APPLICATION FOR AN INTEGRATED POLLUTION PREVENTION AND CONTROL PERMIT

TA' ZWEJRA NON-HAZARDOUS WASTE FACILITY

COMMENTS BY WASTE MANAGEMENT TEAM (MEPA) AND REPLIES BY WASTESERV MALTA LTD.

	Question by MEPA	Request Date	Final Answer by WasteServ	Date of Acceptance by MEPA
1	The permeability rate allowed by LN 168 of 2002 for a non hazardous landfill is of less than or equal to 1x10-9 m/s. According to the working plan, it was suggested that the permeable would be of 1x10-7m/s. This is unacceptable (HRA - 6.0 page 8)	23/03/05	Note No. 1: The Legal Notice LN 168/2002, Schedule 1, Paragraph 3 deals with the requirements for the geological barrier. The geological barrier is the geological formation between the underside of the artificial sealing liner and the compliance point at which the requirements of the Groundwater Regulations should be met (water table or a borehole). The permeability coefficient of $K= 1 \times 10^{-9}$ m/s refers to natural geology in which is landfill set. At the bottom of Paragraph 3.2. there is a section which deals with sites where the geological barrier does not meet requisite conditions, as follows: "Where the geological barrier does not naturally meet the above conditions it can be completed artificially and reinforced by other means giving equivalent protection. An artificially established geological barrier should be no	26/04/05

			less than 0.5 meters thick." Since Ta' Zwejra does not naturally meet required conditions we are establishing artificially by 0.5 m thick mineral layer of 1 x 10^{-7} m/s and reinforcing it with Geo-synthetic Clay Liner (GCL) of 1 x 10^{-11} m/s, which is more then equivalent protection.	
2	In this report the definitions of what are direct and indirect discharges was quoted without stating the source of the information afterwards. (HRA - 6.0 page 8)	23/03/05	Note No. 2: The reference is made to definitions of discharge as defined in Council Directive 80/68/EEC on the protection of ground water against pollution caused by certain dangerous substances: Article 1, Paragraph 2.	26/04/05
3	The permeability rate allowed by LN 168 of 2002 for a non hazardous landfill is of less than or equal to 1x10-9. According to the working plan, it was suggested that the permeable would be of 1x10-7m/s. Also the minimum thickness should be not less than 1m and not 0.5m (500mm) as quoted in the document. This is unacceptable. (HRA - 22.0 page 32: Lining Design)	23/03/05	Note No. 3: Please refer to Note No. 1 in the first section above. Geological barrier is composite multi-functional element which provides more than the required protection of the surrounding environment. The required thickness of 0.5 m is verified in the Quality Assurance Report.	26/04/05
4	It is important that MEPA knows what exactly are the leachate Trigger levels (controls) (HRA - 22.0 page 32: Leachate Control)	23/03/05	Note No. 4: Trigger leachate level is 0.5 m at lowest point of the base of the Cell.	26/04/05

5	Details of Groundwater Management should be given as no details were given in the HRA. (HRA - 22.0 page 32: Groundwater Management)	23/03/05	Note No. 5: Monitoring plans provided in Addendum – Additional Information	26/04/05
6	Details must be given in the HRA of why there is no need for a Leak Detection System (HRA - 22.0 page 32: Leak Detection System)	23/03/05	Note No 6.: There is no requirement and it is not a standard practice to have a leak detection system in non-hazardous landfill. It is standard element in hazardous landfills. Monitoring of upstream and downstream boreholes will be conducted.	26/04/05
7	Details of what will be the well planned method of assessment to be agreed between the regulatory authority and the operator should be given in detail. (HRA - 22.0 page 33: Risk Based Monitoring Scheme)	23/03/05	Note No.7: Provided in Addendum - Additional Information.	26/04/05
8	The authority should be advised in advance what are the control and trigger levels for any substance in advance and these should be approved by the same authority. (HRA - 22.0 page 33: Risk Based Monitoring Scheme)	23/03/05	Note No. 8: See note no. 7 Provided in Annex 1 to replies to questions by IPPC Co-ordinator)	
9	The proposed leachate and groundwater monitoring schedule should be provided before a permit is given from the competent Authority and not	23/03/05	Note No. 9: See note no. 7	26/04/05

