INSPECTORS REPORT
WASTE LICENCE REGISTER NUMBER 21-1

(1) Summary:

Name of Applicant	Mayo County Council
Facility Name (s)	Derrinumera Landfill Site
Facility Address	Derrinumera Newport, Co. Mayo
Description of Principal Activity	Landfill
Quantity of waste (tpa)	20,000 - 40,000 (maximum 39,000 in 2006)
Environmental Impact Statement Required	Yes
Number of Submissions Received	13 valid submissions received.
INSPECTOR'S RECOMMENDATION	The proposed decision as submitted to the Board be approved

Notices	**Issue Date(s)**	**Reminder(s)**	**Response Date(s)**
Article 14 (2) (b) (i)	Not Applicable		
Article 14 (2) (b) (ii)	3rd June 1998 7th October 1998	None Sent	3rd September 1998 2nd October 1998 21st October 1998
Article 14 (2) (a)	25/11/98		
Article 16	4/1/99 23/4/99	None Sent	4/2/99 1/6/99

Applicant Address	Mayo County Council, Aras na Chontae, Castlebar, Co. Mayo
Planning Permission status and date granted (if appropriate)	Not Applicable
Planning Authority	Not Applicable
For Local Authority applicants, is the facility within its own functional area	Yes
Is the facility an existing facility:	Yes
Prescribed date for application:	Prior to 1st March 1998
Date Application received:	27th February 1998
Confidential Information Submitted	No
Location of EIS in Application	Environmental Impact Statement, Volumes 1-4 (stand alone document)

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
14/5/98	Check notice & site visit	P Carey	Site Notice consistent with information in application - however, subsequently an EIS required
13/7/98	Check notice & site visit	P Carey	Site Notice complies with Art. 8
2/6/99	Site Visit	P Carey met Mayo Co Co (Ray Norton, Michael Mc Dermott, Annmarie Dolan),	Visit site and surrounds

(2) Class/Classes of Activity

The class(es) of activities for which the applicant has applied are marked below. The principal activity is indicated by (P), other activities by (X).

Waste Management Act, 1996			
THIRD SCHEDULE **Waste Disposal Activities**		**FOURTH SCHEDULE** **Waste Recovery Activities**	
1. Deposit on, in or under land (including landfill).	P	1. Solvent reclamation or regeneration.	
2. Land treatment, including biodegradation of liquid or sludge discards in soils.		2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).	X
3. Deep injection of the soil, including injection of pumpable discards into wells, salt domes or naturally occurring repositories.		3. Recycling or reclamation of metals and metal compounds.	X
4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.		4. Recycling or reclamation of other inorganic materials.	X
5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.	X	5. Regeneration of acids or bases.	
6. Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule.	X	6. Recovery of components used for pollution abatement.	
7. Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule.	X	7. Recovery of components from catalysts.	
8. Incineration on land or at sea.		8. Oil re-refining or other re-uses of oil.	
9. Permanent storage, including emplacement of containers in a mine.		9. Use of any waste principally as a fuel or other means to generate energy.	
10. Release of waste into a water body (including a seabed insertion).	X	10. The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system,	
11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.		11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	
12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.		12. Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.	
13. Storage prior to submission to any activity referred to in this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.	X	13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.	X

Class description:

Classes 1 and 5 of the Third Schedule refer to the operation of the landfill site.
Classes 6 and 7 of the Third Schedule refer to the treatment of leachate on site
Class 10 of the Third Schedule refers to the discharge of treated leachate to the Glaishwy River
Class 13 of the Third Schedule refers to the storage of hazardous waste material deposited in the civic amenity facility
Classes 2, 3, 4 of the Fourth Schedule refer to the collection of waste materials within the civic amenity site
Class 13 of the Fourth Schedule refers to the storage of recyclable waste materials such as household hazardous wastes and other bulky wastes deposited in the civic amenity facility

Activities recommended for licensing:

It is recommended that all, except Class 10 of the Third Schedule, of the above activities, for which the applicant has applied for a waste licence, be licensed. Class 10 refers to the discharge of treated leachate to the Glaishwy River, however, the available dilution ratios are not satisfactory and it is therefore recommended that Class 10 not be licensed.

(3) Facility Location

Appendix 1 contains a site location map.

The facility is situated in a rural location approximately 5.5km east of the town of Newport, on the Castlebar to Newport Road. The site is surounded by blanket peat bog and is remote from housing; the nearest residential property is located more than 1km away. There is an unauthorised halting site located approximately 650km south of the landfill adjacent to the acccess road to the site. Large tracts of land within the blanket peat to the north, west and east of the site have been afforested. The primary land use in the area is agriculture - principally small scale farming; mainly pasture. The Glaishwy River passes 50m east of the site and flows into Beltra Lough some 3.5km north of the landfill. Beltra Lough is regarded as a prime salmonid fishery and has a salmon rearing farm on it. The Newport River which flows from Beltra Lough is also regarded as a prime salmonid fishery and water is abstracted from the River to supply Newport Town.

