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ENVIRONMENTAL MANAGEMENT FOR BUSINESS

INDEPENDENT CLOSURE AUDIT

BALLAGHVENNY LANDFILL

LICENCE NO. W0078-03

Prepared For: -

Tipperary County Council,
Civic Offices,
Limerick Road,
Nenagh,
Co. Tipperary

Prepared By: -

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Cork

November 2017

Project	Independent Closure Audit			
Client	Tipperary County Council W0078-03			
Report No	Date	Status	Prepared By	Reviewed By
171880101	02/11//2017	Draft Client Review	Jim O'Callaghan MSc, CEnv, MCIWM, IEMA	Sean Moran MSc, PGeo.
	06/11/2017	Final		

TABLE OF CONTENTS

PAGE

1. INTRODUCTION

Tipperary County Council (the Council) operates the Ballaghveny Landfill at Ballymackey, County Tipperary under Industrial Emissions (IE) Licence No. W0078-03 issued by the Environmental Protection Agency (the Agency). The licensed activities are landfilling and the operation of a Civic Amenity Area (CAA).

Landfilling was temporarily suspended in February 2011 and the CAA closed in June 2012. The site office is still in use by staff, as are the landfill gas and leachate control and management systems. The site roads are maintained for access for the leachate trucks and other maintenance vehicles. As the closure is a temporary arrangement, final restoration has not been carried out.

The Council owns a significant amount of land adjacent to the landfill cells and these form part of the licensed area. The lands, which include an 18th century house (Woodville House) and associated outbuildings have never been used by the Council for any waste related activities.

The Council now wishes to sell the house, out buildings and a portion of the surrounding land (total 7.4ha), hereafter referred to as the subject lands. This requires the amendment of the IE licence to remove the subject lands from the licensed area.

The Council consulted the Agency on this matter and the Agency informed the Council that, in order to progress the licence alteration, an Independent Closure Audit (ICA) must be completed. The Council commissioned O'Callaghan Moran & Associates (OCM) to carry out the ICA.