	after. (HRA - 22.0 page 34: Leachate, Groundwater and Surface Water Monitoring Schedule)			
10	The word bs should be changed into be second bullet point (HRA - 23.0 page 34: Compliance with the Waste Management (Landfill)Regulations, 2002)	23/03/05	Note No.10: Noted with thanks	26/04/05
11	A clear Grid Reference of the site location should be given (HRA - 5.0 page 7)	23/03/05	Note No. 11: Site is located between: Northings (m): 78000 – 77670; Eastings (m): 49570 – 49800	
12	The Geological Barrier should not be 0.5m as this should not be less than 1.0m (according to L.N. 168 of 2002. (HRA - 7.0 page 10: Sources)	23/03/05	Note No. 12: See note no. 1	26/04/05
13	The foundation layer should have a maximum permeability rate of 1x10-9 m/s and the should be of 1000 mm (1m) and not of 500mm (0.5 m) thickness. (HRA - 14.0 page 19)	23/03/05	Note No. 13: See above	26/04/05
14	As a general comment to this section; it is stated that in the waste case scenario the model has demonstrated that there would be no discernable discharges to list I and list II substances so as to avoid pollution. It has	23/03/05	Note No.14: Thanks for remark. However we are planning an extensive monitoring regime of groundwater quality. We have established a set of 8 monitoring boreholes much more then required by the Directive: 2 downstream and 1 upstream.	26/04/05

	been demonstrated that in the case as shown in section 20.0 of the HRA (page 28). The models have how higher concentrations of Cadmium and Naphthalene in the Maghtab Landfill. Therefore the possibility of having much higher concentrations of the list I substances is very possible. There should be continuous monitoring. (HRA – 21.0 page 31)			
15	The Geosynthetic Clay Liner (GCL) should be laid on the bed of lime stone sand of 1.0m and not of 0.5 m as suggested. (SRA – 2.2 page 4)	23/03/05	Note No. 15: See note no. 1	26/04/05
16	The screened/crushed lime stone sand (tal Franka), should have thickness of 1000mm (1m) and not as suggested as 500mm (0.5m). It is also important to state that the maximum permeability should not be 1x10-7 m/s but 1x10-9 m/s. (SRA – 2.3 page 4 bullet point 5)	23/03/05	Note No. 16. : See note no. 1	26/04/05
17	It must be proved that the crushed and screened limestone is as good/better than the cohesive soil slopes. (SRA – 4.0 page 7)	23/03/05	Note No. 17: Cohesive soil was not considered since it is not purely natural mineral material. There is high percentage of organic matter that will compromise geo-technical properties in the long term.	26/04/05

18	Kindly refer to how cavities will effect the integrity and stability of the landfill liner. (SRA – 6.0 page 17)	23/03/05	Note No. 18: During the excavation through hard coralline limestone rock formation there was no signs of cavities present within site boundary. The compressive strength of bedrock is sufficient to withstand any future applied strains and tectonic movements.	26/04/05
19	There is no reference to post settlement contours in the SRA. (SRA 8.0)	23/03/05	Note No. 19: Post-settlement contours are provided in drawing ZW004A/04.	26/04/05
20	The definition of non-hazardous waste should be as set out in L.N. 337 of 2001. (SMS – 3.1.3 page 13)	23/03/05	Note no.20: Section 3.1.3 is to be modified as follows: "Non-hazardous waste is defined as waste which is covered by Legal Notice 337 Waste Management (Permit and Control) Regulations, 2001."	26/04/05
21	The date for starting of pre-treatment, should be proposed by WasteServ and agreed to by MEPA. Ideally this should be from the 1st day of operation. (SMS – 3.3 page 16)	23/03/05	Note No.21: Comment noted. WasteServ agrees. Ln337/01 defines treatment of waste as follows: "the application of any physical, thermal, chemical or biological process, including sorting, that changes the characteristics of the waste in order to reduce its volume or hazardous nature, facilitate its handling, or enhance its recovery or disposal". Sorting will be carried out on site in order to remove e.g. tyres, metal, mattresses and any other waste streams that may be sent for recycling or other from of acceptable treatment.	26/04/05
22	What are the plans of operation for the	23/03/05	Note No.22: Bring-in sites have been introduced in a number of localities. The	26/04/05

	segregating/sorting at source. (SMS 3.3 page16)		number of these sites will be increased to 400 over the coming months. A pilot project to segregate biodegradable waste is on going. Civic amenity sites will be established for the separate collection of bulky waste streams and household hazardous wastes.	
23	It is stated that one of the components which will be segregated will be landfilled. Is there consideration to the percentages of wastes not to be landfilled as set out in L.N. 168 of 2002? (SMS – 3.3 page 16)	23/03/05	Note No.23: The fraction of waste that can in no way be recycled will be landfilled. Issues related to the targets stipulated in LN 168/02 are being considered in when planning the whole network of public waste management facilities.	26/04/05
24	The permitted waste will be authorized by the IPPC permit and not by a Waste Management Permit. (SMS – 3.4 page 17)	23/03/05	Note No.24: Noted	26/04/05
25	More details are required on how will the method of waste storage and handling prior to final deposit be. (SMS – 3.6 page 22)	23/03/05	Note No.25: Following the waste acceptance procedure, vehicles will be immediately directed to the active tipping area. Storage of materials in Section 3.6 is related to the storage of landfill cover, etc.	26/04/05
26	The maximum leachate levels should be suggested by the permit holder and agreed to by the competent authority. (SMS – 6.1 page 35)	23/03/05	Note No.26: 2.0 metres as suggested in Section 22.0 of HGA.	26/04/05
27	The leachate drainage blanket should have a	23/03/05	Note No.27: Drainage layer should have high permeability to provide for flow of	26/04/05

