overflows within the agglomeration applied for. This information should be included in Table E.1(ii) via the following web based link: [http://78.137.160.73/epa\\_wwd\\_licensing/](http://78.137.160.73/epa_wwd_licensing/).

Indicate if composite sampling or continuous flow monitoring is in place on the primary or any other discharge points. Detail any plans and timescales for the provision of composite sampling and continuous flow meters.

**E.2. Monitoring and Sampling Points**

Programmes for environmental monitoring should be submitted as part of the application. These programmes should be provided as Attachment E.2.

Reference should be made to, provision of sampling points and safe means of access, sampling methods, analytical and quality control procedures, including equipment calibration, equipment maintenance and data recording/reporting procedures to be carried out in order to ensure accurate and reliable monitoring.

In determining the sampling programme to be carried out, the variability of the emission and its effect on the receiving environment should be considered.

Details of any accreditation or certification of analysis should be included.

**Attachment E.2** should contain any supporting information.

Attachment included	Yes	No
	√	

**E.3. Tabular data on Monitoring and Sampling Points**

Applicants should submit the following information for each monitoring and sampling point:

PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
Point Code Provide label ID's assigned in section E of application	Point Type (e.g., Primary, Secondary, Storm Water Overflow)	Monitoring Type M = Monitoring S = Sampling	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference	Y = GPS used N = GPS not used

An individual record (i.e., row) is required for each monitoring and sampling point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at [www.epa.ie](http://www.epa.ie). [http://](http://www.epa.ie)This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, D.2 and F.2.

**E.4 Sampling Data**

Regulation 16(1)(h) of the Waste Water Discharge (Authorisation) Regulations 2007 requires all applicants in the case of an existing waste water treatment plant to specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application.

Regulation 16(1)(l) of the regulations requires applicants to give details of compliance with any applicable monitoring requirements and treatment standards.

**Attachment E.4** should contain any supporting information.

<b>Attachment included (with original application)</b>	<b>Yes</b>	<b>No</b>
	✓	

## **SECTION F: EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGE(S)**

*Advice on completing this section is provided in the accompanying Guidance Note.*

Detailed information is required to enable the Agency to assess the existing receiving environment. This section requires the provision of information on the ambient environmental conditions within the receiving water(s) upstream and downstream of any discharge(s).

Where development is proposed to be carried out, being development which is of a class for the time being specified under Article 24 (First Schedule) of the Environmental Impact Assessment Regulations, the information on the state of the existing environment should be addressed in the EIS. **In such cases, it will suffice for the purposes of this section to provide adequate cross-references to the relevant sections in the EIS.**

### **F.1. Assessment of Impact on Receiving Surface or Ground Water**

- Give summary details and an assessment of the impacts of any existing or proposed emissions on the environment, including environmental media other than those into which the emissions are to be made.

The original WWTP in Bandon was constructed in the early 1960s and consisted of preliminary and primary/secondary treatment. Due to overloading and a deterioration in the treated effluent standard, the WWTP was upgraded and extended and was commissioned in 1993.

An Environmental Impact Statement was not prepared for the upgrading of the Bandon WWTP.

- Details of all monitoring of the receiving water should be supplied via the following web based link: [http://78.137.160.73/epa\\_wwd\\_licensing/](http://78.137.160.73/epa_wwd_licensing/). Tables F.1(i)(a) & (b) should be completed for the primary discharge point. Surface water monitoring locations upstream and downstream of the discharge point shall be screened for those substances listed in Tables F.1(i)(a) & (b). Monitoring of surface water shall be carried out at not less than two points, one upstream from the discharge location and one downstream.
- For discharges from secondary discharge points Tables F.1(ii)(a) & (b) should be completed. Furthermore, provide summary details and an assessment of the impacts of any existing or proposed emissions on the surface water or ground (aquifers, soils, sub-soils and rock environment), including any impact on environmental media other than those into which the emissions are to be made.

An Environmental Impact Assessment was not completed for the secondary discharges as the Bandon WWTP has been in operation since the 1960s.



- Provide details of the extent and type of ground emissions at the works. For larger discharges to groundwaters, e.g., from Integrated Constructed Wetlands, large scale percolation areas, etc., a comprehensive report must be completed which should include, inter alia, topography, meteorological data, water quality, geology, hydrology, and hydrogeology. The latter must in particular present the aquifer classification and vulnerability. The Geological Survey of Ireland Groundwater Protection Scheme Dept of the Environment and Local Government, Geological Survey of Ireland, EPA (1999) methodology should be used for any such classification. This report should also identify all surface water bodies and water wells that may be at risk as a result of the ground discharge.

There are no ground emissions at the Bandon WWTP.

- Describe the existing environment in terms of water quality with particular reference to environmental quality standards or other legislative standards. Submit a copy of the most recent water quality management plan or catchment management plan in place for the receiving water body. Give details of any designation under any Council Directive or Regulations that apply in relation to the receiving water.

The River Bandon (20B02) is contained within Hydrometric Area No. 20 and is located entirely in Cork County. The River Bandon rises near Barrboy Mountain and generally flows eastwards towards Innishannon. At Innishannon the river changes direction and flows in a southeasterly direction and discharges into Kinsale Harbour. There is no recent water quality management plan or catchment management plan in place for the River Bandon.

The discharge location on the River Bandon is upstream of a designated sensitive area under the Urban Waste Water Treatment Regulations 2001 - The Bandon Estuary Upper from Innishannon Bridge to Kinsale Western Bridge. The following concentrations or reductions for BOD, COD, TSS, Phosphorus and Nitrogen apply to the discharge:

Values for concentrations or for the percentage of reduction:		
Parameter;	Conc. or	% Reduction
BOD(5) @ 20°C	25 mg/l O2	70 -90
COD	125 mg/l O2	75
Total Suspended Solids	35 mg/l	90

The River Bandon at the primary discharge location is not designated as a salmonid water under the European Communities (Quality of Salmonid Waters Regulations, 1988 (S.I. No. 293/1988), however contains good stocks of salmon and sea trout. Upstream of the discharge location near Dunmanway an SAC has been designated, Site Code 002171 Bandon River. This SAC was designated for the Annex I priority habitat Alluvial Forest and has good examples of another Annex I habitat - Floating River Vegetation. The Annex II animal species Otter, Salmon (*Salmo salar*), Brook Lamprey (*Lampetra planeri*) and Freshwater Pearl Mussel (*Margaritifera margaritifera*) occur. The Kingfisher, listed under Annex I of the E.U. Birds Directive, breeds along the river.

The 1998 Phosphorous Regulations set targets for phosphorus levels and biological quality (Q values) for rivers and lakes. Where water quality is satisfactory it must be maintained and where water quality is unsatisfactory it

must be improved. For levels of phosphorous the baseline Q value determines the median molybdate-reactive phosphorus (MRP) to be achieved.

Water quality in the River Bandon is monitored by the EPA and there are 33 EPA monitoring stations within the catchment. EPA monitoring station 0700 Carhoo/Baxters Bridge is located upstream of the WWTP discharge. Water quality at this station is monitored by the EPA and Cork County Council. The Q values for this station in 2006 was Q4 with a target median MRP value of 30µg/l. Water quality results for this station are presented in Attachment F.1.

EPA monitoring station 0800 is located 1.5 km downstream of Bandon Bridge and approximately 300m downstream of the primary discharge point from the Bandon WWTP and is the closest sampling point to the discharge point from the Bandon WWTP. Water quality at this station was unsatisfactory at the 1995-1997 monitoring period with a base Q value of 3. Based on the Q value of 3 the median MRP concentration to be achieved in the River Bandon was 50 µg P/l and a Q value of 3-4 was to be achieved. Recent sampling has shown that water quality has improved at this location with a Q value of 4 recorded in 2006. The median MRP value to be achieved for the River Bandon is now 30 µg P/l.

An IPPC licensed industry which discharges to the River Bandon is located downstream of the WWTP discharge and upstream of the EPA monitoring location 0800 on the Bandon River: AIBP Ltd. which is an abattoir. In 2004 an anoxic tank was installed at AIBP to assist in the removal of Total Nitrogen prior to discharge. Due to breaches of the total phosphorus in the effluent from AIBP a phosphorus removal system was installed in the WWTP.

The upgraded WWTP in Bandon initially incorporated phosphorus removal; however phosphorus removal does not occur presently at the WWTP as the system in place involved chemical precipitation using iron salts which depressed the pH of the waste water and affected biological activity.

Results of the operational monitoring as part of the Water Framework Directive at station 0800 found elevated MRP at the three sampling events in 2007 and nitrite was elevated for one of the three sampling events. All other parameters sampled were within the specified limits. Water quality results for the River Bandon are presented in Attachment F1.

As part of Cork County Council's ongoing monitoring programme, water quality samples are taken upstream and downstream of the WWTP discharge six times per year. The upstream location is at the footbridge in Bandon town, approximately 1.7km upstream of the discharge. The downstream location is approximately 1.8 km downstream of the discharge by a footbridge. Results of the water quality at both stations are presented in Tables F.1.

Water quality downstream in the Upper Bandon Estuary has been classified as Eutrophic by the EPA and is classified as sensitive water under the Urban Waste Water Treatment Regulations. The River Bandon catchment has been classified as 'at risk' of not achieving 'good' status by 2015 under the Water Framework Directive Article 5 Characterisation (2004). The EPA have recently released Draft Classifications of river waterbody status in which the Bandon catchment has been classified as being of 'moderate' status.

The Dry Weather Flow at hydrometric station 20001, upstream of the discharge point, is recorded as 0.36m<sup>3</sup>/s and the 95 percentile flow is 0.78 m<sup>3</sup>/s. The estimated median flow received from the South Western River Basin District

Project Office for the River Bandon is 9.9093m<sup>3</sup> with +/- 23% error, however, this was the only information available with regard to median flows in the River Bandon.

The assimilative capacity calculations are presented below and the figures in bold text indicate that the parameter exceeds the environmental quality standard.