(4) Waste Types and Quantities

Non-hazardous waste only shall be deposited in the landfill. Household hazardous waste may be accepted at the civic waste facility.

The expected life of the facility and the expected maximum annual tonnage are indicated below.

Expected life of the facility, (in years)	8yrs from the end of 1998 (2006)
Maximum Annual Tonnage	39,000 (year 2006)

(5) Activity Summary

Derrinumera landfill has been in operation since 1974 (an existing facility) and is Mayo County Councils primary waste disposal facility. Wastes accepted at the facility are municipal waste, non-hazardous industrial wastes and sewage sludges. It is an unlined site. The depth of waste within the facility is approximately 10m.

Problems have occured due to leachate migration from the facility (within the licence application the applicant has stated that groundwater and the Glaishwy River have suffered some contamination due to leachate). Groundwater ingress into the site is also a problem. Mayo County Council propose to introduce a number of measures to upgrade the facility to achieve BATNEEC. These include: the construction of a horizontal drainage system around the perimeter of the landfill site to collect leachate/groundwater; installation of a low permeability barrier system around the perimeter to reduce the amount of groundwater entering; and the collection of landfill gas. The site is to be further developed with the construction of two lined cells on top of the existing waste. The anticipated lifespan of the site is until approximately 2006.

I recommend the following additional measures which have been included within the Proposed Decision (i) restrictions on the type of waste to be accepted at the facility (e.g. *Condition 5* prohibits the disposal of liquid or sludge waste into the landfill) and (ii) the removal off-site of leachate for treatment/disposal. The applicant did propose constructing a leachate treatment plant on site (including tertiary treatment using a reed bed), with the treated effluent discharging to the Glaishwy River, however, based on an assessment of available data, I cannot recommend such a discharge, as the required dilution is not available in the Glaishwy River.

(6) Facility Operation/Management

- **Waste Acceptance / Handling Procedures**

The applicant proposes to introduce waste acceptance / handling procedures as part of the measures to improve the facility, including measures for traffic control and provision of a weighbridge, waste quarantine areas and waste inspection areas. *Conditions 5.1 and 5.2* stipulate that only Non-Hazardous Waste will be accepted for landfill disposal. Condition 5.1 stipulates that no liquid or sludge waste shall be accepted at the facility from the date of grant of licence. *Condition 5.3* specifies waste types to be accepted at the civic waste facility, and allows for the acceptance of Household Hazardous Waste. *Condition 5.4* requires details on waste acceptance procedures.

- **Nuisance Control**

Potential nuisances are controlled by *Condition 6 Environmental Nuisances.* The potential for wind-blown litter will be minimised by restricting the size of the working face (*Condition 5.11)* and through the installation of a litter fence as required by *Condition 6.5*. Restricting the size of the working face (*Condition 5.11)* and the use of daily cover, as required by *Condition 5.12,* minimises potential odour nuisance, and any nuisance caused by vermin, insects and birds. *Condition 4.22* requires the applicant to submit proposals on landfill gas control (which will control landfill gas odours) for the Agency's agreement. Traffic using the site will use the wheel-wash to prevent the tracking of any materials onto the public road. Scavenging is not allowed at the facility and is prohibited by *Condition 5.8*.

- **Hours of Operation**

Monday to Friday 08.00 to 18.00 inclusive and Saturdays 08:00 to 13:00. Any changes in these hours are subject to the prior written agreement of the Agency.

(7) Facility Design

- **Infrastructure;**

The boundary of the facility shall be delineated by wire mesh fencing, which links into a 2.4m security fence and access gates at the entrance. The access road (LT 4212) to the site from the Castlebar / Newport road (R311) is a dedicated road to the site (Mayo County Council extinguished the public right of way through this road as of 19th November 1997). The upgrading of the facility includes for the provision of a site office, civic waste facility, weighbridge, wheelwash, fuel storage area and garage for plant/equipment, waste inspection area, general site services e.g. electricity and telephone, and water supply. The provision and maintainence of this infrastructure is required by *Condition 4 Site Infrastructure*.

- **Liner System;**

The applicant proposes to develop two lined cells over the existing waste (known as piggyback construction). The applicant has proposed details for the lining system but *Condition 4.21* requires the licensee to submit further details to the Agency for its agreement on the system prior to construction.

- **Leachate Management;**

Currently leachate flows into ponds at the northern and eastern ends of the facility. These ponds were created by construction of a bund along the length of these two sides of the landfill. The bund is constructed of native sandy till and does not act as a complete barrier to flow. A weir has been cut at the north western end of the bund to allow leachate to discharge to the bog to the north of the site. In addition to the main discharge there are a number of areas further east and south where leachate seeps through the bund. Leachate discharged in this way makes its way to the Glaishwy River or infiltrates into the glacial deposits.