	permeability of no more than 1x10-9 m/s. not 1x10-3 m/s. as well as the minimum thickness should not be less than 1000mm. (SMS – 6.4 page 35)		any leachate generated.	
28	The leachate limits levels should be proposed by the applicant and agreed to by the competent authority. (SMS – 6.4 page 36)	23/03/05	Note No.28: Refer to note 26.	26/04/05
29	Any designs for the leachate storage tank should be forwarded with the working plan. (SMS – 6.6.3 page 36)	23/03/05	Note No.29: No leachate has been generated from the storage facility. No immediate plans for such a tank are available. Please note reply to comment related to question 2.3.15 in comments by IPPC Co-ordinator.	
30	Any off-site treatment facility should be permitted. (SMS – 6.6.6 page 37)	23/03/05	Note No.30: Noted.	26/04/05
31	Where is Section XXX of the IPPC Permit Application? (SMS – 7.4.1 page 40)	23/03/05	Note No.31: Section 2.3.32	26/04/05
32	What is m OD? (SMS – 7.6 page 41)	23/03/05	Note No.32: Ordinary Datum	26/04/05
33	Frequency of surface monitoring regime should be suggested by the applicant and approved by the competent Authority. (SMS – 9.1 page 47)	23/03/05	Note No.33: Section 7.0 Table 2 Page 9 Addendum – Additional Information.	26/04/05

34	2nd paragraph 1st line substitute "and the MEPA" to "and MEPA". 2nd paragraph 3rd line substitute "may results" into "may result". (SMS – 9.3.1 page 47)	23/03/05	Note No.34: Noted with thanks.	26/04/05
35	The assessment and compliance limits for surface water monitoring should be given by the applicant and approved by the competent Authority. (SMS – 9.3.1 page 48)	23/03/05	Note No.35: Section 7.0 Table 2 Page 9 Addendum – Additional Information. Provided in Annex 1 to replies to question by IPPC Co-ordinator.	
36	The proposed laboratory to which the samples should be transferred to should be certified (accredited). (SMS – 9.4.3 page 49)	23/03/05	Note No.36: Noted. MEPA will notified accordingly.	26/04/05
37	The frequency of sampling should be suggested by the applicants and this should be approved by the competent authorities. (SMS – Table 10.1 page 51)	23/03/05	Note No.37: Section 7.0 Table 2 Page 9 Addendum – Additional Information.	26/04/05
38	The control and trigger levels should be suggested by the applicant and approved by the competent authority. (SMS – 10.4.1 page 52)	23/03/05	Note No.38: Section 8.0 Table 6 Page 16 Addendum – Additional Information.	26/04/05
39	The laboratory should be certified (accredited). (SMS – 10.5.3 page 54)	23/03/05	Note No.39: Noted. MEPA will notified accordingly.	26/04/05
40	The frequency of results of the groundwater level and quality	23/03/05	Note No.40: Section 7.0 Table 2 Page 9 Addendum – Additional Information.	26/04/05

	monitoring should be given to MEPA by the applicant and must be approved by the compet44ent Authority. (SMS – 10.5.4 page 54)			
41	Table given is empty and without examples. (SMS – Table 12.5 page 73)	23/03/05	Note No.41: Corrective action will be initiated when 50% of allowable concentrations are reached.	26/04/05
42	The laboratory sho49uld be certified (accredited). (SMS – 12.4.2 page 74)	23/03/05	Note No.42: Noted. MEPA will notified accordingly.	26/04/05
43	Kindly indicate what m OD stands for. (SMS – 12.7.1 page 77)	23/03/05	Note No.43: Ordinary Datum	26/04/05
44	Kindly note that the alternative installations should be permitted. (SMS – 17.3.16 page 100)	23/03/05	Note No.44: Noted. MEPA will notified accordingly.	26/04/05
45	Has hunting been considered before drafting bird abatement techniques? This should be considered especially if birds of prey are being considered. (SMS – 18.3.10 page 104)	23/03/05	Note No.45: No. To date birds have not been a problem.	26/04/05
46	MEPA should be informed immediately also if there is the presence of explosive waste materials. (SMS – 22.4.2 page 121)	23/03/05	Note No.46: Noted.	26/04/05
47	The term planning authority	23/03/05	Note No.47: Noted with thanks.	26/04/05