**Note -As per revision Nov 2009 – An additional table has been included to account for the new EQS limits set out in the European Communities Environmental Objectives (Surface Waters) 2009 S.I. 272/2009.**

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Parameter	River Bandon Upstream	Flow Data Used	Effluent	Resulting Concentrations
Biochemical Oxygen Demand	2.43 mg/l	95%ile	12.9275 mg/l	2.705215356 mg/l
Chemical Oxygen Demand	21 mg/l	95%ile	67.25 mg/l	22.21254682 mg/l
Nitrite (as N)	0.0047 mg/l	95%ile	0.32 mg/l	0.012966292 mg/l
Nitrate (as N)	2.86 mg/l	95%ile	28.5 mg/l	3.532209738 mg/l
TON	2.8647 mg/l	95%ile	28.82 mg/l	3.54517603 mg/l
Total Phosphorus (as P)	0.2 mg/l	95%ile	3.46 mg/l	mg/l
Orthophosphate (as P) - unfiltered *	0.025 mg/l	Median (estimated)	3.5275 mg/l	<b>0.032406876</b> mg/l
orthophosphate median at Baxters Bridge	0.024 mg/l	Median (estimated)	3.5275 mg/l	<b>0.031408991</b> mg/l
Orthophosphate median at Desert Station	0.032 mg/l	Median (estimated)	3.5275 mg/l	<b>0.039392073</b> mg/l
Phenols	0.1 µg/l	DWF	0.1 µg/l	0.1 µg/l
Atrazine	0.01 µg/l	DWF	0.01 µg/l	0.01 µg/l
Dichloromethane	1 µg/l	DWF	1 µg/l	1 µg/l
Simazine	0.01 µg/l	DWF	0.01 µg/l	0.01 µg/l
Toluene	1 µg/l	DWF	1 µg/l	1 µg/l
Tributyltin	Not available µg/l	DWF	Not available µg/l	Not available µg/l
Xylenes	1 µg/l	DWF	1 µg/l	1 µg/l
Arsenic	0.96 µg/l	DWF	2 µg/l	1.017322835 µg/l
Chromium **	1.5 µg/l	DWF	1.165 µg/l	1.481535433 µg/l
Copper **	0 µg/l	DWF	5.3 µg/l	0.292125984 µg/l
Cyanide	5 µg/l	DWF	5 µg/l	5 µg/l
Fluoride	100 µg/l	DWF	260 µg/l	94.48818898 µg/l
Lead *	10 µg/l	DWF	16.5 µg/l	<b>10.35826772</b> µg/l
Nickel	1.165 µg/l	DWF	4.667 µg/l	1.358023622 µg/l
Zinc	0.3335 µg/l	DWF	229.5 µg/l	<b>12.96472441</b> µg/l
Boron	10 µg/l	DWF	24 µg/l	10.77165354 µg/l
Cadmium *	10 µg/l	DWF	10 µg/l	<b>10</b> µg/l
Mercury *	0.1 µg/l	DWF	0.3 µg/l	<b>0.111023622</b> µg/l
Selenium	1 µg/l	DWF	2 µg/l	1.05511811 µg/l
Barium	20.67 µg/l	DWF	63.5 µg/l	23.03070866 µg/l

\*The concentration of orthophosphate upstream of the discharge were below the LOD and half the LOD was used in the calculations

\*\*Results used are below the accredited limit of detection

Parameter	River Upstream Average values	Flow data used	Effluent Discharge concentration	Resulting River concentration (assimilative capacity)	EQS Standard for Good status inland water	Breach Of EQS
BOD – see Note	1.482	95%ile	25 mg/l	2.28 mg/l	≤2.6mg/l	No
COD	21 mg/l	95%ile	125 mg/l	24.529 mg/l	N/a	
Ammonia	0.039 mg/l	95%ile	3 mg/l	0.0139 mg/l	≤0.14 mg/l	No
Orthophosphate	0.022	median	4.5 mg/l	0.034 mg/l	≤0.035 mg/l	No
Lead	<20 ug/l	DWF	16.5 ug/l	Increase of 0.38 ug/l	7.2 ug/l	No*
Flouride	100 ug/l	DWF	250 ug/l	110 ug/l	500 ug/l	No
pH	7.74 pH units	n/a	9.0	7.66	4.5<pH>9.0	No

**Notes**

1. The average BOD figure used excludes one reading taken when the river was in flood as this is regarded as an outlier for statistical purposes.
2. The concentrations of lead upstream of the discharge were below the limit of detection for the method used.  
 \* However as the LOD for the method is <20 ug/l using ICP-OES which is the in house instrumentation and using a level of half this amount the river water would be in breach without any discharge as the standard limit is 7.2 ug/l, For this reason the calculations will not provide an estimation of the impact. It is worth noting however that the increase in Pb concentrations would be of the order of 0.358 ug/l using an average Pb discharge concentration of 16.5 ug/l as previously submitted in the application.
3. The median flow was taken from attached spreadsheet with river water data for Bandon River
4. The calculations used to assess whether different parameters in breach is as follows

(Effluent flow cu.m./s\* Concentration mg/l) + (Background river flow \* concentration)

-----  
Effluent flow + River Flow

Effluent Flow used is taken as the normal flow through the WWTP and is 2370cu.m/day  
Flow data submitted for outlet on revised Table E data (attached) would show that this figure is conservative

The flow figure of 2370 cu.m/day takes account of the current PE of 8178 and projected PE due to planning's granted etc. which brings total PE figure to 9948.

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- Provide a statement as to whether or not emissions of main polluting substances (as defined in the *Dangerous Substances Regulations S.I. No. 12 of 2001*) to water are likely to impair the environment.

Cork County Council have monitored for the main polluting substances as defined in the *Dangerous Substances Regulations S.I. No. 12 of 2001*. The results are presented in Table D and F.

In addition Cork County Council conducted a screening assessment for Dangerous Substances in 2002 as part of the Measures Report under the Water Quality (Dangerous Substances) Regulations, 2001. The River Bandon at Innishannon Bridge was screened as part of this assessment and the baseline quality was found to be satisfactory for all parameters screened.

- In circumstances where water abstraction points exist downstream of any discharge describe measures to be undertaken to ensure that discharges from the waste water works will not have a significant effect on faecal coliform, salmonella and protozoan pathogen numbers, e.g., *Cryptosporidium* and *Giardia*, in the receiving water environment.

Water is abstracted downstream of the WWTP at Innishannon. The location of the abstraction point is approximately 6 km downstream of the WWTP outfall. The grid reference is 153484, 057535. The volume abstracted per day is approximately 9,800 m<sup>3</sup>/day.

Specific measures are not taken to ensure that discharges from the wastewater works will not have a significant effect on faecal coliforms, salmonella and protozoan pathogen numbers however, Cork County Council's WWTP at Bandon treats wastewater from the Bandon catchment and the water treatment plant at Innishannon treats water for the Innishannon Water Supply Scheme which consists of coagulation, upward flow clarification, rapid gravity sand filtration, fluoridation and chlorination.

Water quality is monitored at the waterworks intake for the Cork County Council drinking water plant by Cork County Council on a quarterly programme as part of the Abstraction directive. The intake location is also monitored currently on a weekly basis by Cork County Council for both *Cryptosporidium* and *Giardia* and the results are acceptable.

The risk assessment and catchment area for the Innishannon Water Supply Scheme are presented in Attachment F2.

- Indicate whether or not emissions from the agglomeration or any plant, methods, processes, operating procedures or other factors which affect such emissions are likely to have a significant effect on –
  - (a) a site (until the adoption, in respect of the site, of a decision by the European Commission under Article 21 of Council Directive 92/43/EEC for the purposes of the third paragraph of Article 4(2) of that Directive) –
    - (i) notified for the purposes of Regulation 4 of the Natural Habitats Regulations, subject to any amendments made to it by virtue of Regulation 5 of those Regulations,
    - (ii) details of which have been transmitted to the Commission in accordance with Regulation 5(4) of the Natural Habitats Regulations, or
    - (iii) added by virtue of Regulation 6 of the Natural Habitats Regulations to the list transmitted to the Commission in accordance with Regulation 5(4) of those Regulations,

- (b) a site adopted by the European Commission as a site of Community importance for the purposes of Article 4(2) of Council Directive 92/43/EEC<sup>1</sup> in accordance with the procedures laid down in Article 21 of that Directive,
- (c) a special area of conservation within the meaning of the Natural Habitats Regulations, or
- (d) an area classified pursuant to Article 4(1) or 4(2) of Council Directive 79/409/EEC<sup>2</sup>;

<sup>1</sup>Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ No. L 206, 22.07.1992)

<sup>2</sup>Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ No. L 103, 25.4.1979)

The discharge point from the WWTP is not located within a European designated site; however, proposed Natural Heritage Areas (pNHAs) are located upstream and downstream of the discharge point. Bandon Valley West of Bandon pNHA (Site Code: 001034) is located approximately 2.95 km upstream of the discharge point. The main qualifying interests of this pNHA are remnants of broadleaved oak woodland and its unmodified river bed. Otters have also been reported in the Bandon Valley. Approximately 1.25 km downstream of the discharge point the Bandon Valley Above Innishannon pNHA (Site Code: 001740) is located. This main qualifying interests of this pNHA are oak woodland on steep valley sides and unmodified river bed. Otters have been recorded from the Bandon Valley and cormorants and herons fish throughout the river.

The SAC Bandon River (Site Code 002171) is located near Dunmanway and was designated for the Annex I priority habitat Alluvial Forest and has good examples of another Annex I habitat - Floating River Vegetation. The Annex II animal species Otter, Salmon (*Salmo salar*), Brook Lamprey (*Lampetra planeri*) and Freshwater Pearl Mussel (*Margaritifera margaritifera*) occur. The Kingfisher, listed under Annex I of the E.U. Birds Directive, breeds along the river. However, this SAC is located upstream of the Bandon WWTP discharge.

The site synopses are presented below for the two pNHAs and the SAC



## SITE SYNOPSIS

**SITE NAME: BANDON VALLEY WEST OF BANDON**

**SITE CODE: 001034**

The Bandon Valley flows almost due east of much of its course, following a natural synclinal valley that itself extends to Cloyne. At Inishannon however, the river turns abruptly to the south crossing several ridges before reaching the sea at Kinsale. The interest of the valley lies partly in its aquatic habitats since the river has not been deepened artificially as is so often the case. Four Areas of Scientific Interest are located along the river. This site covers a section of river approximately 3km in length running downstream to within 1km west of Bandon. The Castlebernard Estate woodlands run along sections of the bank here.

The banks of the river have old estate woodlands with mature Oak (*Quercus* sp.) and some Ash (*Fraxinus excelsior*). Rhododendron (*Rhododendron ponticum*) and Laurel (*Laurus* sp.) invasion is occurring but as yet is not widespread. Felling of woodlands in this area has recently been widespread and hence greater importance can be placed on the remaining areas.

The 1986 An Forbas Forbatha report notes that the upper part of the Bandon River, before it sinks into a narrow gorge at Bandon floods occasionally in Winter and at such times attracts birds such as Lapwing and Curlews as well as Mallard and Teal. Cormorants and Herons fish throughout the course of the river.

The Bandon Valley is reported to have otters in many places, a species listed in Annex II of the E.U. Habitats Directive as it is threatened within the E.U.

