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Drawing list	28/11/2008				
Attachment B1	WWLA-057	Cork Main Drainage		Carrigrennan Agglomeration	Agglomeration Bdry

Attachment	Drawing Reference	Unique Point code (outfall)	Discharge Source ref	Name of Discharge Source	Type of Discharge
Attachment B4					**Secondary**
Attachment B4	WWLA-029	SD01	PS01	Atlantic Pond Pumping Station	P.S./ EO
Attachment B4	WWLA-030	SD03	PS03	Gilabbey Pumping station	P.S./ EO
Attachment B4	WWLA-030	SD22	PS22	Crosses Green Pumping Station	P.S./ EO
Attachment B4	WWLA-031	SD04	PS04	Rossa Avenue Pumping Station	P.S./ EO
Attachment B4	WWLA-032	SD05	PS05	Dons Court Pumping Station	P.S./ EO
Attachment B4	WWLA-032	SD06	PS06	Stratton Pines Pumping Station	P.S./ EO
Attachment B4	WWLA-032	SD37	PS37	Woodbrook Pumping station	P.S./ EO
Attachment B4	WWLA-033	SD07	PS07	NBA Curraheen Pumping Station	P.S./ EO
Attachment B4	WWLA-034	SD08	PS08	Rossbrook Pumping Station	P.S./ EO
Attachment B4	WWLA-035	SD09	PS09	J. A. Woods Pumping Station	P.S./ EO
Attachment B4	WWLA-035	SD10	PS10	City Printers Pumping Station	P.S./ EO
Attachment B4	WWLA-036	SD11	PS11	Victoria Cycles Pumping Station	P.S./ EO
Attachment B4	WWLA-036	SD12	PS12	University Hall Pumping Station	P.S./ EO
Attachment B4	WWLA-036	SD25	PS25	Victoria Cross Kingsley Pumping Station	P.S./ EO
Attachment B4	WWLA-037	SD14	PS14	Sundays Well Pumping Station	P.S./ EO
Attachment B4	WWLA-038	SD15	PS15	Greenhills Pumping station	P.S./ EO
Attachment B4	WWLA-038	SD17	PS17	Heatherton Pumping Station	P.S./ EO
Attachment B4	WWLA-039	SD16	PS16	Glencurrig Pumpinf Station	P.S./ EO
Attachment B4	WWLA-040	SD18	PS18	Mahon North Pumping Station	P.S./ EO
Attachment B4	WWLA-041	SD19	PS19	Mahon South Pumping Station	P.S./ EO
Attachment B4	WWLA-042	SD20	PS20	Coal Quay Pumping Station	P.S./ EO
Attachment B4	WWLA-043	SD21	PS21	Grand Parade Pumping Station	P.S./ EO
Attachment B4	WWLA-044	SD26	PS26	Bessboro Pumping Station	P.S./ EO
Attachment B4	WWLA-045	SD27	PS27	Castle Avenue Pumping Station	P.S./ EO
Attachment B4	WWLA-046	SD28	PS28	Tivoli Pumping Station	P.S./ EO
Attachment B4	WWLA-047	SD29	PS29	Tivoli Industrial Estate Pumping Station	P.S./ EO
Attachment B4	WWLA-048	SD30	PS30	Railway Yard pumping Station	P.S./ EO
Attachment B4	WWLA-049	SD31	PS31	Bellevue Pumping Station	P.S./ EO
Attachment B4	WWLA-050	SD38	PS38	Sarsfield Road Pumping Station	P.S./ EO
Attachment B4	WWLA-051	SD32	PS32	Flaxfort Pumping Station	P.S./ EO
Attachment B4	WWLA-052	SD33	PS33	Wallingstown Pumping Station	P.S./ EO
Attachment B4	WWLA-053	SD34	PS34	Courtstown Pumping Station	P.S./ EO
Attachment B4	WWLA-054	SD35	PS35	Ronaynes Court Pumping Station	P.S./ EO
Attachment B4	WWLA-055	SD36	PS36	Rochestown Cross Pumping Station	P.S./ EO
Attachment B4	WWLA-056	SD02	Combined Culvert	St Patrick's Street Combined Culvert	Combined sewer Secondary Discharge