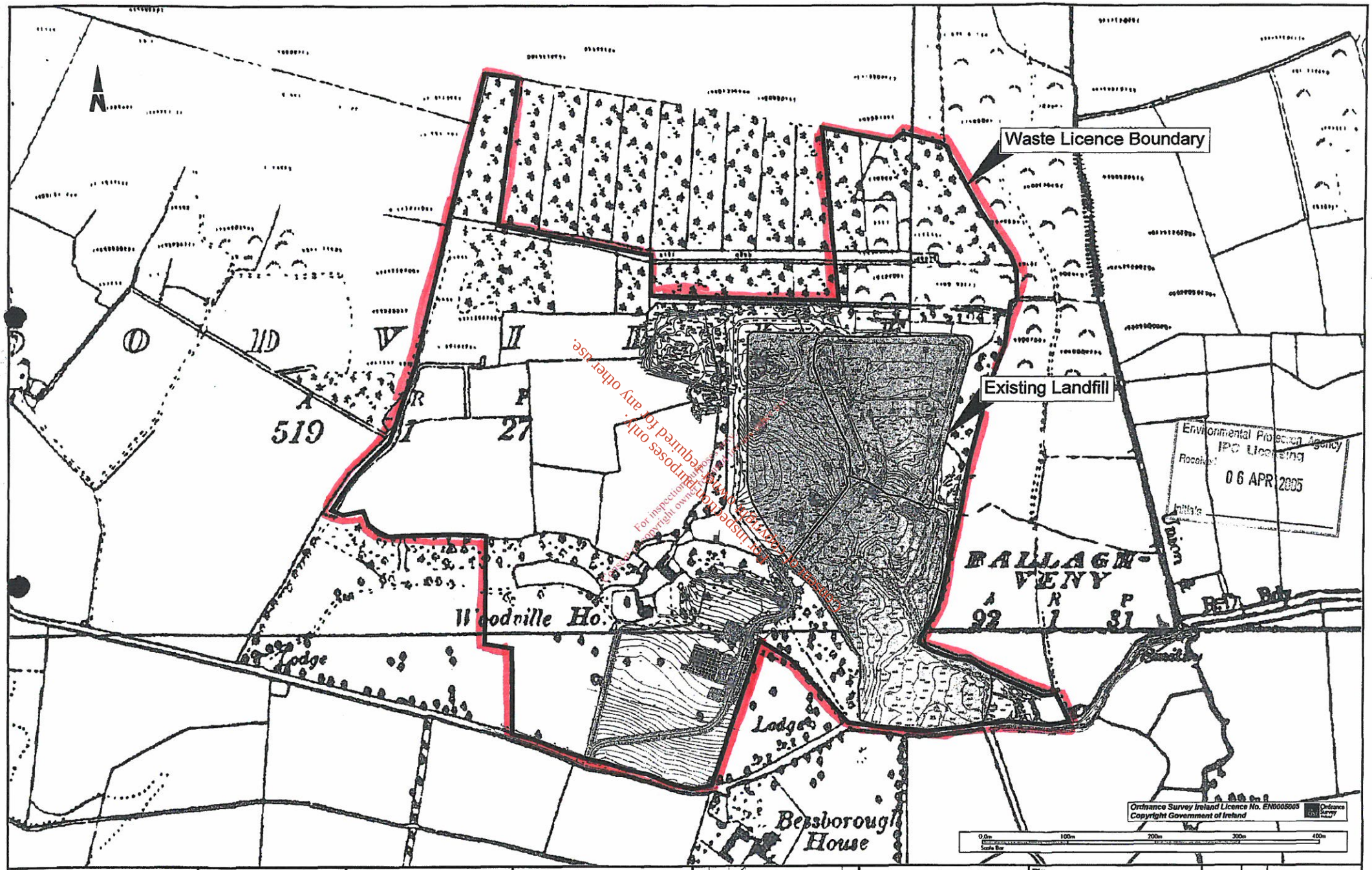
1.1 Methodology

The audit included a site inspection completed on the 10th October 2017, a review of results of the environmental monitoring carried out at the installation by the Council and took into consideration the Agency's guidance '*Guidance on assessing and costing environmental liabilities' (March 2014).*

1.2 Site Description

The installation is located in the townlands of Ballymackey and Woodville, approximately 4km north of Toomevara and 11km north-east of Nenagh. The total licensed area is 50.71 ha, of which approximately 8.5 ha has been developed as a landfill, with the remainder, including the subject lands, forming a buffer zone around the operational areas (Drawing No. DG0155-01).

The subject lands are shown on Drawing No. Ballaghveny_ Land to be surrendered from Licence. The western boundary is defined by the existing hedgerows/treelines. The local road forms the southern boundary and there is a locked access gate at the south-east corner. The Council has erected security fencing around the eastern and northern boundaries.



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NOTES

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2. All Levels refer to Ordnance Survey Datum, Main Head.
3. DO NOT SCALE, use figured dimensions only. If in doubt ask.

P01	04/04/05	Final Issue	W.M.
D01	18/03/05	Draft Issue	W.M.

Ballaghveny Landfill- Waste Licence Compliance

Title: Waste Licence Boundary

Drawn by:	C.N.	Job No:	MGE0001
Checked by:	S.A.	File No:	05050001DG0155
Approved by:	W.M.	Drg. No:	DG0155-01
Scale:	As Shown	Rev:	F01
Date:	Apr.'05		

Woodville House

Bessborough House

Lands to be surrendered from EPA licence lined red, Area = 7.382 Hectares 18.241 acres

0 50 100 Meters

NO.	Initials	Date	Description

TIPPERARY

COUNTY COUNCIL ENVIRONMENT

Scheme :-
Ballaghveny Landfill

Drawing title :-
Land to be surrendered from IE Licence "W0078-03

Director Of Services :-
Sean Keating
A/Senior Executive Engineer:-
Anne Peters

Drawn By :- L.Lee
Designed By :- L.Lee
Surveyed By :- N/a
Checked By :- L.Ryan
Scale/s :- 1:1000@A0 or as shown
Date :- July 2017

Drawing Name :-
Ballaghveny_ Land to be surrendered from Licence 2017.dwg

The subject lands are occupied by Woodville House, associated out buildings (barn and stables) and fields. The house and outbuildings are in a state of disrepair. Water is provided by an on-site well and there is potential access to the mains supply. It is understood there is an on-site septic tank. There was no evidence of any above ground fuel storage tanks. A number of the outbuildings have what appear to be asbestos containing roof tiles. The fields are regressing to semi-natural grassland.