The applicant proposes to construct a leachate treatment plant including a reed bed for tertiary treatment and to discharge the treated leachate to the Glaishwy River. Having assessed available data it is considered that the available dilutions are not adequate to permit such a discharge. To reduce the impacts of leachate on the surrounding ground and surface water resources, *Condition 4.23* requires the applicant to establish a leachate collection system. Leachate from existing waste is to be collected via a trench installed on the landfill side of the cut-off wall and shall drain to a sump. *Condition 4.23* requires the collected leachate and leachate ponded on the northern and eastern sides of the landfill to be tankered off-site for treatment/disposal. *Condition 4.23* also requires the applicant to submit a report/proposals on leachate management. There is a requirement for the applicant to provide a leachate treatment plant on-site unless otherwise agreed with the Agency (*Condition 4.23)*, in which case the leachate would be pre-treated prior to tankering off-site. There is no requirement for the applicant to provide a reed bed as this is no longer considered necessary since leachate will be tankered off-site.

- **Landfill Gas Management;**
  Condition 4.22.1 requires the applicant to submit details for the control of landfill gas (including proposals for flaring and utilisation of landfill gas) within a six month period.

- **Capping System;**

Condition 4.24 specifies the requirements for capping. *Condition 4.24* also requires the applicant to submit details on surface water run-off from the capped/restored landfill.

(8) Restoration and Aftercare

Condition 8.2 requires the applicant to submit details to the Agency for its agreement on restoration and aftercare.

(9) Emissions to Air

Emissions to air include landfill gas, odours and dust. Potential future emissions include the combustion products of landfill gas and aerosols from the aeration of leachate.

A dust survey was undertaken but the results obtained were inconclusive due to spoiling of dust monitors by birds. During the Inspectors site visits to the facility no problems with dust were observed. Dust monitoring is required through *Condition 9.1*. Emissions of dust are reduced by the placement of daily cover and compaction of the waste. Where emissions of dust are generated, particularly during dry windy conditions, *Condition 6.4* requires the use of a water tanker to dampen the access and internal haul roads. *Condition 7.1* sets an emission limit for dust at the facility boundary.

Landfill gas has been detected outside of the waste body. The area surrounding the landfill consists of peatland which also produces gases. *Condition 7.5* requires the applicant to submit proposals, for the Agency's agreement, on trigger levels for landfill gas on or in the immediate vicinity of the facility. In addition, *Condition 7.1* sets emission limits for landfill gas detected in buildings. Landfill gas monitoring requirements have been established in *Conditions 9.1,* and *9.4. Condition 10.7* requires further action, including investigations and remedial action to be taken if trigger levels or emission limits are exceeded.

(10) Emissions to Groundwater

10.1 Geological Information
The site is underlain by rocks of the Croaghmoyle formation (Devonian rock) which comprises red conglomerates with mainly quartzite pebble clasts and are believed to derive from debris flows on an alluvial fan. Bedrock surface around the landfill is generally found at a shallow depth with outcrops to the west and to the south of the site. The area surrounding the site is covered with blanket peat. Beneath the peat where bedrock is deeper, there is evidence of glacial deposits consisting of very sandy glacial till (boulder clay) and fluvioglacial outwash sands. Both deposits contain silt, gravel, cobbles and boulders while the till also contains clay. Overburden is generally less than 3.5m thick.

10.2 Hydrogeological Information
Nine boreholes were drilled at seven locations. Six into bedrock, two into the overburden and one within the fill area.

The overburden deposits in the area, although quite permeable in places, are thin and unlikely to be utilised as a water supply. These deposits act as a potential pathway for contamination of the two potential receptors, the bedrock aquifer and the Glaishwy River. The bedrock is considered to be a poor aquifer usually capable of only yielding domestic supplies. The most significant inflow of groundwater into the waste body is thought to be from the overburden and bedrock at the western boundary of the landfill. Groundwater flow direction is north-eastwards towards the Glaishwy River where it is expected to discharge. Mayo Co Co propose to reduce the potential for leachate to migrate into the overburden and bedrock by minimising inflow of groundwater to the landfill by excavating a trench in the glacial deposits an all sides of the site and constructing a cut-off barrier in this trench (*Condition 4.19*). *Condition 4.23* requires the applicant to submit proposals to reduce levels of leachate within the existing waste body. *Condition 9.9* requires the applicant to establish a programme for the monitoring of leachate levels within the waste.

10.3 Groundwater Quality
Results of water quality sampling showed that a number of parameters exhibited high levels in both upstream and downstream boreholes (magnesium, sodium, potassium, nitrate and nitrite, pH, conductivity). There would appear to be an unidentified source of upgradient pollution (possibly fertiliser). Leachate is also impacting on groundwater downgradient e.g. ammonia. The construction of a cut-off wall as required by *Condition 4.19* and the management of leachate will minimise the potential for future impacts of leachate on groundwater.