Attachment	Drawing Reference	Unique Point code (outfall)	Discharge Source ref	Name of Discharge Source	Type of Discharge
Attachment B5	WWLA-001	S01	CSO01		Storm Water Overflow
Attachment B5	WWLA-001	S35	CSO52, CSO53		Storm Water Overflow
Attachment B5	WWLA-002	S02	CSO02		Storm Water Overflow
Attachment B5	WWLA-002	S03	CSO03		Storm Water Overflow
Attachment B5	WWLA-003	S04	CSO04		Storm Water Overflow
Attachment B5	WWLA-003	S05	CSO05		Storm Water Overflow
Attachment B5	WWLA-003	S06	CSO06		Storm Water Overflow
Attachment B5	WWLA-004	S07	CSO07		Storm Water Overflow
Attachment B5	WWLA-004	S17	CSO22		Storm Water Overflow
Attachment B5	WWLA-004	S18	CSO23		Storm Water Overflow
Attachment B5	WWLA-005	S08	CSO08, CSO09		Storm Water Overflow
Attachment B5	WWLA-005	S09	CSO10		Storm Water Overflow
Attachment B5	WWLA-005	S15	CSO20		Storm Water Overflow
Attachment B5	WWLA-005	S16	CSO21		Storm Water Overflow
Attachment B5	WWLA-006	S10	CSO13		Storm Water Overflow
Attachment B5	WWLA-006	S13	CSO18		Storm Water Overflow
Attachment B5	WWLA-006	S14	CSO19		Storm Water Overflow
Attachment B5	WWLA-006	S47	CSO11		Storm Water Overflow
Attachment B5	WWLA-007	S11	CSO14		Storm Water Overflow
Attachment B5	WWLA-007	S12	CSO15		Storm Water Overflow
Attachment B5	WWLA-008	S19	CSO24, CSO25, CSO26		Storm Water Overflow
Attachment B5	WWLA-009	S20	CSO27		Storm Water Overflow
Attachment B5	WWLA-010	S21	CSO28		Storm Water Overflow
Attachment B5	WWLA-011	S22	CSO29		Storm Water Overflow
Attachment B5	WWLA-011	S23	CSO30		Storm Water Overflow
Attachment B5	WWLA-011	S24	CSO33		Storm Water Overflow
Attachment B5	WWLA-012	S25	CSO34, CSO35		Storm Water Overflow
Attachment B5	WWLA-013	S26	CSO37, CSO38, CSO39, CSO40		Storm Water Overflow
Attachment B5	WWLA-013	S27	CSO41		Storm Water Overflow
Attachment B5	WWLA-013	S28	CSO42		Storm Water Overflow
Attachment B5	WWLA-014	S29	CSO43		Storm Water Overflow
Attachment B5	WWLA-014	S30	CSO44, CSO45, CSO46		Storm Water Overflow
Attachment B5	WWLA-015	S31	CSO47		Storm Water Overflow
Attachment B5	WWLA-015	S32	CSO48		Storm Water Overflow
Attachment B5	WWLA-016	S33	CSO49		Storm Water Overflow
Attachment B5	WWLA-017	S34	CSO51		Storm Water Overflow
Attachment B5	WWLA-018	S48N & S48S Same location as Primary Discharge	(CSO71) Carrigrennan WWTP Diffuser		Storm Water Overflow
Attachment B5	WWLA-019	S37	CSO55		Storm Water Overflow
Attachment B5	WWLA-020	S38	CSO56		Storm Water Overflow
Attachment B5	WWLA-021	S39	CSO58		Storm Water Overflow
Attachment B5	WWLA-022	S40	CSO59		Storm Water Overflow
Attachment B5	WWLA-023	S41	CSO60		Storm Water Overflow
Attachment B5	WWLA-023	S46	CSO70		Storm Water Overflow
Attachment B5	WWLA-024	S42	CSO61		Storm Water Overflow
Attachment B5	WWLA-025	S43	CSO62		Storm Water Overflow
Attachment B5	WWLA-026	S44	CSO64, CSO65, CSO66		Storm Water Overflow
Attachment B5	WWLA-027	S45	CSO67, CSO68		Storm Water Overflow

	Drawing Reference	Unique Point code (outfall)	Discharge Source ref	Name of Discharge Source	Type of Discharge
Attachment B5	WWLA-028	S49W	Atlantic Pond Pumping Station - PS01 Diffuser		Pumped Storm overflow
Attachment B5	WWLA-030	same location as SD03	CSO at Gillabbey Pumping Station PS03	Gilabbey Pumping station	Storm Water Overflow
Attachment B5	WWLA-031	same location as SD04	CSO50 at Rossa Ave Pumping Station-PS04	Rossa Avenue Pumping Station	Storm Water Overflow
Attachment B5	WWLA-042	same location as SD20	Coal Quay Pumping Station - PS20	Coal Quay Pumping Station	Pumped Storm overflow
Attachment B5	WWLA-043	same location as SD21	Grand Parade Pumping Station-PS21	Grand Parade Pumping Station	Pumped Storm overflow