1.3 Site History

1.3.1 Operational Area

Landfilling began in 1985 when Cells 1 and 2 were formed in what was a worked out sand and gravel quarry occupying ca 5.3 hectares. At the time the subject lands were not owned by the Council. In 1998 the Council applied to the Agency for a Waste Licence to operate the existing site and to construct additional landfill cells in an extension.

The Council acquired the subject lands and other lands adjoining the landfill in 2000 and included these in the proposed licensed area. The licence was granted in 2001. In 2005 the Council applied for a review of the licence to increase inter alia and the annual waste acceptance rate and this was granted in 2006. In 2009 the Agency initiated a review of the licence to bring it into conformance with the requirements of the EU Landfill Directive. The revised licence was issued in December 2009.

The installation was developed in four phases comprising 11 cells starting in 1985. Phase 1 (Cells 1 and 2) was designed on the 'disperse and attenuate' principle, with the remaining phases being designed as engineered containment. A permanent cap was placed over Phases 1 & 2 in 2007 and the original leachate storage lagoon was decommissioned. Phase 3 (Cells 6, 7 and 8) was capped in 2008. Cells 9 and 10a of Phase 4 were capped in 2011. At present the Wedge Cell, which is part of Cells 6, 7 and 8 and Cells 10b and 11a and 11b have not been filled.

Landfilling was temporarily suspended in February 2011 and the CAA closed in June 2012. The site office is still in use by staff as are the landfill gas and leachate control and management systems. The site roads are maintained for access for the leachate trucks and other maintenance vehicles. As the closure is a temporary arrangement, final restoration has not been carried out.

1.3.2 Subject Lands

In 2000 North Tipperary County Council acquired the lands from the landowners, who also occupied the house. Between 2002 and 2010 the lands were rented to a number of private individuals for agricultural use, primarily animal grazing and silage. The house was vacated in 2003 and has been unoccupied since then.

Between 2010 and 2012 the lands were leased to Centenary Co-op who planted and harvested rapeseed from the land. The lands have not been used for agricultural for any other type of activity since 2013.

1.4 Restoration and Aftercare Plan

As the subject lands have never been used for waste activities a restoration and aftercare plan is not required.

1.5 Limitations

This scope of this ICA is limited to the subject lands and does not include an assessment of the entire installation apart from those aspects that have the potential to impact on the environmental status of the subject lands.

2. SITE EVALUATION

2.1 Operator Performance

2.1.1 Environmental Management Systems

The subject lands are inside the installation's licensed area and are subject to the requirements of the Environmental Management System specified by Condition 2 of the IE Licence.

2.1.2 Compliance History

The Agency has never identified any non-compliances associated with either the use or condition of the subject lands. The Agency has never identified any non-compliance associated with the operation of the landfill that had the potential to have any adverse environmental impact on the subject lands.

2.1.3 Enforcement History

The subject lands have never been the subject of an enforcement action by the Agency.

2.1.4 Incidents History

There have been no incidents either on the subject lands or in the landfill operational areas that have the potential to cause soil and groundwater contamination.

2.1.5 Complaints History

No complaints have been received in the past three years.

2.2 Environmental Pathways & Sensitivities

2.2.1 Surface Water

There are no open drains across the subject lands. The closest surface water feature to the subject lands is a drain adjacent to the eastern half of the installation's northern site boundary. This drain flows eastwards and discharges into the Ballaghveny Stream.

The Ballaghveny Stream drains the south-eastern portion of the Brownstown Bog. It follows an U-shaped course to the south of Phase 1, turning west approximately 430m south of the south-eastern site corner, and then north again approximately 450m further west, before turning west again approximately 125m south of the southern site boundary.

The Ballaghveny Stream is a tributary of the Ollatrim River, which flows east to west approximately 600m south of the subject lands. The chemical and biological monitoring carried out in accordance with the licence conditions confirms the surface water discharge from the installation is not impacting on water quality in the Ballaghveny Stream.

2.2.2 Geology & Hydrogeology

The subject lands are underlain by sand and gravel that overlie tills, with depth to bedrock more than 21m in places. The remainder of the licensed area and the majority of the surrounding area is underlain by till. The underlying bedrock is a dark muddy limestone shale of the Ballysteen Formation.

The sands and gravels are classified as locally important gravel aquifer. The bedrock is classified as a locally important aquifer which is Moderately Productive only in Local Zones. There is a groundwater divide to the west and south west the waste depositional area. Ground water flow west of the divide is to the south and west, while east of the divide the flow is to the east and south.