10.4 Groundwater Control & Monitoring
Groundwater is monitored by a network of boreholes within and in the vicinity of the facility. *Condition 4.19* requires the installation of further boreholes on the eastern and southern sides of the landfill. Groundwater monitoring is required by *Condition 9.1*.

(10) Noise Emissions

The operation of plant and machinery is the main source of noise associated with the facility. The nearest sensitive receptor is a halting site (temporary dwellings) located on the regional road (R311) some 650m south of the landfill. The nearest residential property is approximately 1150m to the south west of the facility. The facility is remote and unlikely to give rise to any noise problems. Noise emission limits are established by *Condition 7.1*. *Condition 7.4* requires that there shall be no clearly audible tonal component in noise emissions from the facility. Noise monitoring of the facility is required by *Condition 9.1*.

(11) Emissions to Sewer

There are no direct emissions to sewer. A septic tank has been installed on-site to deal with sewerage arising on the facility. Effluent from the septic tank shall drain to a foul sump and shall be tankered off-site. Leachate shall be tankered to the Sewage Treatment Works at Castlebar.

(12) Emissions to Surface Water

12.1 Existing Situation

Runoff from precipitation in the vicinity of the landfill enters the Glaishwy River which is little more than a drain at its nearest point to the site (50m). Leachate from the ponds at the northern and eastern ends of the landfill also makes its way to the River. The flow in the Glaishwy River and the degree of dilution downstream are primarily dependent on the catchment area, this is quite small within the proximity of the landfill so that the impact of the landfill on water quality is considered high at this point. The Glaishwy River flows into Lough Beltra which is regarded as a prime salmonid fishery.

Chemical analysis of surface water parameters in the Glaishwy River indicate that it has been affected by leachate from the landfill. In general levels of all chemical parameters measured (BOD, COD, calcium, magnesium, sodium, potassium, iron, manganese, aluminium, nitrate, nitrite, chloride and ammonia) are elevated compared to those upstream. The Glaishwy River is subjected to a high growth of plants, especially in the vicinity of the landfill and the applicant has stated within the application that this may be attributed to phosphorus in the waste discharge/runoff from the landfill. Investigations dated 6/10/98, 8/10/98 and 12/10/98 by the applicant into the quality of Lough Beltra identified a lot of algae species around the lake shores. A chlorophyll estimation from the south shore yielded a result of 23mg/m^3 indicating an early warning sign of eutrophication. The conditions proposed should ensure that leachate will not impact on Beltra Lough in the future.

12.2 Mitigation Measures
Mayo Co Co have proposed measures to mitigate impacts on surface water from the landfill. These include the collection of leachate from the existing waste body (*Condition 4.23)*.

12.3 Proposed Discharges to Glaishwy River
Mayo Co Co propose to discharge diverted surface water / groundwater and treated leachate to the Glaishwy River. The discharge of leachate is prohibited under *Condition 7.7*.

12.3.1 Flows in Glaishwy River
The Glaishwy River is an ungauged catchment so there is no historic flow data available. Information on the Glaishwy River (relating to flows and discharges to it) was requested in three separate notices by the Agency and only scant information was received from the applicant. However, the applicant has estimated flows by (1) intercatchment correlation of measured flows i.e. correlating downstream measured data (at Glaishwy bridge) with that on the Newport River (Hydrometric Gauging Station 32012 Newport weir - gauged station with historic data); and (2) from catchment characteristics alone. The dry weather flow at Glaishwy bridge is estimated to be $0.0041m^3/s$ and at the treated effluent discharge location is estimated to be $0.00092m^3/s$. No estimate was given for the 95%ile flow in the river, however in estimating the assimilative capacity it was assumed to be twice the DWF.

Using intercatchment correlation of measured flows (method 1 above) and a 95%ile flow in the Newport River of $0.74m^3/s$ for the period between 1982 and 1991 gives an estimate of $0.002m^3/s$ for the 95%ile flow in the Glaishwy River. However, this value must be treated with caution ($0.002m^3/s$) as it may be an over-estimate.

Flow results taken on 31/5/99 indicated that leachate flow ($0.0024m^3/s$) to the Glaishwy River was over twice the River flow measured upstream ($0.001m^3/s$) of the effluent discharge point. Analysis of samples taken on the same date indicates that the leachate was having a significant impact on the Glaishwy River. These results are given in Table 12.1.