This site is important as it contains remnants of broadleaved Oak woodland. The Bandon Valley is specially valuable for its woodlands and unmodified river bed, a rare enough habitat in a European context.

The main landuses within the site are tree felling and clearing. This has much reduced the area of interest in recent years. Fishing is also important in this area.

## SITE SYNOPSIS

**SITE NAME : BANDON VALLEY ABOVE INISHANNON**

**SITE CODE: 001740**

**AUTHOR: HELEN LEACH**

The Bandon Valley flows almost due east for much of its course, following a natural synclinal valley that itself extends to Cloyne. At Inishannon however, the river turns abruptly to the south crossing several ridges before reaching the sea at Kinsale. The interest of the Valley lies partly in its aquatic habitats since the river has not been deepened artificially as is so often the case. Four areas of scientific interest are located along the river. This site covers a section of the river 3km east of Bandon running approximately a further 4km downstream to Inishannon.

The recent survey of this area reports it to be very scenic. Woodlands occur where the meanders of the valley approach the Valley's edge and create steep slopes. The woodlands are semi-natural, mostly planted with species such as Sycamore (*Acer pseudopentanus*) and Beech (*Fagus sylvatica*) mixed in with the native Oaks (*Querus* sp.). Some areas of commercial plantation occur near the railway tunnel and at Drumkeen Wood. The spread of Rhododendron (*Rhododendron ponticum*) is limited to small areas of the site.

Lower down in the Bandon Valley birdlife is more associated with Woodland and involves characteristic species like Owls, Sparrowhawks, Woodcocks and Jays.

Cormorants and herons fish throughout the river.

The Valley is reported to have otters in many places, a species listed in Annex II of the EU Habitats Directive as it is threatened within the EU.

This area is important as it contains an example of oak woodland on steep valley sides. The Bandon Valley is specially valuable for its woodlands and unmodified river bed, which are a rare habitat in a European context.

## SITE SYNOPSIS

**SITE NAME: BANDON RIVER**

**SITE CODE: 002171**

The site consists of relatively short adjoining stretches of the Bandon and Caha Rivers. These rivers flow in a southerly direction to the east of Dunmanway, Co. Cork. Towards the southern end of the site the Bandon takes an easterly course. The predominant rock formations are Old Red Sandstone to the north and Carboniferous Slate stretching south of Dunmanway. Soils in the northern section consist of peats, podzols and skeletal soils. The southern section consists of alluvial soils and Brown Podzolics.

The east-west exposure of Old Red Sandstone to the north of Dunmanway displays distinct ridgelines of bare rock with poor pasture and scrub. In this area around Lovers Leap the Bandon River cuts a narrow channel southwards, cascading over a series of rock steps through a narrow valley. Below this and above Long Bridge the river widens and meanders through a fertile floodplain. Immediately south of the Long Bridge the reduced flow gradient and broad, flat valley permit the main channel to split and extend into a network of braided streams forming islands.

The site is important for a number of reasons. It contains a small though very important example of the Annex I priority habitat Alluvial Forest as well as good examples of another Annex I habitat - Floating River Vegetation. The Annex II animal species Otter, Salmon (*Salmo salar*), Brook Lamprey (*Lampetra planeri*) and Freshwater Pearl Mussel (*Margaritifera margaritifera*) occur. The populations of the Mussel are thought to be nationally important. The Kingfisher, listed under Annex I of the E.U. Birds Directive, breeds along the river.

Wet broadleaved semi-natural woodland is found in an undisturbed area of braided river channels and islands below Dunmanway. The river channels are well defined and the islands appear solid. Canopy dominants are Hazel (*Corylus avellana*) (multi-stemmed) and Sessile Oak (*Quercus petraea*), with scattered Downy Birch (*Betula pubescens*), Ash (*Fraxinus excelsior*), Rusty Willow (*Salix cinerea* subsp. *oleifolia*) and Alder (*Alnus glutinosa*). There is a very sparse understorey composed of Whitethorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*) and saplings of Hazel and Sessile Oak. Epiphytes are abundant on trees: Ivy (*Hedera helix*), Honeysuckle (*Lonicera periclymenum*) and bryophyte species such as *Isoetecium myosuroides*. The ground flora is dominated by Ramsons (*Allium ursinum*), Wood Anemone (*Anemone nemorosa*), Ivy with abundant/scattered Lesser Celandine (*Ranunculus ficaria*), Wood Sedge (*Carex remota*) and Irish Spurge (*Euphorbia hiberna*). Goldilocks Buttercup (*Ranunculus auricomus*), a very rare plant in Co. Cork, has been recently recorded from this woodland.

Floating river vegetation is found along the length of the river and is dominated by Water-crowfoot (*Ranunculus* spp.). Other aquatic plants found include Alternate Water-milfoil (*Myriophyllum alterniflorum*), Broad-leaved Pondweed (*Potamogeton natans*) and four Water-starwort species (*Callitriche* spp.). Mosses present on rocks and attached to tree roots include *Fontinalis antipyretica* in slack flow areas and *Fontinalis squamosa*, *Rhynchostegium riparioides* and *Amblystegium riparium* in moderate flows. The landward fringe of deep pools supports Yellow Water-lily (*Nuphar lutea*),

Bogbean (*Menyanthes trifoliata*), Marsh Marigold (*Caltha palustris*), Water Mint (*Mentha aquatica*) and Fool's Water-cress (*Apium nodiflorum*). Shoreweed (*Littorella uniflora*) and Six-stamened Waterwort (*Elatine hexandra*) are two species of local importance which are found in the river. In moderate current flow below the Long Bridge, the larger stones are covered by the moss *Brachythecium rivulare* and the Liverwort *Chiloscyphus polyanthos* var. *polyanthos*. Boulders covered in *Nostoc* algae are probably of local occurrence in Ireland. The liverwort *Riccardia chamaedryfolia* and the moss *Fissidens crassipes* found under the Long Bridge are considered to be rare in Ireland.

Heath in mosaic with wet grassland, exposed rock, scrub and improved grassland covers up to 30% of the site north of Long Bridge. Typical heath plants growing in association with the rocks are abundant Western Gorse (*Ulex gallii*), Ling Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Cross-leaved Heath (*E. tetralix*), Tormentil (*Potentilla erecta*), Heath Grass (*Danthonia decumbens*), Stonecrops (*Sedum* spp.), small amounts of St Patrick's Cabbage (*Saxifraga spathularis*) and many lichen species.

Some small areas of woodland occur within the site north of Long Bridge. Tree species such as Sessile Oak, Beech (*Fagus sylvatica*), Scots Pine (*Pinus sylvestris*) and Downy Birch are found with an understorey of Holly, Hazel, Rowan and Rusty Willow.

Two Red Data Book plant species have been recorded in the past from within or close to the site - Greater Broomrape (*Orobanche rapum-genistae*), a species that grows on the roots of legumes, and Small White Orchid (*Pseudorchis albida*), a species of upland pastures and heaths that is protected under the Flora Protection Order 1999.

The river below Long Bridge is an important inland site in Cork for Mute Swan and approximately 20 individuals are present throughout the year along this stretch. Several hundred Snipe use the site during the winter. Other birds seen regularly within the site are Grey Heron, Cormorant and Mallard, while low numbers of Lapwing and Teal visit during the winter.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Badger, Irish Hare, Daubenton's Bat and Pipistrelle. The two bat species can be seen feeding along the river and roosting under the old bridges.

Landuse at the site consists mainly of sheep grazing in the northern section and cattle grazing on improved grasslands below Lovers Leap and further south. In the area between Milleenanannig and Bealaboy Bridge land reclamation and drainage is taking place. In the area of exposed rock on the higher terrain above Ardcahan Bridge some land reclamation and forestry is carried out.

This site contains good examples of two habitats listed on Annex I of the E.U. Habitats Directive - alluvial forest and floating river vegetation - and supports populations of four Annex II species - Otter, Salmon, Brook Lamprey and Freshwater Pearl Mussel. The presence of a number of Red Data Book plant and animal species adds further interest to the site.

- Describe, where appropriate, measures for minimising pollution over long distances or in the territory of other states.

Not applicable.

- This section should also contain full details of any modelling of discharges from the agglomeration. Full details of the assessment and any other relevant information on the receiving environment should be submitted as **Attachment F.1**.

The original WWTP in Bandon was constructed in the 1960s and no modelling study was conducted for the discharges from the WWTP.

<b>Attachment included</b>	<b>Yes</b>	<b>No</b>
		✓

**F.2 Tabular Data on Drinking Water Abstraction Point(s)**

Applicants should submit the following information for each downstream or downgradient drinking water abstraction point. The zone of contribution for the abstraction point should be delineated and any potential risks from the waste water discharge to the water quality at that abstraction point identified.

<b>ABS_CD</b>	<b>AGG_SERVED</b>	<b>ABS_VOL</b>	<b>PT_CD</b>	<b>DIS_DS</b>	<b>EASTING</b>	<b>NORTHING</b>	<b>VERIFIED</b>
Abstraction Code	Agglomeration served	Abstraction Volume in m <sup>3</sup> /day	Point Code Provide label ID's	Distance Downstream in meters from Emission Point to Abstraction Point	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference	Y = GPS used N = GPS not used

**Note:** Attach any risk assessment that may have been carried out in relation to the abstraction point(s) listed.

An individual record (i.e. row) is required for each abstraction point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at [www.epa.ie](http://www.epa.ie). [http://](http://www.epa.ie)This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, D.2 and E.3.

**Attachment F.2** should contain any supporting information.

## SECTION G: PROGRAMMES OF IMPROVEMENTS

*Advice on completing this section is provided in the accompanying Guidance Note.*

### G.1 Compliance with Council Directives

Provide details on a programme of improvements to ensure that emissions from the agglomeration or any premises, plant, methods, processes, operating procedures or other factors which affect such emissions will comply with, or will not result in the contravention of the;

- Dangerous Substances Directive 2006/11/EC,
- Water Framework Directive 2000/60/EC,
- Birds Directive 79/409/EEC,
- Groundwater Directives 80/68/EEC & 2006/118/EC,
- Drinking Water Directives 80/778/EEC,
- Urban Waste Water Treatment Directive 91/271/EEC,
- Habitats Directive 92/43/EEC,
- Environmental Liabilities Directive 2004/35/EC,
- Bathing Water Directive 76/160/EEC, and
- Shellfish Waters Directive (79/923/EEC).

#### Dangerous Substance Directive 2006/11/EC

Cork County Council have monitored for the main polluting substances as defined in the Dangerous Substances Regulations S.I. No. 12 of 2001. The results are presented in Tables D and F.