The majority of the subject lands are west and south of the divide, as shown on Figure 17 which is an extract from the Hydrogeological Review/Technical Assessment (2015) completed in accordance with Technical Amendment B of the Licence.

The groundwater monitoring programme conducted at the installation in accordance with the licence conditions has established that the operational area is impacting locally on downgradient groundwater related receptors, with elevated benzene, ammonia, chloride, sulphate, phosphate, sodium, iron, manganese, chromium, mercury, nickel, and conductivity detected.

Phase 1 has a dilute and disperse design; however the placement of a clay cap in 2007 resulted in a significant improvement in downgradient groundwater quality and is proposed to further upgrade the capping system. There is evidence of leachate leakage from Phases 3 and 4 and a management programme is being developed to achieve compliance with the Groundwater Regulations (S.I. No. 9 of 2010).

2.2.3 Designated Sites

There are no Special Area of Conservation (SAC), Special Protected Areas (SPA) or National Heritage Areas (NHA) within the vicinity of the site. The nearest site is Ballintemple Bog NHA, approximately 4km to the north-east.

2.2.4 Emissions

There are no emissions from the subject site apart from rainwater run-off from the building roofs and this percolates to ground.

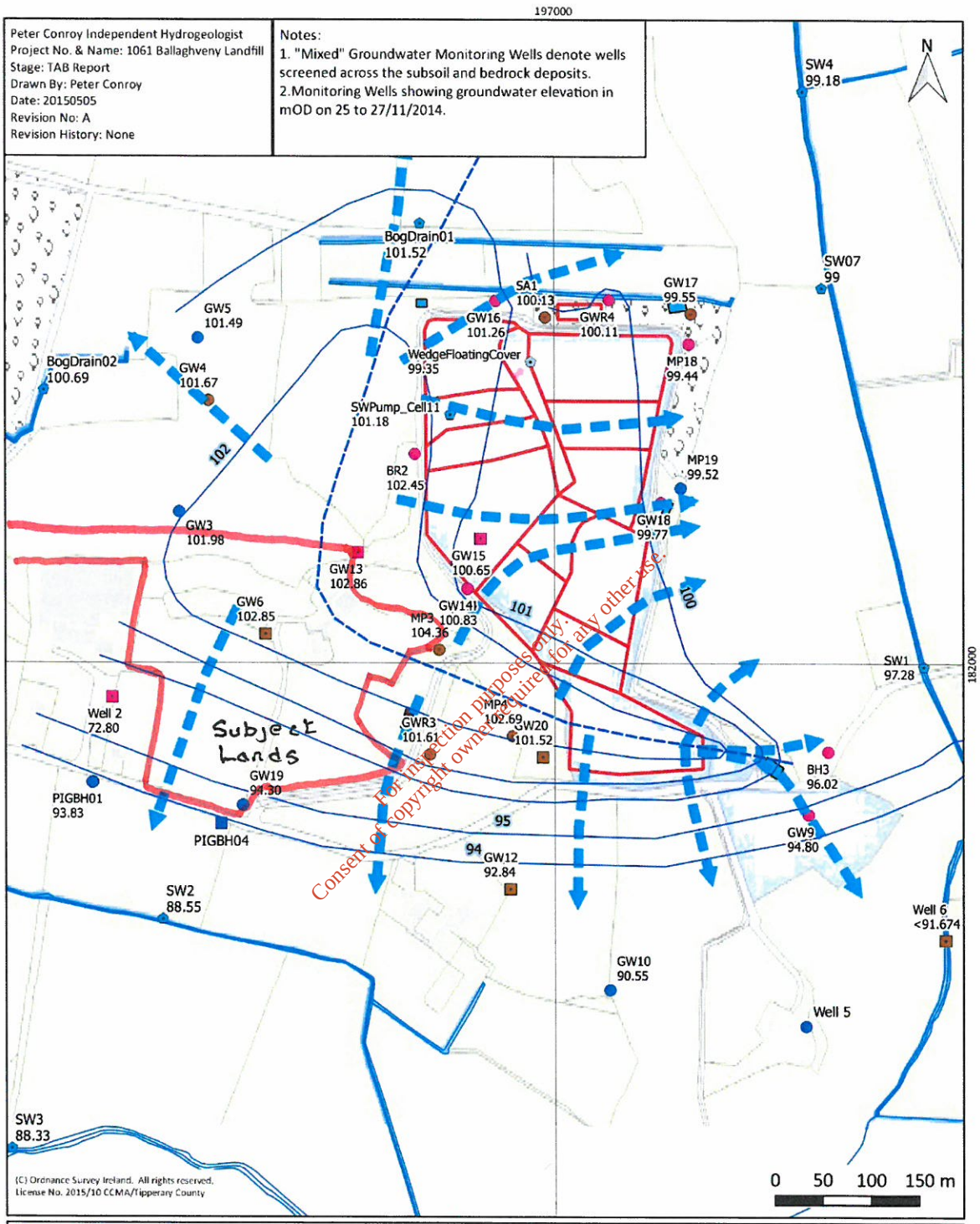

Figure 17 Groundwater Flow Directions

- Landfill Cell Boundaries
- Groundwater Elevation Contours (25-27/11/2014)
- Bedrock
- Subsoil
- Subsoil (Probably)
- Mixed Groundwater
- Mixed Groundwater (Probably)
- Floating Cover
- Surface Water
- Groundwater Flow Direction
- Groundwater Divide

3. CLOSURE TASKS

3.1 Management Team

The closure will be managed and implemented by Council staff.

3.2 Consumables/Wastes

There are no consumables or wastes on-site.

3.3 Buildings

As the buildings have never been used for waste related activities, it is not proposed to either clean them out, or demolish them. Prospective purchasers will inspect the subject lands and be aware of the condition of the house and outbuildings prior to the sale.

3.4 Soil & Groundwater Assessment

Waste related activities have never been carried out on the subject lands and there have been no incidents or accidents either within or outside the installation boundary that could have resulted in soil contamination on the subject lands.

The waste deposition areas are a source of groundwater contamination and a management programme has been put in place to address the issue. The majority of the subject lands is south of a groundwater divide and outside the potential zone of influence of the landfill cells. In the northern section of the subject lands, which is north of the divide, the direction of flow is to the north, towards the landfill cells and this portion is also outside the landfill cells zone of influence.