Table 12.1 Water Quality of the Glaishwy River

Parameter (All units in mg/l except pH)	Leachate	Glaishwy River (u/s eff)	Glaishwy River (d/s eff)	Glaishwy Bridge (d/s eff)
pH	7.2	7.7	7.6	8
BOD	1791	6.4	281.5	1.9
SS	1144	14	91	4
TON	<0.010	0.57	0.1	0.99
O-Phos	57	0.102	6.85	0.045

Ammonia	650	1.26	117	0.06

12.3.2 Groundwater/Surface Water Diversion

To minimise water infiltration into the facility, the applicant proposes to install a cut-off wall/trench to divert groundwater/surface water around the facility. Diverted water shall discharge to the Glaishwy River via a settlement pond. *Condition 4.19* requires the applicant to provide details of the settlement pond prior to its construction and before any discharge to the Glaishwy River. *Condition 9.7* requires the applicant to submit proposals for the agreement of the Agency on a monitoring programme for both the surface water emission flow and the flow in the Glaishwy River. *Condition 9.1* requires the monthly monitoring of the discharge and ongoing monitoring upstream and downstream of the discharge point.

12.3.3 Discharge of Treated Leachate

Mayo Co Co propose to discharge treated leachate after tertiary treatment to the Glaishwy River (approximately 20m downstream of the proposed surface water discharge). The Proposed Decision does not allow for such a discharge as the available dilution is not adequate (Calculations attached as Appendix 2), and *Condition 7.7* requires leachate to be removed from the facility for treatment at Castlebar Sewage Treatment Works. An available dilution of only 1.9 (estimate) is available when the estimated maximum allowable discharge is used. The applicant estimated that a dilution of 23 is required to limit the increase in the post dilution ammonia level (ammonia is the critical parameter after tertiary treatment). In order to achieve a dilution of even 20 the discharge volume would be limited to 8.64m3/d or 0.36m^3/hr. It is therefore recommended that no treated leachate be discharged to the Glaishwy River.

12.4 Monitoring

Monitoring frequencies have been increased at this facility as monitoring results to date indicate problems with leachate in surface water and groundwater. Ortho-phosphate levels measured in the leachate are high (over 9mg/l measured on 14/7/98), hence the immediate prohibitation of acceptance of sludges and liquid wastes is proposed. Water quality in the Glaishwy River downstream of the uncontrolled leachate discharges reflects the impact of leachate on the river with very high results for parameters associated with leachate, e.g. BOD and ammonia. The number of site inspections and audits recommended reflect the conditions attached to the waste licence, the existing condition of the site and the fact that a lot of remediation work is required in order for this facility to satisfy BATNEEC.

(13) Other Significant Environmental Impacts of the Development

Cultural heritage: There is a possible burial mound identified as Site D in attachment C3 of the application. *Condition 4.25* requires that no engineering works be

undertaken within 50m of the mound unless it is pre-tested by a qualified archaeologist under licence from the Heritage Service in the Department of Arts, Heritage, Gaeltacht and the Islands.

(14) Waste Management, Air Quality and Water Quality Plans

No relevant (under Waste Management Act, 1996) Waste Management Plan exists. Mayo County Council have a Waste Management Plan dated September 1995. No details were provided on Air Quality and Water Quality Plans.

(15) Submissions/Complaints

Appendix 3 contains a list of all submissions, and copies of same, received relating to the application. The dates received and the details of the individual, department, group or organisation making the submission are provided.

An overview of all submissions received in relation to the waste licence application is provided. This includes a summary of all issues raised in the submissions and clearly shows how these issues are dealt with in the proposed decision.

1. **Mr. Frank Chambers on behalf of the Director of Newport and District Development Co. Ltd. (NADDCO) Newport Co. Mayo submission received 20th May, 1998**

NADDCO state that large amounts of leachate have made there way into the main drinking water source for the community. NADDCO are anxious that the concerns of the people in relation to their water supply will be addressed in the conditions of the licence.

Response

Condition 4.23 provides for leachate management at the facility. Leachate is required to be tankered off-site for treatment/disposal. Any discharge of leachate to the Glaishwy River must be treated as in an incident in accordance with *Condition 3.1*.

2. **Senator Frank Chambers, Seanad Éireann, Dublin 2 submission received 30th September 1998**

Senator Chambers expressed concern that the people of Newport are drinking water which takes in all the leachate and effluent from the Derrinumera Dump. He states that effluent from the landfill runs freely in a stream directly into the inlet to the Newport River at Beltra Lough. He asks whether it is right to allow people to drink this contaminated water supply. He states that alternative ways of supplying water to the people of the Newport area should be examined and put into action.

Response

The content of this submission is dealt in 1 above. The above submission was also treated as a complaint and it was dealt with in accordance with procedures for dealing with complaints. Both Mayo County Council and Senator Chambers were written to regarding the matter and Mayo Council were requested to submit a report regarding this matter. A report was received on 4th November 1998 and was used in the assessment of this application.

3. Mr Seamus Mannion Regional Manager Community Services Western Health Board (WHB)Merlin Park regional Hospital Galway submission received 7th December 1998

WHB wished to know whether the EPA had assessed the implications of this development on human health in light of attached information.

Response

The Inspector was unclear what the term "attached information" referred to and telephoned the WHB on 8/12/98 for clarification and was told that it referred to the fact that the application had an environmental impact statement. The application has been assessed in accordance with the relevant Regulations.