In addition Cork County Council conducted a screening assessment for Dangerous Substances in 2002 as part of the Measures Report under the Water Quality (Dangerous Substances) Regulations, 2001. The River Bandon at Innishannon Bridge was screened as part of this assessment and the baseline quality was found to be satisfactory for all parameters screened.

#### Water Framework Directive 2000/60/EC

The objectives of the Water Framework Directive (WFD) are to protect all high status waters, prevent further deterioration of all waters and to restore degraded surface and ground waters to good status by 2015. Cork County Council monitor daily inlet and outlet flows from the WWTP at Bandon to ensure compliance with the relevant standards. Upstream and downstream locations are also monitored a minimum of 6 times per year. The River Bandon is also monitored by Cork County Council under the Salmonid Directive, the Phosphorus Regulations and the Water Framework Directive. The water quality section of Cork County Council currently monitor at a designated operational site (under WFD 20B020800) at 1.5 kms downstream of the discharge location from both the treatment plant and the discharge from an IPPC licenced facility.

#### Birds Directive 79/409/EEC

The directive aims to conserve and manage populations of wild birds throughout Europe by part through the designation of Special Protection Areas (SPA) for birds and their habitats. The WWTP site and discharge point are not located within an SPA.

#### Groundwater Directives 80/68/EEC and 2006/118/EC

Not Applicable as there are no emissions to groundwater.

### **Drinking Water Directives 80/778/EEC**

An abstraction point is present downstream of the WWTP discharge. Monitoring of the raw water intake and the treated water is undertaken by Cork County Council in order to comply with the Directive.

The River Bandon is monitored at the waterworks intake for the Cork County Council drinking water plant by Cork County Council on a quarterly programme as part of the of the Abstraction directive. The intake location is also monitored currently on a weekly basis by Cork County Council for both Cryptosporidium and Giardia and the results are acceptable.

### **Urban Waste Water Treatment Directive 91/271/EEC**

Waste water from the Bandon WWTP is subject to treatment prior to discharge in order to meet with the required discharge standards as set out under the Urban Waste Water Treatment Regulations 2001. Discharges from Bandon WWTP complied with the requirements of the Urban Waste Water Treatment Directive in 2007. Samples from the treatment plant discharge are analysed for BOD, COD, Ammonia, pH, Suspended Solids, Total Nitrogen, Total Phosphorus, Sulphate, Ortho phosphate (in recent times) and metals (in recent times).

### **Habitats Directive 92/43/EEC**

There are no SACs or SPAs designated under the Habitats Directive in the vicinity of the waste water discharge location.

### **Environmental Liabilities Directive 2004/35/EC**

Regard to the EPA Guidance on Environmental Liability Risk Assessment, Residuals Management Plans and Financial Provision was made during completion of this application and it is considered that the WWTP does not contravene this Directive.

### **Bathing Water Directive 76/160/EEC**

There are no designated bathing waters in the vicinity of the discharge.

### **Shellfish Waters Directive (79/923/EEC).**

There are no waters designated for shellfish in the vicinity of the discharge.

**Attachment G.1** should contain the most recent programme of improvements, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

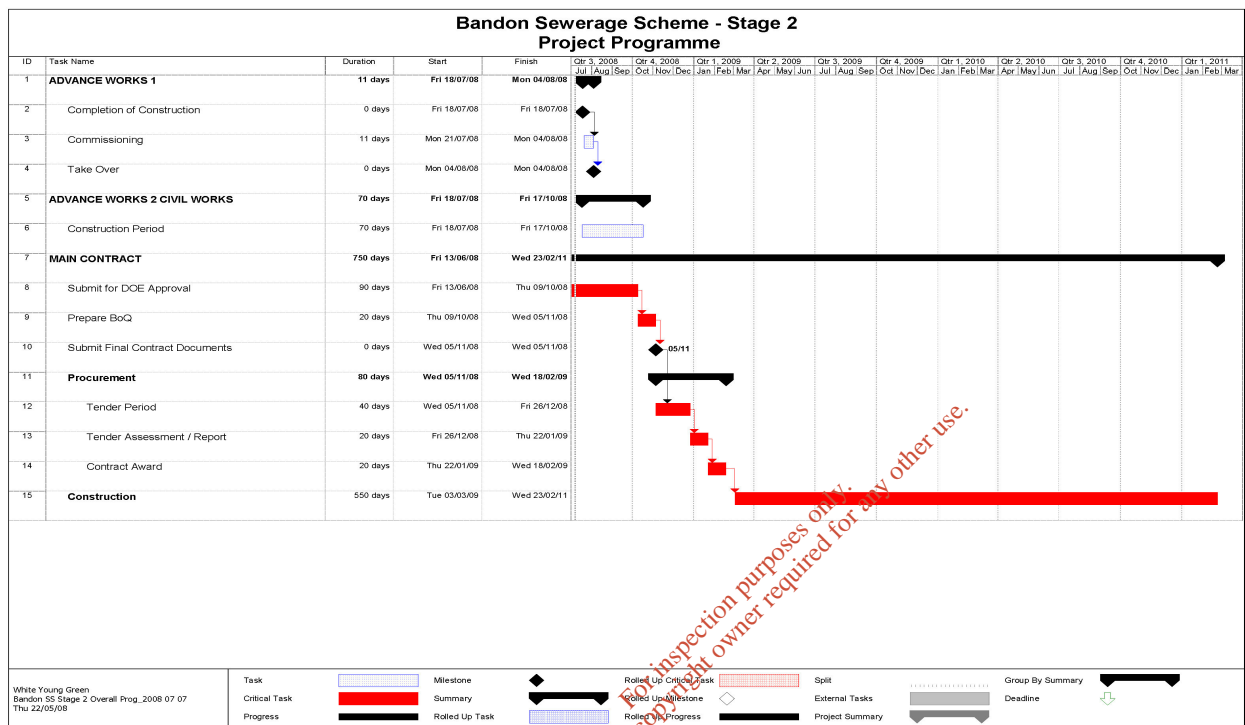
A programme of works has been prioritised for the development of infrastructure to collect and convey waste water from Bandon to the existing waste water treatment plant.

The scheme involves 3 main contracts:

1. Advance Works Contract 1 – foul & storm pump station at Watergate Street/river crossing/associated pipework – substantially complete – total cost of civil & M&E €1.3M (incl. VAT)
2. Advance Works Contract 2 – foul and storm sewers to serve northern environs – cost approx. €800K(incl. VAT) but being funded directly by Cork Co Co and developers (not WSIP)

- Main Contract – upgrading of the existing combined sewer network, extension of existing storm network. Contract documents awaiting approval from DEHLG – current estimate €7.55M (incl. VAT)

The 2007 – 2009 Water Services Investment Programme published by the Department has set aside €14.29M for the Bandon SS Stage 2 works which includes Advance Contract 1 and the Main Contract. This higher figure comes from the earlier Planning Stage Budget submitted for approval while current lower estimates are based on more competitive recent tenders.



<b>Attachment included</b>	<b>Yes</b>	<b>No</b>
		✓

**G.2 Compliance with Water Quality Standards for Phosphorus Regulations (S.I. No. 258 of 1998).**

Provide details on a programme of improvements, including any water quality management plans or catchment management plans in place, to ensure that improvements of water quality required under the Water Quality Standards for Phosphorous Regulations (S.I. No. 258 of 1998) are being achieved. Provide details of any specific measures adopted for waste water works specified in Phosphorus Measures Implementation reports and the progress to date of those measures. Provide details highlighting any waste water works that have been identified as the principal sources of pollution under the P regulations.

**Attachment G.2** should contain the most recent programme of improvements and any associated documentation requested under Section G.3 of the application.



Attachment included	Yes	No
	√	

**G.3 Impact Mitigation**

Provide details on a programme of improvements to ensure that discharges from the agglomeration will not result in significant environmental pollution.

**Attachment G.3** should contain the most recent programme of improvements, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

There is no programme of improvements for the WWTP.

Attachment included	Yes	No
		√

**G.4 Storm Water Overflow**

Provide details on a programme of improvements to ensure that discharges other than the primary and secondary discharges comply with the definition of 'storm water overflow' as per Regulation 3 of the Waste Water Discharge (Authorisation) Regulations, 2007.

**Attachment G.4** should contain the most recent programme of improvements, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

There is no programme of improvements for storm water overflows in Bandon.

Attachment included	Yes	No
		√

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**SECTION H: DECLARATION**

**Declaration**

I hereby make application for a waste water discharge licence/revised licence, pursuant to the provisions of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007).

I certify that the information given in this application is truthful, accurate and complete.

I give consent to the EPA to copy this application for its own use and to make it available for inspection and copying by the public, both in the form of paper files available for inspection at EPA and local authority offices, and via the EPA's website.

This consent relates to this application itself and to any further information or submission, whether provided by me as Applicant, any person acting on the Applicant's behalf, or any other person.

**Signed by :** \_\_\_\_\_  
*(on behalf of the organisation)*

**Date :** \_\_\_\_\_

**Print signature name:** \_\_\_\_\_

**Position in organisation:** \_\_\_\_\_

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**SECTION I: JOINT DECLARATION**

**Joint Declaration** <sup>Note1</sup>

I hereby make application for a waste water discharge licence/revised licence, pursuant to the provisions of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007).

I certify that the information given in this application is truthful, accurate and complete.

I give consent to the EPA to copy this application for its own use and to make it available for inspection and copying by the public, both in the form of paper files available for inspection at EPA and local authority offices, and via the EPA's website.

This consent relates to this application itself and to any further information or submission whether provided by me as Applicant, any person acting on the Applicant's behalf, or any other person.

**Lead Authority**

**Signed by :** \_\_\_\_\_ **Date :** \_\_\_\_\_  
(on behalf of the organisation)

**Print signature name:** \_\_\_\_\_

**Position in organisation:** \_\_\_\_\_

**Co-Applicants**

**Signed by :** \_\_\_\_\_ **Date :** \_\_\_\_\_  
(on behalf of the organisation)

**Print signature name:** \_\_\_\_\_

**Position in organisation:** \_\_\_\_\_

**Signed by :** \_\_\_\_\_ **Date :** \_\_\_\_\_  
(on behalf of the organisation)

**Print signature name:** \_\_\_\_\_

**Position in organisation:** \_\_\_\_\_

**Note 1:** In the case of an application being lodged on behalf of more than a single water services authority the following declaration must be signed by all applicants.

