



ENVIRONMENTAL IMPACT STATEMENT FOR THE CONTINUED OPERATION & INTENSIFICATION OF POWERSTOWN LANDFILL, CO. CARLOW



VOLUME 1 OF 3 - NON TECHNICAL SUMMARY
FEBRUARY 2012



ENVIRONMENTAL IMPACT STATEMENT FOR THE CONTINUED OPERATION & INTENSIFICATION OF POWERSTOWN LANDFILL, CO. CARLOW

CARLOW COUNTY COUNCIL

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Abstract: This report forms the non-technical summary of the Environmental Impact Statement for the continued operation of the landfill at Powerstown, Co. Carlow.

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GLOSSARY

Daily cover	Is the term used to describe material spread (about 150 mm if soil cover is used) over deposited waste at the end of each day. Synthetic materials may also be used. Its objective is to minimise odour, the amount of litter generated and to control flies and access to the waste by birds and vermin. Where soils are used for daily cover, it is recommended that they be removed at the start of the day and subsequently reused as much as possible.
Green waste	Waste wood (excluding timber), plant matter such as grass cuttings, and other vegetation.
Hours of operation	The hours during which the facility is authorised to be operational.
Hours of waste acceptance	The hours during which the facility is authorised to accept waste.
Interceptor	Device installed according to the International Standard I.S.E.N 858-2:2003 (Separator systems for light liquids (e.g. oil and petrol) – Part 2: Selection of nominal size, installation, operation and maintenance.
Landfill footprint	Refers to the area of the facility where the waste is disposed of by placement on the ground or on other waste.
Landfill gas	Gases generated from the landfilled waste.
Landfill gas management system	Network of pipes which extracts landfill gas from the waste body and conveys it to a flare or engine.
Leachate	Rainwater which falls on areas containing waste.
Leachate management system	Network of pipes which collect leachate and convey it to a leachate pond and leachate holding tank where it is then taken off-site for disposal
Municipal solid waste:	Household waste as well as commercial and other waste, which, because of its nature or composition, is similar to household waste, excluding municipal sludges and effluents.
Recyclable materials	Those waste types, such as cardboard, batteries, gas cylinders, etc which may be recycled.
Residual waste	The fraction of collected waste remaining after treatment or diversion.
Stormwater	Rainfall that falls on any area of the site free from waste i.e. roads, buildings etc.
Wastewater	Foul water from facility buildings.
WEEE	Waste Electrical and Electronic Equipment
White goods	Refrigerators, cookers, ovens and other similar appliances.
Working face:	The area of the site in which waste other than cover material or material for the purposes of the construction of specified engineering works is being deposited.

PREAMBLE

Carlow County Council (CCC) was granted permission by An Bord Pleanála in 2004 (01.EL2020) for an extension of the landfill which included the development of a new site entrance, site offices, civic amenity centre as well as four engineered cells for the purposes of landfilling. Condition 1 of this permission included a time limit of 8 years, requiring landfilling activities to cease at the site in January 2012:

1. *"This approval relates only to an 8 year period from the date of this order. At the end of this period the landfill shall be capped and the lands reinstated to grassland, unless approval has been granted for an extension of landfilling on the site.*

Reason: *In order to clarify the period to which the approval relates and to enable a reassessment of the development in the light of circumstances then prevailing, including the implementation of an integrated waste management strategy for the region, which implementation is considered to be in the interest of the proper planning and sustainable development of the area."*

There has been a marked decline in the amount of waste received at the facility between 2006 and 2010. This decline is in part due to the economic downturn and in part due to market forces within the Irish waste industry. This has resulted in two of the four cells constructed as part of the extension remaining unfilled post the 2012 deadline.

As a consequence, CCC is applying to An Bord Pleanála for approval to continue landfilling operations at the site until such time as the two cells are filled and the final restoration contours of the site are reached.