4. Mr Vincent Roche Chief Officer North Western Regional Fisheries Board (NWRFB) submission received 16th December, 1998

Summary of main points.

a) The NWRFB state that water quality of the Yellow (Glaishwy) River has deteriorated due to discharges of leachate from Derrinumera Landfill. They state that this River is a spawning and nursery stream for the Beltra Lough and that it is imperative that the water quality is returned to its original standard. They state that if the proposed upgrading, with leachate treatment, is managed and monitored properly that it should assist in improving the existing water quality of the Yellow River.

b) The NWRFB state that if this was a location for a new facility, they would completely reject it because it is so close to a top class salmonid fishery.

c) The NWRFB state that they would prefer if treated leachate were discharged to a constructed percolation area between the facility and the River.

d) The NWRFB consider that a fish population survey should have been carried out on the Glaishwy River and that metal analysis on the bottom sediments of Lough Beltra should have been undertaken to determine if the existing landfill had already affected the lake.

e) The NWRFB consider it appropriate that they should be named as an authorised body for inspection purposes of the facility (its upkeep, management, maintenance and monitoring). The NWRFB state that they should be a named body for notification in the event of any type of emergency and that they should receive all water quality monitoring data, relating to the landfill produced by both the EPA and the Council as soon as it becomes available.

f) The NWRFB stress that they are anxious to see a very high level of inspection and monitoring on part of the Agency. They state that they also expect the EPA to act immediately on any breach of licence conditions or any incident resulting in a risk of pollution.

Response

Matters concerning leachate are dealt with as in 1 above. *Condition 9.3* requires the licensee to carry out a biological assessment of the Glaishwy River including fish population surveys. *Condition 3.6* requires the NWRFB be notified in the event of any incident. All monitoring data will be available for public inspection and the licensee is required to establish a communications programme in accordance with *Condition 2.7*. *Condition 9* sets out monitoring requirements.

5. Mr. Jackie Deffely Secretary Glenisland Co-Op Glenisland Castlebar submission received 23rd December, 1998

Summary of main point:.

a) *Glenisland Co-Op state that they are concerned with the effect the dump has on Lough Beltra as the stream that flows from the dump flows directly into the Lough. They state that there is a cess pool held between a barrier dam and dump, which overflows during periods of heavy rain which is often, resulting in it reaching the lake. They provide a date when such an incident occurred and state that the floor of the lake is covered in a thick black scum as a result of such incidents. They state that they are concerned the lake will suddenly end up polluted and give what happened at L. Conn as an example of case in kind.*

b) They state that it is an area of high rainfall, that local rock is almost impermeable and that there is a layer of blanket peat of almost 1m, so there is no porosity and the gradient ensures water from the dump runs off rapidly to Lough Beltra.
c) They state that they feel the dump is poorly supervised.

Response
Matters concerning leachate are dealt with as in 1 above. *Condition 2* sets out requirements regarding the management of the activity.

6. Mr. Kieran J. Thompson Newport House Newport Co. Mayo submission received 23th December, 1998
Mr. Thompson states the following grounds as the basis for his objection to the further development of the landfill.
a) Landfill sites are no longer an acceptable solution for waste disposal within the EC.
b) The existing dump has been polluting Lough Beltra/Newport River for many years.
c) Mayo County Council are unfit to manage the facility. Mr. Thompson also states that Mayo County Council have ignored his objections and includes a letter written to Mayo County Council in which he states his concerns and to which he states he did not receive a reply. Mr. Thompson concludes by stating that if the dump is not closed then its future management should be assigned to somebody other than Mayo County Council.

Response
Issues of concern are dealt with in responses 1 to 5 above.

7. Senator Frank Chambers, Seanad Éireann, Dublin 2 submission received 24th December 1998
States that if Agency's decision is to grant a licence that the following should be included:
a) Guarantees are put in place to protect the health and safety of people who are water users of the Newport River town supply.
b) A time limit be put in place on the usage of this landfill.
c) Control and restrictions be put in place on the type of waste and materials that are allowed to be dumped in it.

Response
Issue a) is dealt with in 1 above. *Condition 8.1* sets limits for the final profile of the landfill and hence time span of waste disposal. *Condition 5* places restrictions on waste types to be accepted at the facility.

8. Mr. Seamus Mannion, Regional Manager, Community Services, Western Health Board (WHB) submission received 13th January, 1999
WHB state that they would like to see the following issues addressed:
a) Location of any wells in the area which may be used by locals as their drinking water source.
b) Proposed drinking water supply for operatives working on site.
c) Proposed sewerage disposal methods for proposed sanitary accommodation.
d) Will any chemical or wetting agent be used in the wheel washing process proposed for dust suppression and if so where is it to be disposed.
e) Rodent and pest control and birds carrying litter off-site.
f) Back up systems in relation to storage of leachate in the event of break down of the proposed sequencing batch reactors.