	Drawing Reference	Title		Monitored points	
Attachment E3	WWLA-058	Monitoring and Sampling Points		Pts M01 to M15 incl	
Attachment E3	WWLA-059	Monitoring and Sampling Points		Pts C5 to C9 incl	

Cork City Council
Waste Water Discharge Licence Application
Register No. D0033-01
Information requested in EPA letter dated 4 April 2008-11-18

Regulation 16 Compliance Requirements

16(1) (c) - *Provide the location of the discharge points, in particular the secondary discharge points, and a description of the outfall design and construction as specified in Sections B and C.2 of the application form.*

The location of the discharge points are tabulated in Tables B4 and B5 in attachments
Shapefiles for Secondary Discharge points, named *SecondaryDischarge* is included in Attachments
Shapefile for Storm Water Overflows named *Stormwateroverflow* is included in Attachments
Pdf Drawings WWLA-029 to WWLA-056 show the location of Secondary Discharge points.
Pdf Drawings WWLA-001 to WWLA-028, together with WWLA-030, WWLA-031, WWLA-042 and WWLA-043 show the location of Storm Water Overflows.

Details of Outfalls are listed in Table C.2
Outfalls for Secondary discharges are in general Pump Station emergency overflows and are simple pipe outlets, some of which have flap valve covers or tideflex valves fitted. Storm Water Overflows are predominately outfalls from Combined Sewer Overflows (CSOs) discharging to River / River culvert. Detail drawings of the CSOs, ie discharge sources, showing spill arrangements, overflow outlets were included in attachment B5 of original submission.

Additional PumpStation Layout drgs are included in Regulation 18(3)(b) reply Attachment C1

16(1) (d) *Reassess the information submitted in relation to the size of the agglomeration, in particular the map entitled "Total Catchment outline with City Boundary" having regard to the definition of agglomeration provided in the regulations. Provide the name of the agglomeration and submit a revised map as specified in the application form with a justification for the boundaries of the agglomeration.*

The definition of "agglomeration" is: "an area where the population or economic activities or both are sufficiently concentrated for a waste water works to have been put in place" (Waste Water Discharge (Authorisation) Regulations 2007, SI 684, Part 1-3-interpretation)
The Red line on drawing WWLA-057 marks as required by the Discharge Licence Application form, the limit of the agglomeration, i.e. the outer extent of the sewage collection system, served by the Waste Water Treatment Plant at Carrigrennan, Co.Cork

Following assessment and evaluation of the viable treatment plant options, including various different catchment combinations, the Cork Main Drainage Preliminary Report selected Carrigrennan as the single preferred treatment plant location, by which all the sewer collection systems, within the boundary shown, were designed to be serviced.
The agglomeration has been named The Carrigennan Agglomeration and the boundary has been named as such on the drawing.
The Waste Water Treatment plant location has been identified on drawing no WWLA- 056.

Provide and estimate of the existing and the maximum proposed Population Equivalent (p.e.) contribution from (1) domestic, (2) commercial and (3) trade effluent sources

Copy of Table C.2.1.1. Cork Main Drainage Preliminary Report on Wastewater Collection treatment & Disposal (1992) Appendix C refers

The figures were revised in 1998 following an Industrial Survey and D.O.E. consultation
The revised estimates are as follows:

	Estimated Existing PE	Estimated future PE (2020)
Domestic	161,638	194,816
Commercial	25,861	31,166
Trade	187,216	187,216
Totals	374,716	413,200

(The estimated Future PE was revised downwards to 413,000 PE Total)
See Volume 4 Employers req. Carrigrennan Influent

Actual average PE to the Treatment Plant in 2007 was 254,000

-Where planning permission has been granted for developments but said development has not been commenced or completed to date, within the boundary of the agglomeration and the development is being or is to be served by the water works provide the following:
+ Information on the calculated population equivalent (p.e.) to be contributed to the waste water work as a result of these 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 habitats

The calculated population equivalent (p.e.) to be contributed to the waste water work within the agglomeration as a result of planning permissions granted (that have not been commenced or completed to date) is in the order of 5,000 PE. These consist of Domestic and Commercial only, there are no proposed industrial Trade activities.
The Docklands Development is estimated will contribute an additional 20,000 residents and 25,000 workers to the agglomeration over the lifetime of that development. This is a further 20,000 domestic PE, and 8,300 commercial PE. This additional population equivalent however can be accounted for within the actual reduction in domestic PE from the estimated domestic PE within the City boundary itself.

The estimated current plant loading is 254,000 PE and the design capacity is 413,000 PE The Waste water Treatment works therefore can accommodate this extra organic loading without posing an environmental risk to the receiving water habitat.