While it is also proposed to increase the annual tonnage from 40,000 tonnes per annum to 50,000 tonnes per annum it is not proposed to increase the footprint of the landfill, nor is it proposed to construct any additional infrastructure. This application is for the extension of the life of the landfill and an increase in waste acceptance only until the remaining constructed cells are filled.

The application for approval is being made to An Bord Pleanála under the Strategic Infrastructure Act as the development in question is deemed an "Environmental Impact Assessment (EIA)" development as the applicant is a Local Authority.

This EIS is prepared with regard to the following guidelines:

- Guidelines on the information to be contained in Environmental Impact Statements, (Environmental Protection Agency, 2002)
- Advice notes on Current Practice (in the preparation of Environmental Impact Statements) (Environmental Protection Agency, 2003).

This environmental impact statement comprises three volumes:

- Volume 1:** Non-Technical Summary
- Volume 2:** Main Report
- Volume 3:** Appendices

This report forms the non-technical summary document (Volume 1).

1. INTRODUCTION

1.1 The Applicant

The applicant is Carlow County Council which is a local authority. The Council has been operating a waste management facility at the Powerstown site and is the holder of the waste management licence for the site issued by the Environmental Protection Agency.

1.2 The Site in Summary

The Powerstown facility is located just off Junction 6 of the M9 Motorway. The facility comprises of a non-hazardous municipal solid waste landfill and a civic amenity. Figure 1.1 shows the location of the site.

The landfill has been developed in three phases; Phase 1 is unlined and operated on the principle of 'dilute and disperse'. Phases 2 and Phase 3 are made up of 17 cells, all of which are lined. The facility has been in operation since 1975 and is licensed (licence reference number W0025-03) to accept 40,000 tonnes per annum of waste. Phases 1 and 2 of the landfill have been closed and capped, while cells 15 and 16 in Phase 3 are currently being filled. Cells 17 and 18 have been constructed but remain unfilled to-date. As of January 2012, approximately 165,000 m³ of void space remained within Cells 17 and 18.

The civic amenity is open to the general public and provides for the recovery of glass, paper, cardboard, green waste, metal, household hazardous waste amongst others. It has an estimated 18,000 customers per year.

Other ancillary infrastructure on-site includes weighbridges, a surface water management system and attenuation pond, leachate lagoon, leachate holding tank, administration office, landfill gas flare and waste inspection/quarantine areas.

1.3 The Consultant

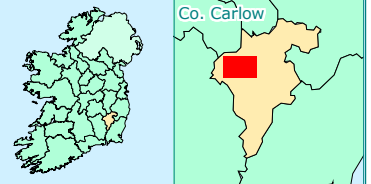
Fehily Timoney and Company (FTC) was retained by Carlow County Council to prepare the Environmental Impact Statement and was responsible for all elements of the project. FTC was established in 1990 and is one of the largest Irish-owned independent consultants. The company has four key competencies: waste management, environment, renewable energy and civils infrastructure.

Carlow County Council appointed Mr. Pascal Sweeney to prepare the Natura Impact Statement (NIS).

1.4 Compliance with National and Regional Policy

The proposed development at Powerstown landfill is in compliance with both national and regional policy. National waste policy documents recognise the importance of the waste management hierarchy in particular prevention, preparing for reuse, recycling, other recovery. It also recognises that landfills or disposal must continue to play a key role in the management of waste, particularly while alternative treatment infrastructure to reduce dependency on landfilling, are being developed.

The continuation operation of Powerstown landfill, will provide additional landfill capacity in the short-term both nationally and regionally until such time as alternative waste treatment infrastructure is available. It is expected that as a result of a number of landfill facilities closing over the coming years (refer to Section 1.5), the remaining landfills will provide landfill capacity to the country as a whole. Therefore, the movement of waste to other regions will increase.