Response
Issues a), b), c), d) e) are dealt with through *Conditions 9.10, 4.8, 4.11, 5,* and *6.10* respectively. Issue f) is dealt with in 1 above.

9. Mr Barry O Reilly Archaeologist National Monument Services Dúchas submission received 20th January, 1999

Dúchas state that they would be unhappy with development in the vicinity of Site D as identified during the archaeological fieldwork. They recommend a programme of more detailed archaeological survey work and that such investigations should be undertaken prior to any ground disturbance for the development.

Response

Condition 4.25 addresses this matter.

10. Mr. Seamus Mannion, Regional Manager, Community Services, Western Health Board (WHB) submission received 10th May, 1999

WHB state that they received notification from Mayo Co Co that they were proceeding with the upgrading of the existing landfill and wanted to know if issues raised in their submission received 13th January were dealt with in advance of the upgrading.

Response

A letter relating to this matter was sent to WHB on 14/5/99. Matters raised are dealt with in 8 above.

11. Senator Frank Chambers, Seanad Éireann, Dublin 2 submission received 30th June, 1999

Senator Frank Chambers expressed concerns over the following:

a) What materials are being dumped.
b) Treatment of leachate that runs from the site to the Newport River.
c) The protection of the water supply to Newport Town and surrounding area.
d) Improvement of Castlebar/Newport Road and the Lodge Road through Fahy to Newport because of extra traffic generated due to closure of dumps in Claremorris and Belmullet and throughout the County and the need to protect the rural environment with the appointment of a litter control officer so as to protect the rural environment.

Response

Issues a), b), and c) have been dealt with in 7 above. *Condition 5.6* restricts the quantity of waste to be accepted for disposal at the landfill. *Condition 6* places control on litter nuisance from the facility.

12. Mr. John Loftus on behalf of the Director of Newport and District Development Co. Ltd. (NADDCO) Newport Co. Mayo submission received 8th July, 1999

Summary of main points:

a) NADCO state that Mayo Co Co allowed dumping, without any supervision, of toxic heavy metals, chemical wastes, and tons of diseased salmon.
b) NADCO state that they are concerned that the construction of a new dump on top of the old dump will force leachate out into the water saturated bog and the underlying sandstone formation where the dump is situated.
c) NADCO state there is an unacceptable high health risk to anyone using water in Newport as the water supply comes directly from the River into which the noxious potion flows
d) NADCO state that the road into Newport from Castlebar, is in essence a bogroad and has been made dangerous with all the heavy rubbish trucks.
e) NADCO state that seatrout and shellfish in the river and bay into which the river flows have been impacted which has economic consequences for the town.
f) NADCO state that they distrust Mayo Council based on historic management of the facility.

Response

Issues of concern have been addressed in 1, 5, 7, and 11 above.

13. Mr Vincent Roche Chief Officer North Western Regional Fisheries Board (NWRFB) submission received 13th July, 1999

Summary of main points.

a) The NWRFB reiterate that they consider that a fish population survey should have been carried out on the Glaishwy River and that metal analysis on the bottom sediments of Lough Beltra should have been undertaken to determine if the existing landfill had already affected the lake and that this would need to be rectified.

b) The NWRFB query a number of aspects of the licensees proposal referred to in Attachment 2 - Non Technical Summary which may have a direct and indirect repercussions on the water quality and on Beltra Lough

c) Concern over the capability of the proposed leachate treatment plant to deal with the high organic loading especially since Mayo County Council recently informed them that this would be the short term disposal route for sludge from surrounding sewage treatment works.

d) The NWRFB state that they welcome the Councils decision to include tertiary treatment(reed bed) but express concerns over operation and maintenance of the reed bed.

e) The NWRFB reiterate that they consider it appropriate that they should be named as an authorised body for inspection purposes of the facility (its upkeep, management, maintenance and monitoring) and also that they should be a named body for notification in the event of any type of emergency and that they should receive all water quality monitoring data, relating to the landfill produced by both the EPA and the Council as soon as it becomes available.

f) The NWRFB express concern over staff safety regarding installation of a perimeter drain around the entire site to supplement fencing as they will be regularly monitoring the landfill and Glaishwy River.

g) The NWRFB reiterate that that they are anxious to see a very high level of inspection and monitoring on part of the Agency. They state that they also expect the EPA to act immediately on any breach of licence conditions or any incident resulting in a risk of pollution

Response

Issues a), b), c), d), e) and g) have been addressed in 4 above. *Condition 4.3* controls site security.

Signed _____ Dated:

Name Peter Carey

APPENDIX 1
LOCATION PLAN

APPENDIX 2

FLOW MEASUREMENT ESTIMATES

Flow measurements:
The Glaishwy River is an ungauged catchment and as such there are no historical data for the River. Mayo County Council have provided results for one date (21/5/99) as given below for both the Glaishwy River and the Newport River (a gauged catchment with historic data). The historic results for Newport River were used to estimate flows in the Glaishwy River based on this one day sample (21/5/99).

