

**IAH (IRISH GROUP) FIELDTRIP SECRETARY REPORT,
4TH -5TH OCTOBER 2003**

**GORTADROMA LANDFILL.
ENNIS FLOOD STUDY & WATER SUPPLY**

Prepared by - Fionnuala Collins, Fieldtrip Secretary.

Lead by - Eleanor Boland (RPS-MCOS, Catherine Coxon (Trinity College Dublin),
Teri Hayes (White Young Green), Anita Furey (P.J. Tobin & Co. Ltd)

Attended by - 15 delegates

NAME	ORGANISATION
Gerry Baker	Geological Survey of Ireland
David Broderick.	Geological Survey of Ireland
Morgan Burke	TES Ltd
Fionnuala Collins	RPS-MCOS
Cecilia Gately	-
Caoimhe Hickey	Geological Survey of Ireland
Taly Hunter Williams	Geological Survey of Ireland
Coran Kelly	Geological Survey of Ireland
Patrick Laffly	Geosprings
Una Leader	Geological Survey of Ireland
Sonja Masterson	Minerex
Jenny Rush	Geological Survey of Ireland
Bruno Teillard	Geosprings
Conor Walshe	Thorntons Recycling
Eugene Daly	Eugene Daly Associates

The 2003 annual IAH (Irish Group) fieldtrip weekend was held in October and was based in Ennis. A visit to Gortadroma Landfill in west Limerick was made on Saturday morning with the remainder of the trip involving site visits in the Ennis area. The visit to Gortadroma was led by Ms. Eleanor Boland, RPS-MCOS. The Ennis Flood study was led by Anita Furey and Teri Hayes while the Ennis Water Supplies were led by Catherine Coxon. A total of 15 people attended the trip. Attendance was down on previous years by about half.

Saturday 4th October. Weather: cool, breezy with sunshine.

The first stop on Saturday morning was a viewing point on the 'mainland' overlooking Aughinish Island. From this vantage point, the Aughinish Alumina Site was visible along with the 'mud stack' spoil deposits, a by-product of the processing of bauxite to extract alumina. The key hydrogeological aspects of the site were introduced by Fionnuala Collins based on a hydrogeological report, information obtained from the EPA and a summary obtained from Kevin Forde of URS. A brief discussion followed.

On arrival at Gortadroma Landfill, which lies approximately 9km south of Foynes, the group were met by Eleanor Boland of RPS-MCOS and Sinead Kennedy, Executive Engineer, Environment Section, Limerick County Council.

Eleanor Boland gave an overview of the development of the landfill. Her presentation described the impact of EU and national legislation and national and regional waste management policy on the development of the landfill, a background history of the landfill, as well as the recent construction works at the site and its operational controls.

The presentation was followed by a site visit. The group walked over existing capped cells and viewed a new cell in which the leachate drainage blanket was visible. The leachate collection system was explained and the group viewed a leachate recirculation chamber within the cap from which leachate is redistributed through a series of HDPE slotted pipes in the waste. Alternatively leachate can be pumped from the collection sumps within the waste to the on-site leachate treatment plant. There are four original unlined cells on site from which leachate is pumped and which are contained by a bentonite cut-off wall. Currently there are 9 other lined cells which have been constructed according to modern engineering standards.

The gas collection system was also explained. Currently gas is being collected on site by a series of wells in the waste connected to a manifold system which draws the gas to a gas flare. A gas collection layer is also installed below the liner of the cap to distribute the gas evenly over each cell and avoid localised gas build up. There are plans to harness the gas and convert it to electricity which can be fed into the National Grid.



Gortadroma Landfill Aeration lagoon

The group then viewed the leachate collection and treatment area where fresh leachate from new lined cells and older leachate from older unlined cells are combined and treated. The leachate treatment system provides biological treatment, secondary clarification and tertiary polishing and comprises: a raw leachate storage lagoon; a biological treatment lagoon; an aeration basin; a polishing lagoon & clarifier, a sand filter, a peat filter and a treated leachate lagoon. Currently treated leachate is being stored on site and tankered off site to a waste water treatment plant. However once the system is properly commissioned it is planned to discharge the treated water to the White River in accordance with the conditions of the waste licence emission standards.