Legend
 site boundary

Date	23/08/2011
Name of Client	Carlow County Council
Name of Job	EIS for Continued Use of Powerstown Landfill
Title of Figure	Site Location Map
Scales Used	1 : 75,000 @ A4
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Rev	A

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This is recognised in national waste policy documents that while waste facilities in a region must primarily serve the waste management needs of that region, the inter-regional movement and treatment of wastes should be provided for in appropriate circumstances. Therefore, Powerstown Landfill will contribute to the national landfill capacity as other landfill facilities close over the coming years.

With regards to the South East waste management area (to which County Carlow forms part of), it is possible that there will be a "critical capacity shortage stage" in this region alone when Donohill landfill (Tipperary) closes and should Holmestown (Wexford) also cease accepting waste. Therefore, the proposed development will also provide regional landfill capacity in the South East. This is in compliance with the regional waste policy documents such as the *Joint Waste Management Plan for the South East 2006-201*.

The proposed development is also in line with the Regional Planning Guidelines (RPG) for the South East and the County Carlow Development Plan, as it will provide sufficient waste management landfill capacity within the region.

1.5 The Need for the Development

The structure of the waste management industry in Ireland has changed considerably since An Bord Pleanála granted the time limited permission (PL01.EL2020) in 2004. In 2004, there were c. 34 active landfills in Ireland accepting municipal solid waste¹, with four located in the South East Waste Management Region.

In 2012, there are 16 no. active landfills accepting residual waste nationally. A dramatic drop in the number of operational landfills between 2009 and 2012 has been observed with 27 operational facilities in the country in 2009. It is anticipated that, by 2015, a maximum of seven operational landfills will remain in Ireland, in addition to the Carranstown Energy from Waste (EfW) facility (online in Q4 of 2011) and the Poolbeg EfW (assumed online in 2016).

Of the 3 no. landfills located in the SEWMR in 2012, i.e. Powerstown, Donohill & Holmestown Wood, it is unclear what capacity will be provided by these facilities in the future.

Donohill landfill, operated by South Tipperary County Council, is due to cease waste acceptance at the end of 2012 as the remaining void is utilised.

In November 2011, it was confirmed that the operation of the Wexford County Council Holmestown Wood landfill was under review with a possible closure date of the end of February 2012 being identified². While a formal decision has yet to be made regarding the future of Holmestown, lack of clarity as to the future of the facility, at the very least, raises significant concerns as to its continued operation.

With no current landfilling activities on site at Powerstown, it is possible that there will be no landfill capacity within the SEWMR from 2012 onwards with all residual waste generated in the region being disposed of outside the Region.

A trend of landfill demand outstripping capacity in the coming years is certain given the number of landfill facilities that are due to close over the coming years.

As landfills close, the arguments in support of regional self sufficiency in terms of waste management are reduced as the remaining landfills, by default, must provide capacity to the country as a whole.

This is acknowledged in the National Waste Report 2009 (Environmental Protection Agency) where, in relation to remaining landfill capacity, it is stated in Section 10.2 that:

"The number of landfills is expected to continue to decline, with 16 of the currently 28 active MSW disposal facilities expected to close in the next three years (unless extensions are applied for and then granted). This contraction will likely lead to significant inter-regional movement of waste."

and

¹ National Waste Report 2004; www.epa.ie

² <http://www.enniscorthyecho.ie/news/eycwaucw/>

"Significantly, this (landfill) capacity is not distributed evenly around the State. Some regions such as Donegal are at critical capacity shortage stage (Donegal is expected to have no residual municipal landfill capacity by the end of 2011)."

Given the uncertainty surrounding the future of Holmestown Wood landfill, it is also quite possible that the South East Region will enter a "critical capacity shortage stage" when Donohill closes and should Holmestown also cease waste acceptance.

The issue of the proximity principle and its consideration were a reduced number of landfills to serve a national need was addressed in the Department of the Environment, Heritage & Local Government Circular WIR 04/05 which states:

"However, relevant authorities, in preparing waste management plans, determining that necessary statutory authorisations and in regard to other associated waste management functions, should recognise that the application of the proximity principle does not entail interpreting administrative waste management planning boundaries in such a manner as to inhibit the development infrastructure which will support the attainment of national waste management policy objectives through the rational development and use of such infrastructure."