Note: The following information was provided in the application:

date	location	flow
21/5/99	Glaishwy River:	0.0203 m^3/s
21/5/99	Newport Weir:	1.59 m^3/s

Previous measurements from gauged catchment:

drought years (DWF)

date	location	flow
13/9/95	Newport Weir	0.33m^3/s
18/8/84	Newport Weir	0.32m^3/s

The DWF measured at Newport Weir was used to calculate a DWF for the Glaishwy River. The DWF (0.32m^3/s) is equivalent to 20.13% of recorded flow at Newport Weir on 21/5/99. On this basis DWF at Glaishwy Bridge is 20.13% of 0.0203m^3/s = 0.0041m^3/s. On a catchment proportional basis, this gives a DWF at the proposed treated effluent discharge location of: 0.00092m^3/s

Note: The following information is based on data above and personal communication with M Mac Carthaigh, (EPA Dublin).

95% ile

date	location	flow
1982 - 1991	Newport Weir	0.74m^3/s

The 95% ile at the Newport Weir for the above period (0.74m^3/s) is equivalent to 46.5% of recorded flow at Newport Weir on 21/5/99. On this basis the 95%ile flow at Glaishwy Bridge is 46.5% of 0.0203m^3/s = 0.009m^3/s. On a catchment proportional basis, this gives a 95% ile at the treated effluent discharge location of: 0.002m^3/s

This value (0.002m^3/s) is only an estimate and personal communication with H Mc Ginley (EPA, Castlebar) would suggest that it is an over estimate. However, for the purposes of this assessment it has been used, because even with using this figure it will be shown that the Glaishwy River has not got the available flow to obtain the dilution rates required.

Assimilative Capacity
To estimate the assimilative capacity in the Glaishwy River the following formulae was used:

$$\text{Assimilation capacity } (AC) \text{ in kg BOD} \cdot \text{day} = (C_{max} - C_{back}) \times F_{95} \times 86.4$$

Where:

C_{max}	=4mg/l	maximum permissible BOD_5 concentration in the receiving water (this depends on the background level, here it is assumed as 4mg/l)
C_{back}	=2mg/l	the background (upstream) BOD_5 concentration (mg/l). This is based on data within Attachment C.9 of the application measured on 6/11/97 (BOD <2mg/l)
F_{95}	=0.002m^3/s	95% flow (m^3/s). This is estimated above. (Note: this figure is likely to be an over estimate)

86.4 adjusts for the different units and converts the load to a daily figure

Hence assimilative capacity = 0.35 Kg BOD day.

(Note a figure of 0.432Kg/day was provided in the application where 95% ile flow was assumed to be 2DWF (00017m^3/s), C_{max} (10mg/l) and C_{back} (1mg/l). They also stated that leachate production at 95% ile flow is 1.8m^3/hr, however an average per day figure of 4.5m^3/hr is also given in Table 1.14.)

BOD_5 LOADING, Kg/day

$$\text{BOD loading kg/day} = \frac{(\text{mg/l BOD}_5)(\text{m}^3/\text{d flow})}{1000}$$

Using the assimilative capacity derived above of 0.35 Kg BOD day, a BOD_5 of 4mg/l, the maximum permissible discharge is calculated as: 87.5m^3/day or 3.6m^3/hr.

DILUTION RATE

$$\text{No of dilutions available in the receiving water} = \frac{\text{flow in the receiving water} * (\text{m}^3/\text{day})}{\text{discharge volume } (\text{m}^3/\text{day})}$$

* Using the 95%ile flow figure

Flow in receiving water estimated as 0.002m^3/sec or 172.8m^3/day, discharge volume as calculated above of 87.5m^3/day gives a dilution ratio of 1.9.

The applicant has in the further information of 1st June 1999 set out effluent quality for certain parameters after secondary and tertiary treatment of leachate. These are as set out in the Table below

Parameter (All units in mg/l except pH)	**Discharge Limit**	**Effluent Quality Tertiary**	**Dilution required Tertiary**
BOD	Not increased by more than 2mg/l	<10mg/l	5
SS	Not increased by more than 10mg/l	<20mg/l	2
Ammonia	Not increased by more than 0.3mg/l	<7mg/l	23

Assuming the Agency was to use the above discharge limits (which I would not recommend), a dilution ratio of 23 after tertiary treatment would be required to meet the proposed limit. An available dilution of only 1.9 is available when the maximum allowable discharge is used. In order to achieve a dilution of even 20 the discharge volume would be limited to 8.64m^3/d or 0.36m^3/hr (which is only 10% of their requirements). It is therefore recommended that no treated leachate be discharged to the Glaishwy River.

Note: The above results are based on estimates.

APPENDIX 3

SUBMISSIONS