Following lunch the group returned to the Ennis area. At Clarecastle the barrage on the River Fergus was visible. It was constructed in the last century to control flooding by preventing high tides from reaching the town of Ennis and environs.

The group then visited Whelans quarry, at Fountain Cross, north of Ennis, to look at the local rock type. We were met by the manager – Louis Grijalva. Confidentiality agreements were signed such that site operations were not permitted to be photographed. The discussion within the quarry was led by Anita Furey.

The quarry was largely dry with only one relatively small area where excavations had reached the water table and some pumping of groundwater was being carried out.

The northern quarry face was comprised of largely competent rock with very little fracturing, a shallow zone of epikarst and thin or absent overburden. In contrast, overburden was encountered on the southern side and the limestone in this area was relatively highly fractured and weathered. The Ennis area is typified by Karst type hydrogeology but, apart from the epi karst, no major features of karstification were evident within the quarry itself.



Whelans Quarry, Fountain Cross, Ennis

Our final stop on Saturday, was Drumcaranmore swallow hole/Loughvella turlough located adjacent to a service station. The discussion of flooding and water quality issues was led by Teri Hayes, Catherine Coxon and Anita Furey. The turlough was not present at this time of year so we were able to view the swallow hole itself into which there was a small stream of water flowing. There was a strong smell of

animal manure around the swallow hole which is used by grazing animals for drinking water. Tracer studies have been undertaken in this area and have identified that it takes less than 12 hours for the water to reach Drumcliff Spring from where public water supplies are pumped.

Sunday 5th October. Weather: cool, damp and grey.

The meeting point for Sunday morning was in Ennis town in a carpark adjacent to the River Fergus. Anita Furey introduced Ennis flooding problems and discussed the drive by developers to build in the floodplain which to date has been resisted by the local Council.

Following this, we visited Poulacorey swallow hole, north of Ennis. Water from the Ballygriffy river sinking in this swallow hole passes to Drumcliff springs approximately 1 km to the south in 7-9 hours. Potential hazards in the vicinity include a graveyard, a farmyard and direct cattle access to the sinking stream. In addition, the sinking stream water has high levels of iron, turbidity and colour due to its source on the Namurian shale to the west, and this is reflected in problems with those parameters in Drumcliff springs following heavy rainfall.

Mary Burke, Senior Executive Chemist with Clare County Council, met us at Poulacorey swallow hole and then brought us to Drumcliff springs, from which the water supply for Ennis is pumped. We looked at the spring and sumps, and examined the source protection maps for Drumcliff drawn up by the Geological Survey of Ireland. The need for further implementation of source protection measures was discussed, and additional alternative water supplies for the rapidly growing Ennis area were also debated.

The final stop of the weekend was the swallow hole in the ground of St. Flannans college where a discussion of further flooding issues was led by Anita Furey.

The IAH would like to thank the following:

- Eleanor Boland, Project Engineer (RPS-MCOS)
- Sinead Kennedy, Executive Engineer, Environment Section, Limerick County Council.
- Catherine Coxon (Trinity College Dublin),
- Teri Hayes, Director (White Young Green) and
- Anita Furey, Project Manager (P.J. Tobin & Co. Ltd)
- Enda Whelan, Whelans Quarry, Fountains Cross, Ennistimon Road, Ennis. (with special mention to Louis Grijalva;
- Mary Burke, Senior Executive Chemist, Environment Section, Clare County Council, New Road, Ennis, Co. Clare.
- Kevin Forde, Senior Hydrogeologist, URS, Cork for summaries of the hydrogeological aspects of Aughinish Alumina, Syntex Roche (not visited) and of Drum Carranmore Swallow Hole/Turlough.

Finally, thanks also to all who attended the weekend and we hope to see you again next year.

Fionnuala Collins
IAH (Irish Group) Fieldtrip Secretary.

Papers/information sheets presented during the fieldtrip are available on line at iah-ireland.org.