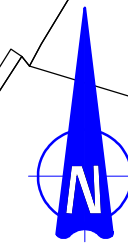
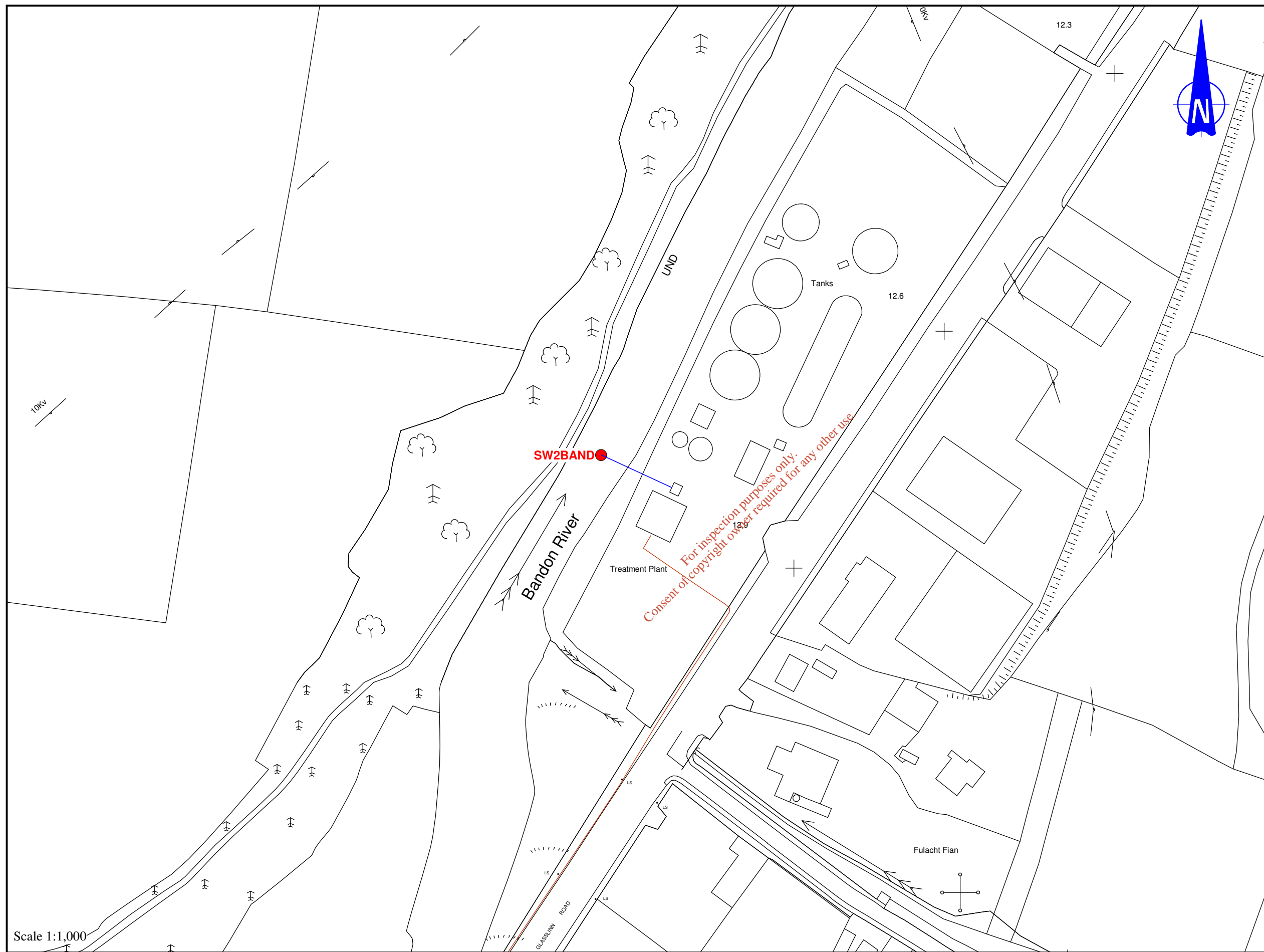
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**ATTACHMENT B.5**  
**MAP 6**

**LEGEND**

● STORMWATER OVERFLOW LOCATION

Point	Easting	Northing
SW2BAND ●	150368	055690



Scale 1:1,000

Approved : \_\_\_\_\_



**MAP 6 - STORMWATER OVERFLOW LOCATION (SW2BAND)**

REVISION : B  
DATE : NOV 2009

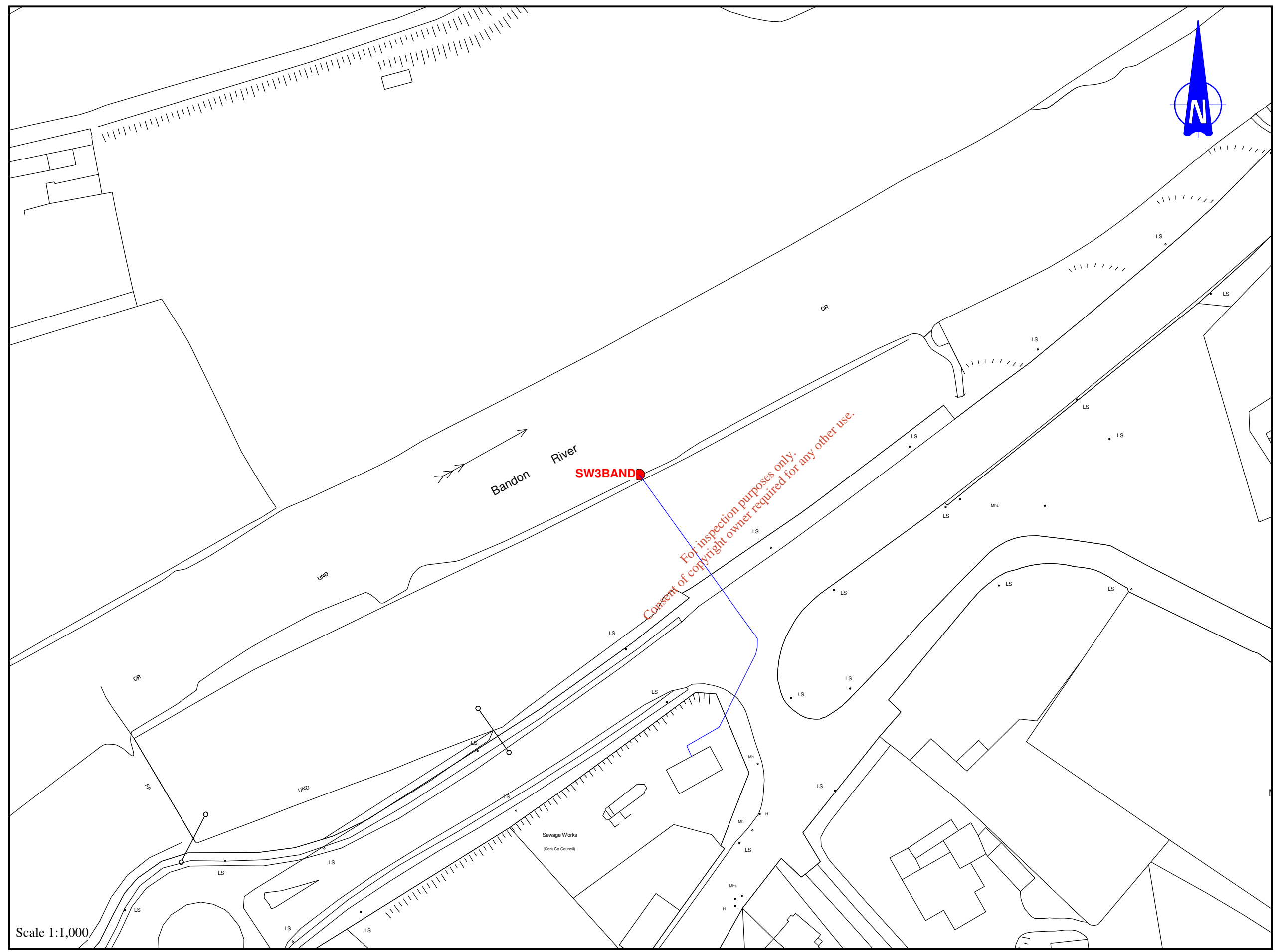
BANDON WASTE WATER DISCHARGE LICENCE APPLICATION  
CORK COUNTY COUNCIL  
PROJECT Nr. 249282  
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**ATTACHMENT B.5**  
**MAP 7**

**LEGEND**

● STORMWATER OVERFLOW LOCATION

Point	Easting	Northing
SW3BAND ●	150074	055292



Approved : \_\_\_\_\_



**MAP 7 - STORMWATER OVERFLOW LOCATION (SW3BAND)**

REVISION : B  
DATE : NOV 2009

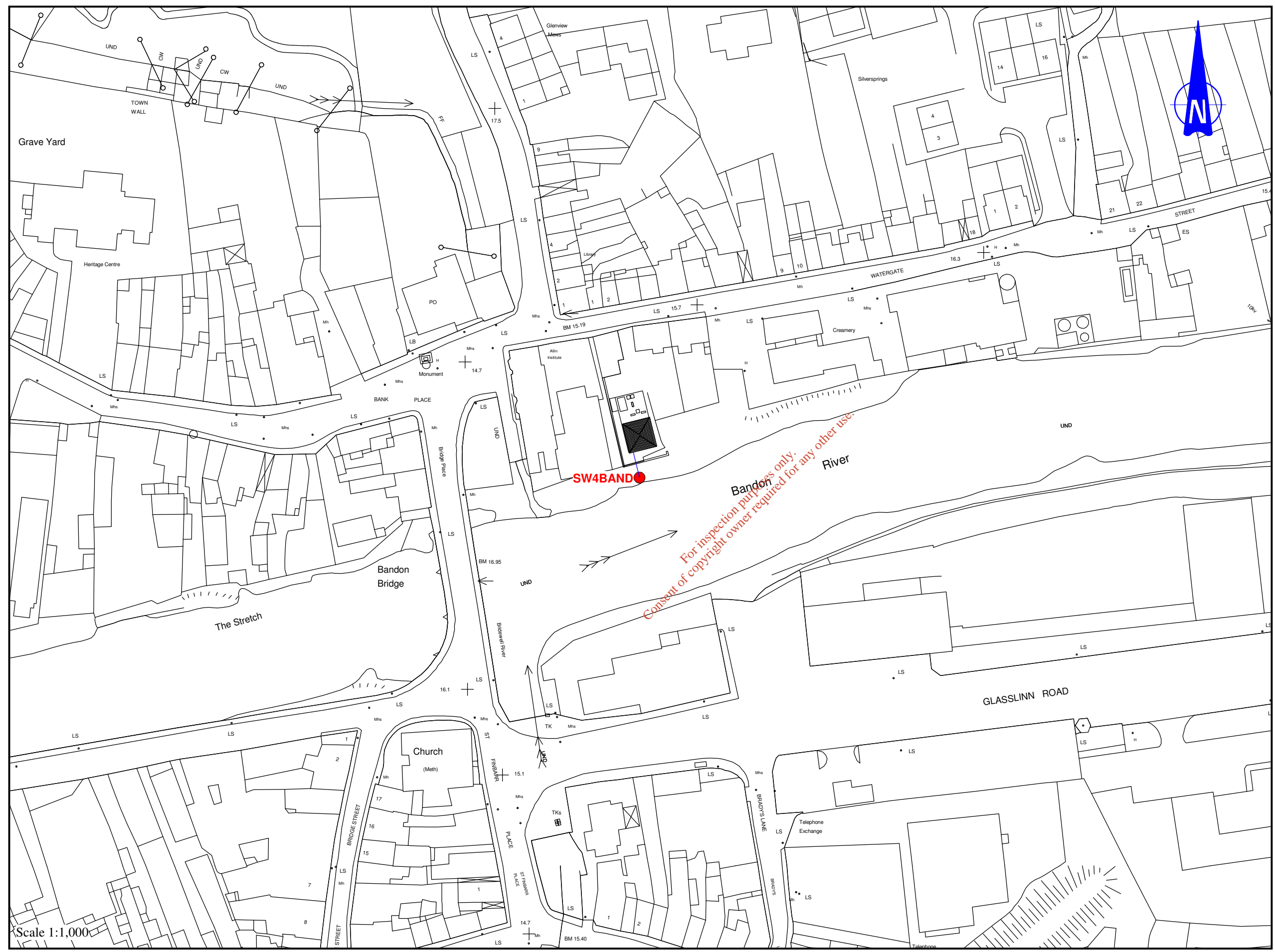
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CORK COUNTY COUNCIL  
PROJECT Nr. 249282  
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**ATTACHMENT B.5**  
**MAP 8**