	should be changed into either MEPA or else competent authority. (SMS – 25.3.4 page 132)			
48	Kindly indicate source of figures for the calculations. (WBR – 2.1 page 1)	23/03/05	Note No.48: The figures are based on empirical data	26/04/05
49	The thickness of the liners should not be less than 1000m and not 500mm as suggested as well as that the permeability should not be greater than 1x10-9 m/s. (CS – 1.1.2 page 1)	23/03/05	Note No.49: See note no. 1	26/04/05
50	Appendices contain no information at all. (CS – 2.0 page 1)	23/03/05	Note No. 50: note taken Appendices are provided in hard copy only.	
51	Engineered full material should be changed into engineered fill material (CS – 3.3.2 page 3)	23/03/05	Note No. 51: note taken	26/04/05
52	The max rate of permeability should not be more than 1x10-9 m/s. (CS – 3.4.1 page 4)	23/03/05	Note No. 52: see note no. 1	26/04/05
53	The depth must not be less than 1000mm and not 500mm. (CS – 4.1.1 page 5)	23/03/05	Note No. 53: see note no. 1	26/04/05
54	Maximum permeability allowed should be 1x10-9 m/s. (CS – 4.1.5 page 5)	23/03/05	Note No. 54: see note no. 1	26/04/05

55	The laboratory should be licensed (accredited). (CS – 4.4.2 page 7)	23/03/05	Note No. 55: In fact all samples are sent to UK accredited laboratory	26/04/05
56	Minimum thickness of the layer should be 1000mm. 9CS – 8.1.1 page 21)	23/03/05	Note No. 56: see note no.1	26/04/05
57	Minimum thickness should be of 1000mm and max permeability should be of 1x10-9 m/s. (CS – 8.2 page 22)	23/03/05	Note No. 57: see note no.1	26/04/05
58	Minimum thickness should be of 1000mm and not of 500mm. (CS – 8.3.3 page 22)	23/03/05	Note No. 58: see note no.1	26/04/05
59	The thickness should be of 1000mm and not of 500mm and the maximum permeability should be of 1x10-9 m/s. (PC – 3.2 page 9)	23/03/05	Note No. 59: see note no.1	26/04/05
60	Foundation layer should be 1000mm thick and not 500mm. (CQA – 1.1 page 1)	23/03/05	Note No. 60: see note no.1	26/04/05
61	Foundation layer should be 1000mm thick and not 500mm. (CQA – 1.3 page 1)	23/03/05	Note No. 61: see note no.1	26/04/05
62	Foundation layer should be 1000mm thick and not 500mm. (CQA – 2.2 page 3)	23/03/05	Note No. 62: see note no.1	26/04/05
63	Foundation layer should be 1000mm thick and not 500mm and the maximum permeability	23/03/05	Note No. 63: see note no.1	26/04/05

	should be of1x10-9 m/s. (CQA – 3.1 page 5)			
64	GCL should be 1000mm thick and not 500mm. (CQA – 3.2 page 5)	23/03/05	Note No. 64: GCL is geo-synthetic clay liner. It is man-made product to replace natural clay.	26/04/05
65	No clearly defined appendices are found in the report. (CQA – General)	23/03/05	Note No. 65: Provided in amended version Appendices are provided in hard copy only.	
66	Maximum permeability should be1x10-9 m/s. (CQA – 3.2 page 6)	23/03/05	Note No. 66: see note no.1	26/04/05
67	Tests all failed the permeability tests as the max permeability should have been 1x10-9 m/s. (CQA – 4.2.4.3 page 10)	23/03/05	Note No. 67: see note no.1	26/04/05
68	The thickness should be 1000mm thick and not 500mm. 9CQA – 4.6 page 13)	23/03/05	Note No. 68: see note no.1	26/04/05
69	Why does SLR think that minor deviations from specifications of permeability testing does not constitute a significant effect on the performance of the foundation barrier as a geological barrier? (CQA – 5.1 page 15)	23/03/05	Note No. 69: SLR is an independent, liable, UK accredited environmental Company and their statements are founded on material facts based on acceptable general practice in the UK.	26/04/05
70	Why does SLR think that the minor failure will not have any significant impact on the performance of the foundation	23/03/05	Note No. 70: see above	26/04/05

	barrier? (CQA – 5.2 page 15)			