In this instance, the "rational development and use of such infrastructure" can be deemed to directly relate to how the remaining landfill capacity should be viewed.

Furthermore, the National Waste Report 2009 acknowledges that the inter-regional movement of waste results in "regional planning or administrative boundaries (that) are somewhat artificial as waste does move between waste planning regions for disposal".

National policy, or the most recent indications of same, recognise the role that landfill must continue to play in the 'short term' while sufficient infrastructure and legislative provisions are made to ensure diversion of wastes from landfill, a recognition that is echoed in the Joint Waste Management Plan for the South East Region which also recognises the transitional period between moving from landfill-centric to other residual waste treatment means. How long the 'short term' period referenced in both the Joint Waste Management Plan for the South East Region and the recent national policy discussion document, will last is unknown at this point but it will be required to be supported by sufficient landfill capacity.

As identified at the outset, this application is in relation to the extension of the lifetime of the landfill until such time as the existing constructed capacity is filled. Approximately 165,000 m³ of constructed capacity remains in Powerstown landfill, equivalent to c. 140,000 tonnes. The capacity that would be provided by the extension of the lifetime of the Powerstown facility will provide much needed capacity at a regional and national level.

1.6 Viewing and Purchasing the EIS

Any member of the public can view the planning application and accompanying EIS documentation, free of charge, at the offices of Carlow County Council, County Buildings, Athy Road, Co. Carlow during office hours, from the date of receipt of the documentation for a period of at least six weeks.

Carlow County Council will, on request, sell copies of any part of a planning application or EIS, at a fee not exceeding the reasonable cost of making a copy. Any documents for sale will be available for purchasing while they are open for public inspection.

1.7 Pre-submission Scoping Consultation

Twenty one letters were issued to statutory and non-governmental bodies requesting observation/submissions were received in response. The issues raised have been addressed, where practicable, in the relevant sections of the main volume of this EIS.

1.8 Alternatives

The principal alternative considered for this development was the cessation of landfilling activities at the site indefinitely in January 2012 (the 'do nothing' alternative).

In the 'do nothing' scenario, landfill activities would cease in January 2012 and the capping and restoration of the waste filled cells would be undertaken. The capping and restoration levels proposed for the landfill and agreed with the planning authority and EPA would not be achieved for the site as two cells remain unfilled. This would result in an elevated section of the site leading to two empty cells which would impact on the local landscape of the area. The current capping plan and restoration of the site would need to be revised to accommodate the appropriate grading of landfill slopes and examine the options for dealing with surface water collection in the empty cells.

With regard to land availability and engineering capacity, the existing development has already constructed landfill cells sufficient for the acceptance of waste. These landfill cells have been fully engineered to minimise impacts on the environment under the existing waste licence. In addition, the site has existing infrastructure such as a landfill gas collection system and flare, a surface water collection system and pond, leachate collection system and storage tank, etc. In the case where an alternative location for two landfill cells is considered, it is appropriate to locate these cells where they exist. As the landfill cells infrastructure itself is already constructed in Powerstown, this was the only site location considered.

With regards to alternative layouts and processes, there is no scope to assess this with regards to the proposed development, as the landfill cells are constructed in the layout permitted and these cells connect into the existing landfill site processes such as leachate and gas collection management systems. The proposed development would not alter this layout or system.

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2. DESCRIPTION OF THE DEVELOPMENT

2.1 The Existing Development

2.1.1 General

Powerstown Landfill is located in a rural setting in the townland of Powerstown approximately 8 km south of Carlow Town in County Carlow. The total area of the site is approximately 24 ha. This includes a 50 m wide 'buffer zone' along the eastern side of the landfill where no waste activities can take place.