**LEGEND**

- STORMWATER OVERFLOW LOCATION

Point	Easting	Northing
SW4BAND ●	149316	055103



Scale 1:1,000

Approved : \_\_\_\_\_



**MAP 8 - STORMWATER OVERFLOW LOCATION (SW4BAND)**

REVISION : B  
DATE : NOV 2009

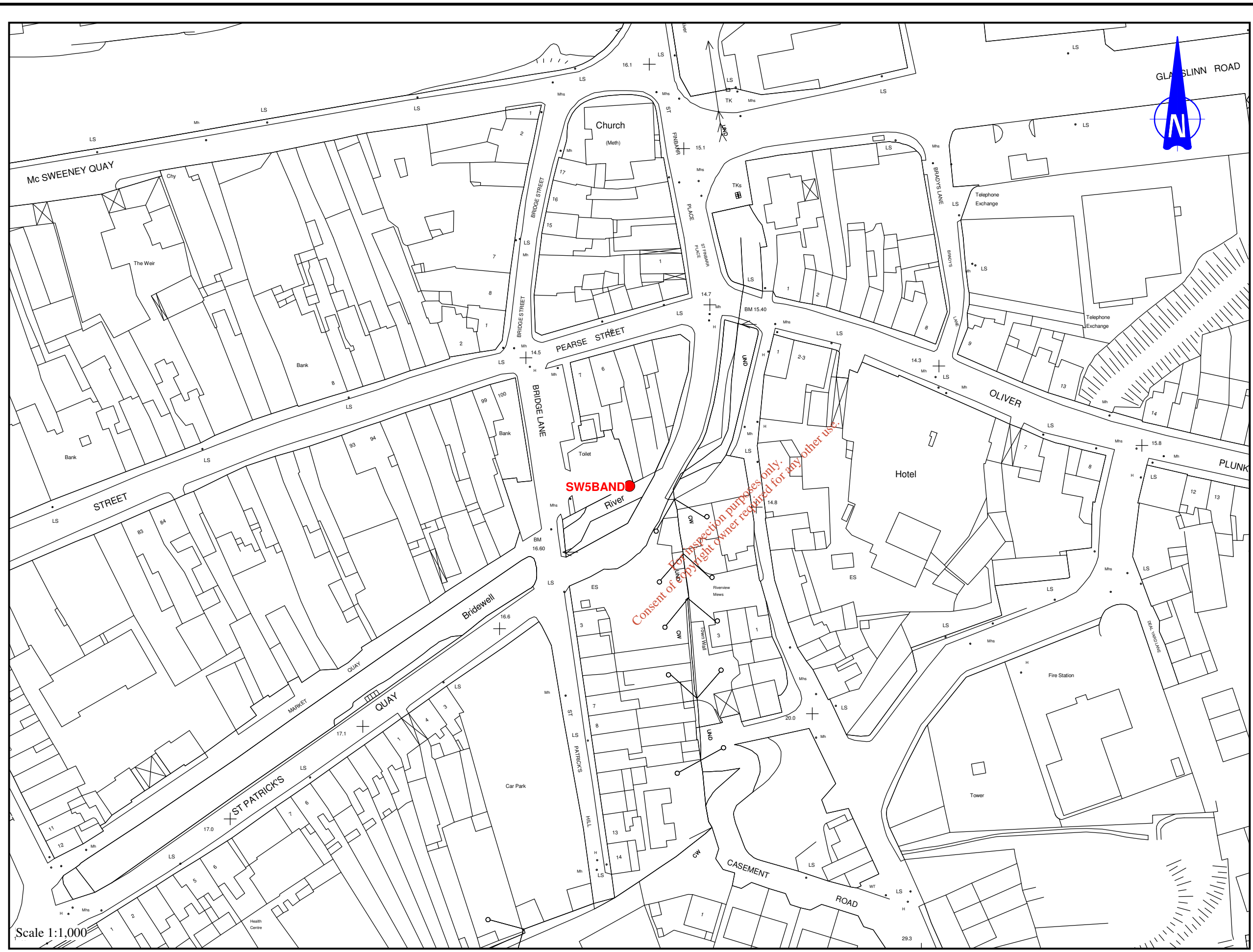
BANDON WASTE WATER DISCHARGE LICENCE APPLICATION  
CORK COUNTY COUNCIL  
PROJECT Nr. 249282  
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**ATTACHMENT B.5**  
**MAP 9**

**LEGEND**

● STORMWATER OVERFLOW LOCATION

Point	Easting	Northing
SW5BAND ●	149265	054933



Approved : \_\_\_\_\_



**MAP 9 - STORMWATER OVERFLOW LOCATION (SW5BAND)**

REVISION : B  
DATE : NOV 2009

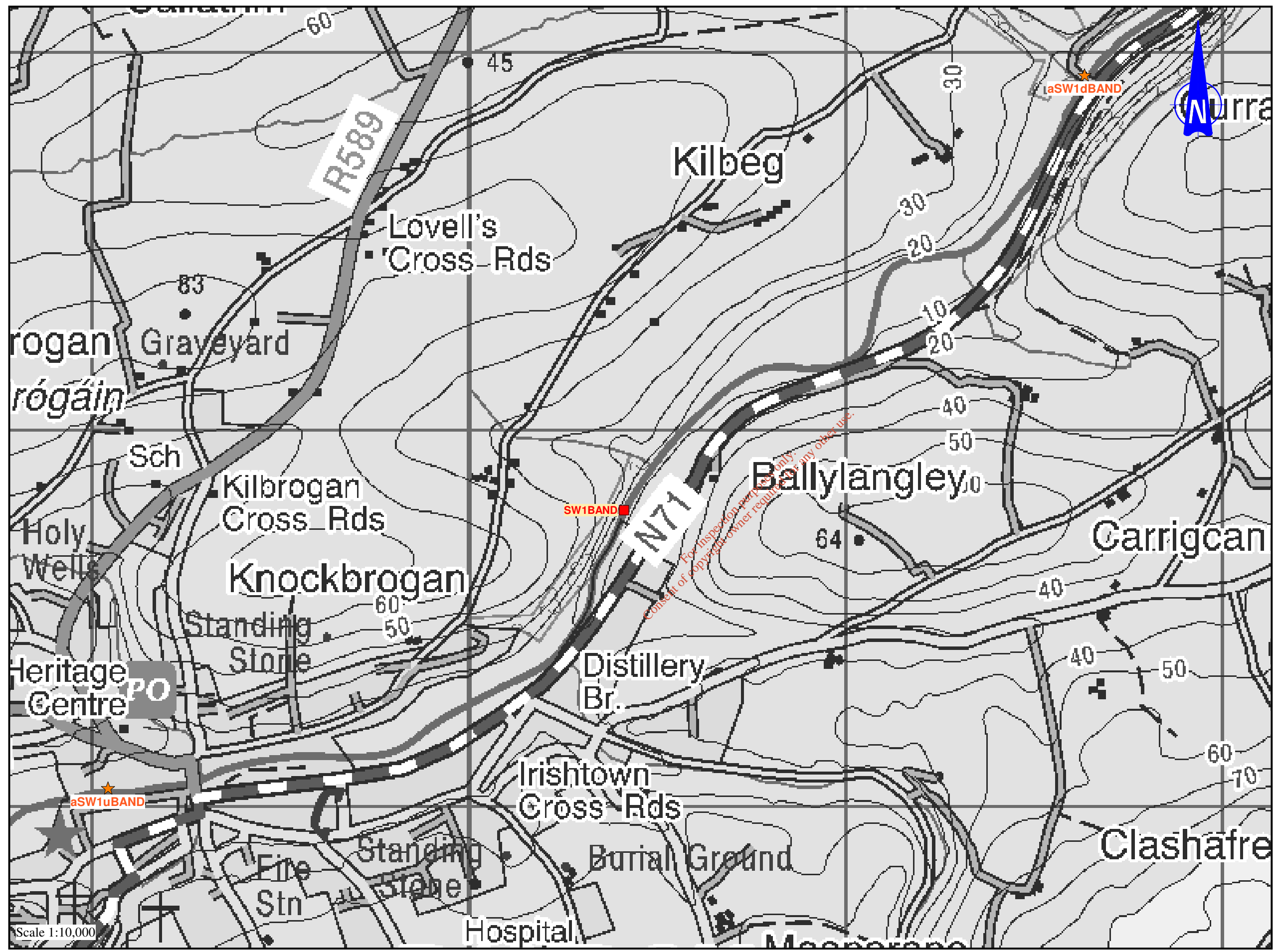
BANDON WASTE WATER DISCHARGE LICENCE APPLICATION  
CORK COUNTY COUNCIL  
PROJECT Nr. 249282  
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**ATTACHMENT B.4**  
**MAP 10**