The WWTP plant has been designed on a modular basis to allow expansion as necessary over the next 20 years. Where additional flows beyond the limits designed for are identified these will be catered for into the future. At this stage however no such flows /loads have been identified.

Provide further details of the transfer and storage arrangements for Sludge/ leachate, the location in the WWTP where the leachate and /or sludge residues are introduced and the quantity ((volume and pe), frequency and rate of the addition to the WWTP

No Leachate or sludges are accepted at the WWTP.
As part of the Licence for Cork City Council Kinsale Road Landfill site, Leachate is collected, conditioned and discharged to the Tramore Valley sewer, for conveyance to Carrigrenan WWTP. The flow through the Kinsale Road Landfill conditioning plant varied from 0-23 M3/hour in 2007. The licence requirement is 25 m3/hr. There were no exceedances. The cumulative flow in 2007 was 104,243m3 (122,627) (121,454) m3. Previous years in brackets.

16(1) (e) Discharge from Primary Discharge Point.

Data on table relates to 2007. The only regularly measured parameters are BOD, COD, SS with a total of 261 samples each for year. Other parameters listed in Table D1(i)(a)(b)(c) arise from a single day composite sample.

On the three regularly measured parameters the following is the summary for 2007.

Treated Effluent

	BOD	BOD	COD	COD	SS	SS	Flow
	Conc mg/l	Daily kg/d	Conc mg/l	Daily kg/d	Conc mg/l	Daily kg/d	Cu.m/d
Max	40	3626	190	21486	68	7253	162000
Min	3	274	15	1885	4	317	63990
Average	13	1187	88	8112	16	1526	95167
Median	11	1044	89	7608	14	1275	87900

Partially Treated Overflow (Intermittent)

	BOD	BOD	COD	COD	SS	SS	Flow
	Conc mg/l	Daily kg/d	Conc mg/l	Daily kg/d	Conc mg/l	Daily kg/d	Cu.m/d
Max	82	3690	240	3690	95	4171	88700
Min	9	77	53	77	14	84	0
Average	43	1055	132	1055	38	1029	2392
Median	40	674	120	674	32	628	

Combined Outlet

	BOD	BOD	COD	COD	SS	SS	Flow
	Conc mg/l	Daily kg/d	Conc mg/l	Daily kg/d	Conc mg/l	Daily kg/d	Cu.m/d
Max	40	5712	190	21654	68	8371	237730
Min	3	274	15	1885	4	317	63990
Average	13	1255	88	8307	16	1592	97357
Median	11	1057	89	7660	14	1302	87900

16 (1) (g) *Provide details of the monitoring and sampling points as specified in Attachment B.3 and Section E of the application form. Where provision of treatment or connection to Primary discharge of secondary discharges is not proposed provide details for a monitoring programme to demonstrate compliance with the requirements of the regulations*

The location of Monitoring points within the harbour points C5 to C9 inclusive and on the minor rivers, M1 to M15 inclusive, are tabulated in Table E3.
Shapefile for Monitoring points, named *River Monitoring* is included in Attachments.

River Lee /Harbour
Refer to Drawing no WWLA-059.pdf , E3 Monitoring and Sampling Points. Points C5 to C9
Monitoring Point C8 is upstream of Carrigrennan (Primary) outfall and Point C6 is downstream of Carrigrennan (Primary) Outfall.
Sampling is carried out on the River Lee by Bodycote-Consultus Ltd (Formerly Consultus Ltd) twice monthly (high tide and low tide same day) at locations upstream of the Agglomeration to the end of Cork Harbour. The samples are tested in that company's INAB accredited laboratory.

Minor Rivers
Refer to Drawing no WWLA-058.pdf, E3 Monitoring and Sampling Points. Points M01 to M15

These locations are monitored 6 times a year at 2 –monthly intervals, on the Curraheen river, The Glasheen river and the Glen /Bride Kiln river system.
They are not specific to any single discharge points. They consist of initial upstream points on each river as given and a number of intermediate points which can be downstream of a number of possible discharge points, either secondary or Storm water Overflow.