The facility is licensed to accept waste for disposal at the landfill between the hours of 08:00 and 17:30 Monday to Friday inclusive (bank Holidays excepted) and 08:00 to 12:30 on Saturdays. Waste can be accepted at the recycling centre only between the hours of 08:00 to 17:30 Monday to Friday inclusive (Bank Holiday excepted), 08:00 and 16:30 on Saturdays and 08:00 and 12:30 on Sundays.

Powerstown landfill and recycling centre was developed over a number of years in three phases namely Phase 1, Phase 2 and Phase 3. These phases of development are summarised below and illustrated on Figure 2.3.

Phase 1 - Landfilling commenced in Phase 1 in 1975 and finished in 1990. Phase 1 (or the 'old landfill') is located on the south western portion of the site. It is an unlined landfill and was developed in a spent sand and gravel quarry and operated as a 'dilute and disperse' type landfill. In 2006 this Phase was capped in accordance with the requirements of the waste licence.

Phase 2 - Landfilling in Phase 2 took place between 1991 and 2006. This phase of the landfill is located within the north west portion of the site as shown on Figure 2.3. It has an area of approximately 4.5 hectares and consists of 13 engineered landfill cells. Final capping of this phase was completed in 2008.

Phase 3 – This phase involved a major capital investment including the construction of four new landfill cells (cells 15 - 18). The Phase 3 development works took place largely in 2006 and in addition to the new cells, additional infrastructure included:

- A new facility entrance off the local road (L3045) as shown in Figure 2.2
- A civic amenity as shown in Figure 2.3
- Installation of a leachate holding tank and associated pipe work
- Construction of a green waste composting area
- Conversion/renovation of an existing dwelling house into a site office
- Installation of two weighbridges and weighbridge office
- Security fencing
- Surface water management infrastructure
- Foul drainage system
- Car parking
- Wheelwash
- Landscaping
- Extension of landfill gas management system

The site ceased accepting waste for landfilling on-site on 21 January 2012. Consequently cells 17 and 18 remain unfilled as shown in Figure 2.1.

