

APPENDIX 5.4

**Leachate Generation
for Existing WENT
Landfill**

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Landfill Phasing Plan & Leachate Generation for Existing WENT Landfill

Existing WENT Area = 1,100,000 m²

Assumptions :

1. Based on the existing operation mode, the daily active tipping cell = 60m x 40m = 2400m².
2. Assuming active tipping area is limited to max. 12 ha (i.e. 50 nos tipping cells) per year for conservative.
3. For conservative estimate, the permanent restoration will be assumed to be carried out at a later stage of the landfill life.
4. Assuming three types of landfill surface :
 - Active Tipping area - areas where waste is being actively tipped
 - Temporary working area - either site formation areas or areas which have been temporarily restored
 - Permanent restored - areas which have been permanently restored or final capped
5. Assuming runoff coefficient/ infiltration rate to landfill surface :
 - Active Tipping area - 1.00 (100% of surface water infiltrated into leachate collection system of landfill)
 - Temporary working area - 0.30 (70% of surface water will be convey to surface channel / stormwater system)
 - Permanent restored - 0.10 (90% of surface water will be convey to surface channel / stormwater system)

Landfill Phasing Plan for Existing WENT Landfill

Year	Active tipping area (ha)	Temporary working area (ha)	Permanent restored (ha)	Total Area (ha)	Remark
1993	0	5	0	5	Initial development
1994	5	10	0	15	
1995	5	15	0	20	
1996	5	20	0	25	
1997	6	25	0	31	
1998	6	30	0	36	
1999	7	35	0	42	
2000	7	40	0	47	
2001	8	45	0	53	
2002	8	50	0	58	
2003	9	55	0	64	
2004	10	60	0	70	
2005	11	65	0	76	
2006	12	70	0	82	
2007	12	70	0	82	
2008	12	75	0	87	
2009	12	75	0	87	
2010	12	75	0	87	
2011	12	80	0	92	
2012	12	80	0	92	
2013	12	80	0	92	
2014	12	82	0	94	
2015	12	84	0	96	
2016	12	68	20	100	Restoration start in 2016
2017	12	58	40	110	
2018	12	38	60	110	Operation end in 2018
2019	0	30	80	110	Aftercare start in 2019
2020	0	0	110	110	
2021	0	0	110	110	
2022	0	0	110	110	

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Year	Rainfall (mm/year)	Calculation of Infiltration (m ³)			Estimated Leachate		Recorded Leachate Rate flow (m ³ /day)
		Active tipping area	Temporary working area	Permanent restored	(m ³ /year)	(m ³ /day)	
1993	2266.0	0	33,990	0	33,990	93	not available
1994	1983.0	99,150	59,490	0	158,640	435	not available
1995	1814.5	90,725	81,653	0	172,378	472	not available
1996	1480.0	74,000	88,800	0	162,800	446	466
1997	2162.5	129,750	162,188	0	291,938	800	510
1998	2045.0	122,700	184,050	0	306,750	840	742
1999	1560.0	109,200	163,800	0	273,000	748	1,178
2000	2196.5	153,755	263,580	0	417,335	1,143	1,225
2001	2149.0	171,920	290,115	0	462,035	1,266	998
2002	1758.0	140,640	263,700	0	404,340	1,108	1,081
2003	1660.5	149,445	273,983	0	423,428	1,160	1,274
2004	1293.5	129,350	232,830	0	362,180	992	1,581
2005	1629.0	179,190	317,655	0	496,845	1,361	1,494
2006	1861.5	223,380	390,915	0	614,295	1,683	1,402
2007	1343.0	161,160	282,030	0	443,190	1,214	X
2008	1813.5	217,616	408,030	0	625,646	1,714	
2009	1813.5	217,616	408,030	0	625,646	1,714	
2010	1813.5	217,616	408,030	0	625,646	1,714	
2011	1813.5	217,616	435,232	0	652,848	1,789	
2012	1813.5	217,616	435,232	0	652,848	1,789	
2013	1813.5	217,616	435,232	0	652,848	1,789	
2014	1813.5	217,616	446,113	0	663,729	1,818	
2015	1813.5	217,616	456,994	0	674,610	1,848	
2016	1813.5	217,616	369,947	36,269	623,833	1,709	
2017	1813.5	217,616	315,543	72,539	605,698	1,659	
2018	1813.5	217,616	206,735	108,808	533,159	1,461	
2019	1813.5	0	163,212	145,077	308,289	845	
2020	1813.5	0	0	199,481	199,481	547	
2021	1813.5	0	0	199,481	199,481	547	
2022	1813.5	0	0	199,481	199,481	547	