The samples are grab samples, collected by Cork City Council Technician Staff and tested at the Cork City Council Laboratory at Kinsale Rd Landfill Site. This laboratory is proficiency tested by the EPA 5 times per year.
Monitoring point M01 (Twopot river) is upstream of confluence with the Curraheen River and Secondary Discharge points SD07, SD04 and SD08.
Point M02 is downstream of these Discharges and upstream of SD09 and SD10.
M03 is downstream of SD09 and SD10 and upstream of SD11 and SD12 and S35
M04 is upstream of SD06,
M05 is downstream of SD06 and upstream of SD37 plus storm overflow S33
M06 is downstream of SD37 and SD38.
M07 is downstream of storm overflow S38 and upstream of Storm overflow S37, S35
M08 is downstream of Storm overflow S37, S35 and upstream of S36

M09 to M15 monitor along the Bride/Glen/Kiln rivers and are at intermediate points between a number of Storm overflows

Elimination of secondary discharge
There is only one secondary discharge which is not a pump station emergency overflow. This is the St Patrick Street combined culvert.
Investigations and surveys are ongoing with respect to this culvert Secondary Discharge, to endevour to reduce and/or eliminate the sources of foul contamination. One source with over 20 connections has been identified to date and should be re-directed to foul interceptor in early 2009.

16(1) (h)
See Table D1(1) a,b,c

16 (1) (i) Reassess the details submitted in the application form to ensure that it fully describes the existing or proposed measures, including emergency procedures to prevent unintended waste water discharges and to minimise the impact on the environment of such discharges. Review and resubmit as necessary Section F of the application form and in particular in relation to those discharges that are not fully addressed in the EIS e.g. secondary discharges

All but one of the Secondary discharges are Emergency overflows for pumping stations.

Maintenance
Maintenance of equipment is a critical element in the reduction/elimination of pump/mechanical failure with resultant discharges. Regular monitoring procedures and maintenance visits are carried out to prevent breakdowns.
The older (pre CMD) stations are monitored weekly to check operations, with the exception of Gillabbey rock P.S. which is visited daily. Maintenance of the older Stations is carried out by City council Staff on a monthly basis as required, with sumps de-sludged twice yearly.
These PumpStations are PS03 (Gilabbey PS) together with PS04, PS05, PS06, PS07, PS08, PS09, PS10, PS11, PS12, PS14, PS15, and PS16. PS17 (Heatherton) has only been taken in Charge during 2008 and will be part of this
A contract for renewal of the electrical panels for all these pre CMD pumpstations (excluding PS03 Gillabbey PS, PS16 Glencurrig PS, and PS17 Heatherton has been tendered for and will be awarded within the next month (Dec 2008).

The newer City operated CMD Pump Stations, depending on size, are monitored by visit on a weekly or bi-weekly basis. Maintenance is carried out by contract which includes one main visit for major inspection and overhaul together with one or two additional maintenance visits.
These pumpstations are PS18, PS19, PS20, PS21, PS22, PS25, PS26, PS27 PS28, PS29 and PS30
All pumpStations are fitted with elements of redundancy to reduce the probability of unintended waste water discharge.
These include provision at a minimum in the smaller pumping stations of a Standby pump in addition to the main duty pump in the event of Pump Failure.
The larger stations include for duty/ assist /standby pump(s) regimes to cater for larger and more variable flows.
A Standby generator is provided in one pump station (Mahon south) in the event of power failure.

The remaining are Cork County Council operated Pump Stations. These are visited daily and maintenance is carried out as required.

CSO's & Storm Water overflows
Each of the 59 Combined Sewer Overflows (CSOs) which discharge to 45 Storm water overflows within the city is inspected and cleaned within a two week interval. Particularly troublesome CSOs are visited and cleaned twice a week as required. In addition to the Cleaning inspections the outfalls are inspected at low tide in the intervening periods to determine if there are any blockages in CSOs causing unwarranted spills.

Telemetry
There is Department of the Environment approved provision within the Water services Investment programme 2007-2009 for the amount of €1,051,000 to provide telemetry within Pumping stations and combined sewer overflow chambers. This will enable extensive operational Information and

alarms for each pump station, together with spill events and spill durations for CSOs, to be relayed back for technical staff action, monitoring, or review.

This provision will improve on the information being received through inspections and subsequently improve maintenance regimes for both systems, reduce reaction time to events and also reduce the duration of spill incidents. In the case of Pump Stations the intention would be to eliminate any such occurrences.

Contract documentation is being prepared at present and it is expected to have the systems in place by 2010.

Sampling

Sampling and modelling review of CSO's was carried out as part of the CMD Preliminary report. Refer to EIS as submitted, Chapter 3, "Emissions to the Environment" together with Appendix 3, "Impacts of Storm Overflow Discharges", River modelling etc.

Monitoring Data

Results of monitoring at the locations outlined in Tables E3 are attached as Regulation18(3)(b) Reply Dated 28Nov2008 Attachment F.

As stated previously, they are not specific to any single discharge points. They consist of initial upstream points on each river as given and a number of intermediate points which can be downstream of a number of possible discharge points, either secondary or Storm water Overflow.