**LEGEND**

- PRIMARY DISCHARGE LOCATION
- ★ MONITORING LOCATION

Point	Easting	Northing
aSW1uBAND ★	149042	055048
aSW1dBAND ★	151633	056940



Scale 1:10,000

Approved : \_\_\_\_\_

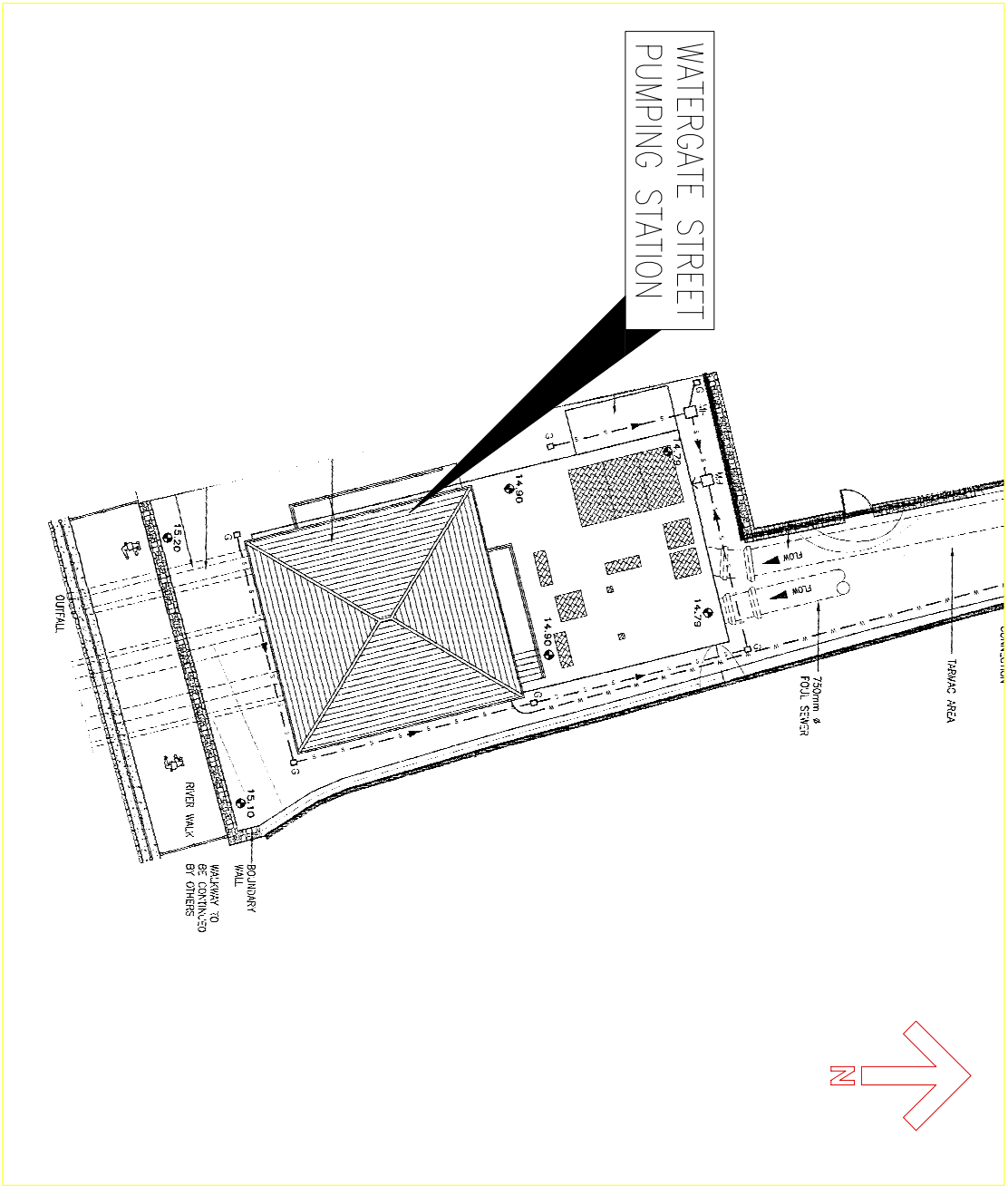


**MAP 10 - UPSTREAM/DOWNSTREAM MONITORING LOCATIONS  
FOR PRIMARY & SECONDARY DISCHARGES**

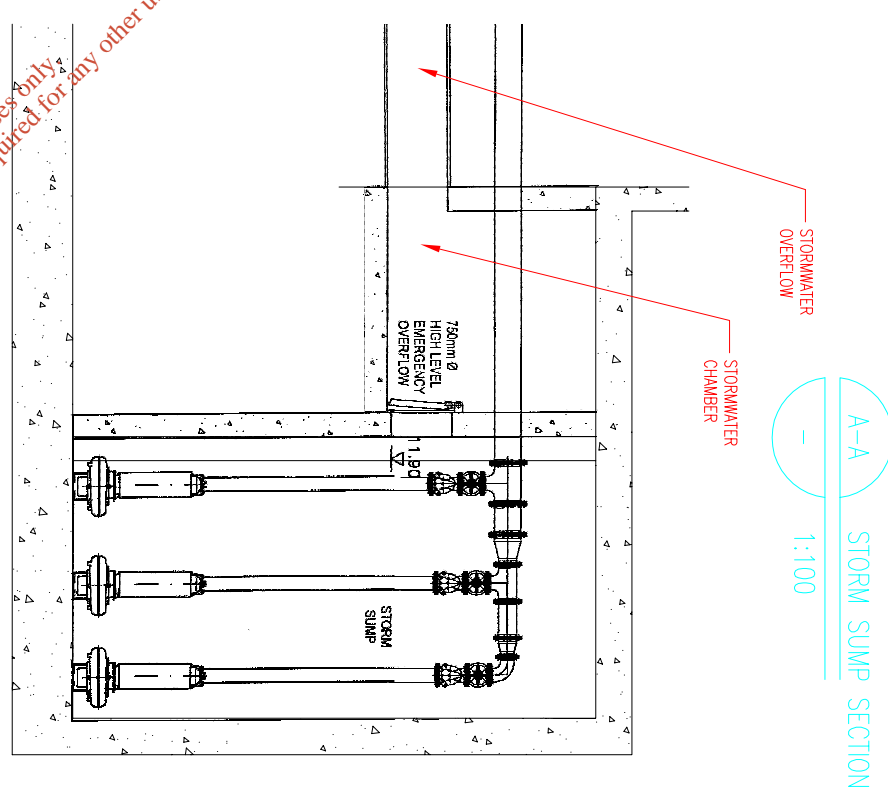
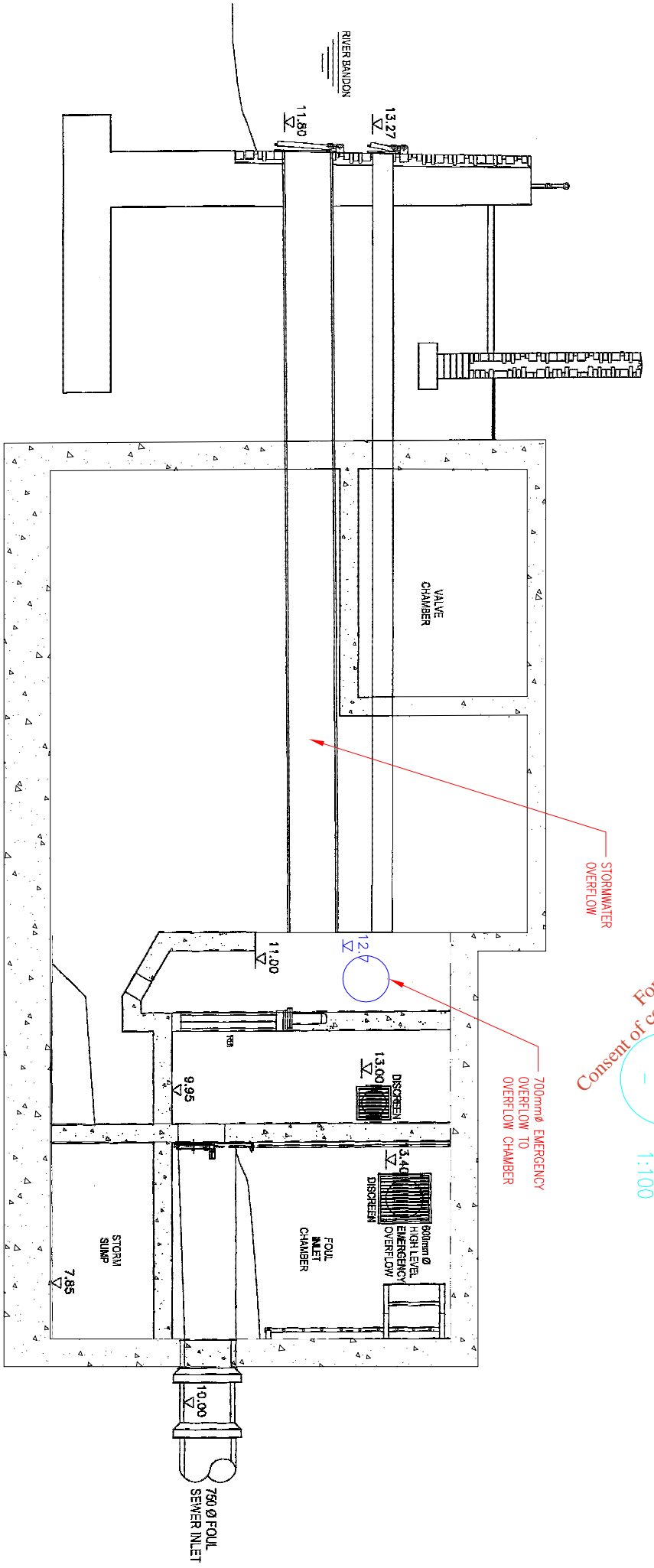
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DATE : NOV 2009

BANDON WASTE WATER DISCHARGE LICENCE APPLICATION  
CORK COUNTY COUNCIL  
PROJECT Nr. 249282  
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LAYOUT PLAN  
SCALE 1:250