Groundwater monitoring point GW-19 is a bedrock well in the south-east corner of the subject lands as shown on Figure 17. The Hydrogeological Review/Technical Assessment concluded that, while GW-19 appears upgradient of the landfill cells and the hydrochemistry is indicative of contamination from agricultural activities, it was likely to be impacted by lateral migration of leachate in preferential pathways above the water table.

The results of the monitoring carried out in GW-19 between December 2015 and June 2017 are in Appendix 1. Of the twenty-one samples analysed ammonia exceeded the Groundwater Threshold Value[1] (0.065 – 0.176 mg/l) on two occasions. Iron and manganese levels were also elevated; however other potential indicators of leachate contamination (COD, chloride, sodium and electrical conductivity) were not.

[1] European Communities Environmental Objectives (Groundwater) Regulations S.I .No.9 of 2010, as amended

The results are generally consistent with the baseline groundwater quality in GW-5 which is a bedrock well located to the north-west of the operational area and outside its zone of influence.

The Council is continuing to develop the groundwater management programme and it will be a condition of the sale agreement that the Council will have unrestricted access to GW-19 for monitoring purposes.

3.5 Landfill Gas Assessment

All the areas where waste have been deposited have been covered by a low permeability cap that incorporates a landfill gas collection system. The gas is abstracted and flared to control gas pressure, which is the driving force for gas migration. Landfill gas monitoring wells are positioned in the natural ground outside the landfill cells and methane, carbon dioxide and oxygen levels are measured monthly.

The results of the monitoring in MP-04, which is to the east of the subject lands and MP-03, which is near the north-east corner of the subject lands confirm that landfill gas migration from the waste deposition area is not occurring.

3.6 Criteria For Successful Closure

As waste activities have never been carried out on the subject lands, there are no wastes or materials associated with the landfill stored on site, there is in no evidence of any soil and groundwater contamination, and no indication of landfill gas migration, the criteria for successful closure is that a Closure Audit has been completed and approved by the Agency.

4. CLOSURE PLAN COSTING

4.1 Cost Summary and Financial Provision

The costs incurred by the Council include the erection of the security fencing, the completion of the ICA and auctioneers fees. These costs will be recouped from the sale price.