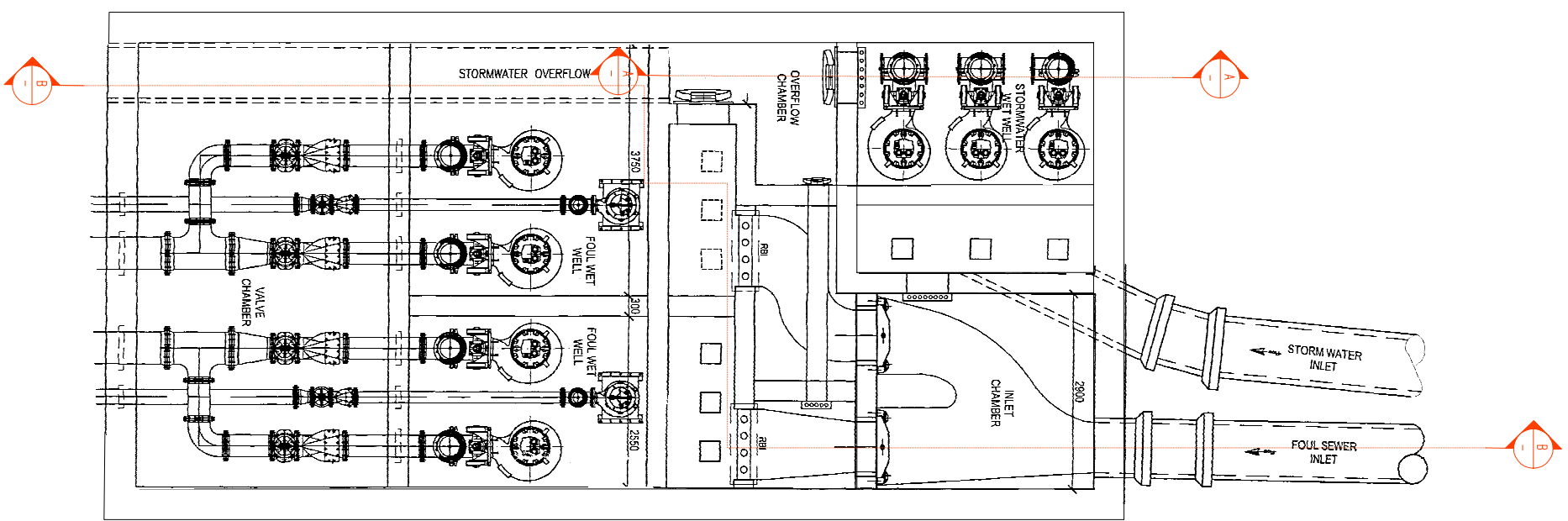


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B-B

PUMP STATION SECTION

1:100



ATTACHMENT C.2

MAP 15

MAP 15 - STORMWATER OVERFLOW DETAIL : SW4BAND

BANDON WASTE WATER DISCHARGE LICENCE APPLICATION  
CORK COUNTY COUNCIL  
JOB NR. 249282  
DRG NR. 249282F008

**TABLE D.1(i)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Primary Discharge Point)**

**Discharge Point Code:** **SW1BAND Revised**

Source of Emission:	Bandon WWTP Primary Discharge and Storm Overflow
Location:	Ballylangley, Bandon
Grid Ref. (12 digit, 6E, 6N):	150411E 055785N
Name of receiving waters:	River Bandon
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge location
Flow rate in receiving waters:	$0.36 \text{ m}^3 \cdot \text{sec}^{-1}$ Dry Weather Flow $0.78 \text{ m}^3 \cdot \text{sec}^{-1}$ 95%ile flow

**Emission Details:**

(i) Volume emitted			
Normal/day	2370 m <sup>3</sup>	Maximum/day	9037 m <sup>3</sup>
Maximum rate/hour	Not available m <sup>3</sup>	Period of emission (avg)	$60$ min/hr $24$ hr/day $365$ day/yr
Dry Weather Flow	Require PE to get DWF m <sup>3</sup> /sec		

**TABLE D.1(i)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (Primary Discharge Point)**

**Discharge Point Code:** SW1BAND Revised

Number	Substance	As discharged	
		Max. daily average	
1	pH	9.0	
2	Temperature	25°C	
3	Electrical Conductivity(@25°C)	1000	
		Max. daily average (mg/l)*	kg/day*
4	Suspended Solids	35	316.3
5	Ammonia (as N)	5	45.19
6	Biochemical Oxygen Demand	25	225.9
7	Chemical Oxygen Demand	125	1129.6
8	Total Nitrogen (as N)	Not applicable	Not applicable
9	Nitrite (as N)	Not applicable	Not applicable
10	Nitrate (as N)	Not applicable	Not applicable
11	Total Phosphorus (as P)	6	54.2
12	Orthophosphate (as P) <sup>Note 1</sup>	5	45.19
13	Sulphate (SO <sub>4</sub> )	Not applicable	Not applicable
14	Phenols (sum) <sup>Note 2</sup> (ug/l)	Not applicable	Not applicable

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Note 3: \* Average flow data of 1334.5m<sup>3</sup>/day recorded in E4 sheets

Note 4: \*\* Values recorded less than LOD were recorded as half the LOD in order to generate statistical data

**TABLE D.1(i)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**

**Primary Discharge Point - Characteristics of the emission**

**Discharge Point Code:** SW1BAND Revised

Number	Substance	As discharged		
		Max. daily average (µg/l)*	kg/day*	kg/year*
1	Atrazine	Not applicable	Not applicable	Not applicable
2	Dichloromethane	Not applicable	Not applicable	Not applicable
3	Simazine	Not applicable	Not applicable	Not applicable
4	Toluene	Not applicable	Not applicable	Not applicable
5	Tributyltin	Not applicable	Not applicable	Not applicable
6	Xylenes	Not applicable	Not applicable	Not applicable
7	Arsenic	Not applicable	Not applicable	Not applicable
8	Chromium	Not applicable	Not applicable	Not applicable
9	Copper	Not applicable	Not applicable	Not applicable
10	Cyanide	Not applicable	Not applicable	Not applicable
11	Fluoride	250	2.26	824.63
12	Lead	Not applicable	Not applicable	Not applicable
13	Nickel	Not applicable	Not applicable	Not applicable
14	Zinc	Not applicable	Not applicable	Not applicable
15	Boron	Not applicable	Not applicable	Not applicable
16	Cadmium	Not applicable	Not applicable	Not applicable
17	Mercury	Not applicable	Not applicable	Not applicable
18	Selenium	Not applicable	Not applicable	Not applicable
19	Barium	Not applicable	Not applicable	Not applicable

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW02BAND**                     **Revised**

Source of Emission:	Storm Overflow in treatment plant
Location:	Ballylangley Bandon
Grid Ref. (12 digit, 6E, 6N):	150368E 055690N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p style="text-align: right;">_____ 0.36 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p style="text-align: right;">_____ 0.78 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                                 **SW03BAND**                                 **Revised**

Source of Emission:	Storm Overflow in Glasslynn Road pumping station
Location:	Clogheenavodig Bandon
Grid Ref. (12 digit, 6E, 6N):	150074E 055292N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	_____ <u>0.36</u> m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow _____ <u>0.78</u> m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted - <b>No data available</b>			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr



**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW5BAND**                     **Revised**

Source of Emission:	Storm Overflow From Bridge Street Pumping Station
Location:	Gully Bandon
Grid Ref. (12 digit, 6E, 6N):	149265E 054933N
Name of receiving waters:	Bridewell River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p style="text-align: right;">_____ 0.025 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p style="text-align: right;">_____ 0.05 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr



**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW6BAND**                    **Revised**

Source of Emission:	Storm Overflow
Location:	Bandon
Grid Ref. (12 digit, 6E, 6N):	149265E 054933N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p style="text-align: right;">_____ 0.36 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p style="text-align: right;">_____ 0.78 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                             **SW7BAND**                            **Revised**

Source of Emission:	Storm Overflow
Location:	Bandon
Grid Ref. (12 digit, 6E, 6N):	149145E 055124N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	_____ <b>0.36</b> m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow _____ <b>0.78</b> m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW8BAND**                    **Revised**

Source of Emission:	Storm Overflow
Location:	Bandon
Grid Ref. (12 digit, 6E, 6N):	149732E 055124N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	_____ $0.36 \text{ m}^3 \cdot \text{sec}^{-1}$ Dry Weather Flow _____ $0.78 \text{ m}^3 \cdot \text{sec}^{-1}$ 95%ile flow

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	$\text{m}^3$	Maximum/day	$\text{m}^3$
Maximum rate/hour	$\text{m}^3$	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW9BAND**                    **Revised**

Source of Emission:	Storm Overflow
Location:	Bandon
Grid Ref. (12 digit, 6E, 6N):	149281E 055040N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<div style="text-align: right;"> <u>0.36 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</u>  <u>0.78 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</u> </div>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW10BAND**                     **Revised**

Source of Emission:	Storm Overflow
Location:	Bandon
Grid Ref. (12 digit, 6E, 6N):	149244E 055045N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p>_____ 0.36 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p>_____ 0.78 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW11BAND**                     **Revised**

Source of Emission:	Storm Overflow
Location:	Bandon
Grid Ref. (12 digit, 6E, 6N):	149951E 054996N
Name of receiving waters:	Bandon River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p>_____ 0.36 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p>_____ 0.78 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** **SW12BAND** **Revised**

Source of Emission:	Storm Overflow
Location:	Bridewell River
Grid Ref. (12 digit, 6E, 6N):	149293E 054948N
Name of receiving waters:	Bridewell River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<div style="text-align: right; margin-right: 20px;"> <u>0.025</u> m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow  <u>0.05</u> m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow </div>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW13BAND**                     **Revised**

Source of Emission:	Storm Overflow
Location:	Bridewell River
Grid Ref. (12 digit, 6E, 6N):	149116E 054830N
Name of receiving waters:	Bridewell River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p style="text-align: right;">_____ 0.025 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p style="text-align: right;">_____ 0.05 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr



**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW14BAND**                    **Revised**

Source of Emission:	Storm Overflow
Location:	Bridewell River
Grid Ref. (12 digit, 6E, 6N):	148819E 054959N
Name of receiving waters:	Bridewell River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p style="text-align: right;">_____ <math>0.025 \text{ m}^3 \cdot \text{sec}^{-1}</math> Dry Weather Flow</p> <p style="text-align: right;">_____ <math>0.05 \text{ m}^3 \cdot \text{sec}^{-1}</math> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	$\text{m}^3$	Maximum/day	$\text{m}^3$
Maximum rate/hour	$\text{m}^3$	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr

**TABLE D.1(iv)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:**                     **SW15BAND**                     **Revised**

Source of Emission:	Storm Overflow
Location:	Bridewell River
Grid Ref. (12 digit, 6E, 6N):	148552E 054267N
Name of receiving waters:	Bridewell River
River Basin District:	South Western River Basin District
Designation of receiving waters:	No designation at discharge point
Flow rate in receiving waters:	<p style="text-align: right;">_____ 0.025 m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p style="text-align: right;">_____ 0.05 m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>

**Emission Details:**

(i) Volume emitted - No data available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>	Period of emission (avg)	_____ min/hr _____ hr/day _____ day/yr