Figure 2.1: Cell 17 and 18 at Powerstown Landfill

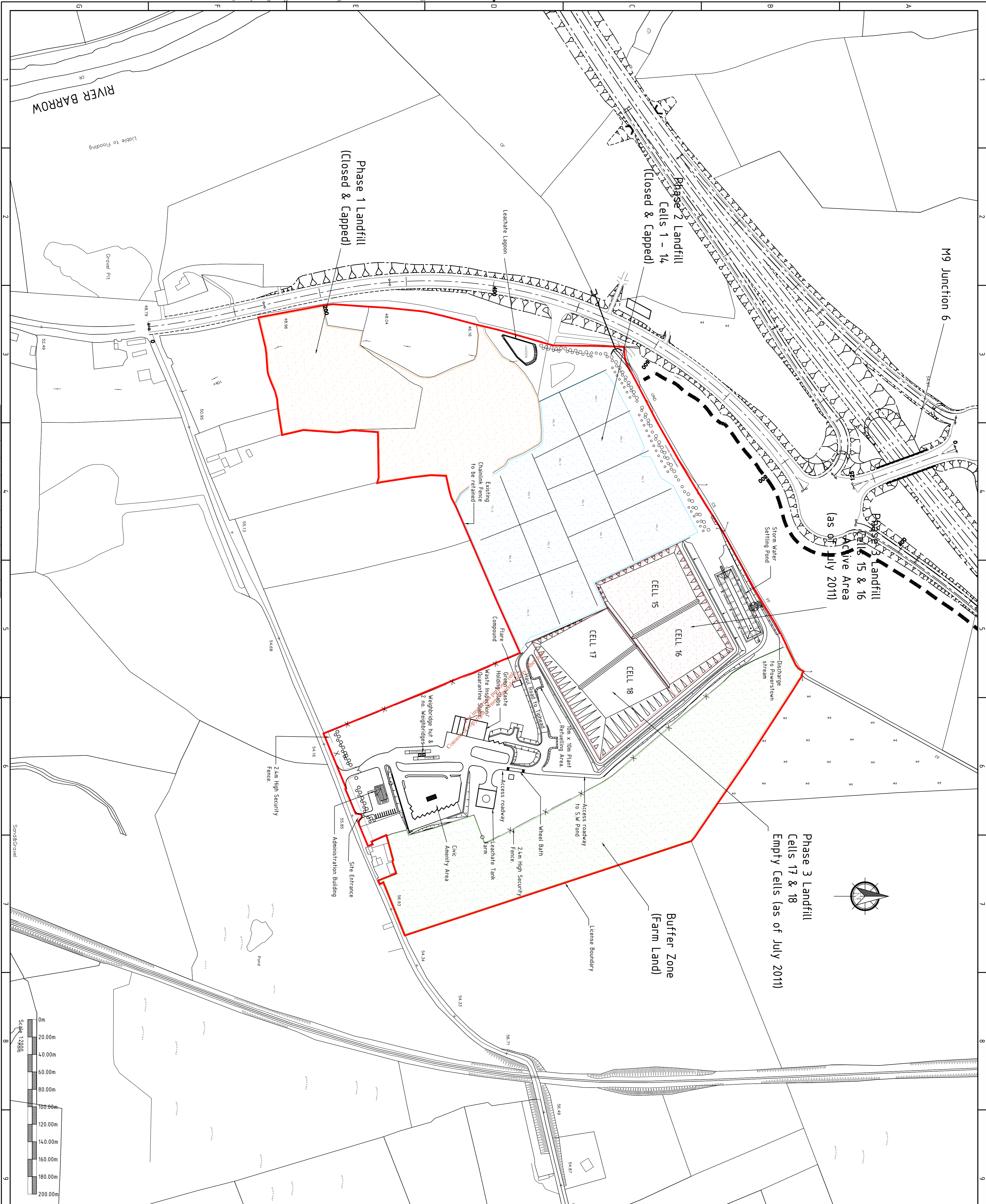
Cells 15, 16, 17 and 18 were developed with a very high specification of liner in order to provide added protection to groundwater. This was done in agreement with the Environmental Protection Agency.

2.1.2 Access to the Facility and Site Security

Access to the site is via the main site entrance only, along the local road (L3045) off the R448 (part of the old N9) as shown on Figures 2.2 and 2.3. The L3045 was upgraded as part of the 2004 permission to include a footpath for pedestrians along with public lighting running from the junction of the N9 to the new site entrance. The previous site entrance, which was directly off the N9, is no longer in use.

Figure 2.2: Facility Entrance at Powerstown Landfill and Civic Amenity

The entire facility including the landfill and civic amenity is surrounded by a 2 m high security fence. Secure gates are located at the facility entrance and these are locked when the site is closed. When opened the site is manned at all times. The site has a number of CCTV cameras to monitor activities on site when the site is open and closed.



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<p>Powerstown Landfill</p> <p>Name of Job</p>															
<p>Existing Site Layout</p> <p>Title of Drawing</p>															
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2.1.3 Civic Amenity

The civic amenity at Powerstown offers a wide range of recycling/recovery facilities for the general public as shown in Figure 2.4. In 2011 some 1,533 tonnes of waste was accepted.

Figure 2.4: Civic Amenity at Powerstown Landfill



2.1.4 Landfilling Operations

Typically landfilling operations on site consisted of the following:

- All loads passed over the weighbridge and were recorded appropriately
- If suitable, waste was then directed to the active cells of the landfill and tipped. When waste is tipped the vehicle/truck moves off and is weighed again over the weighbridge.
- Waste is placed and compacted using special waste compactors and/or bull dozers – refer to Figure 2.5
- At the end of each day the waste received a 'daily cover' of soil to prevent windblown litter, bird scavenging and odours
- When waste reached predetermined levels a temporary soil cap is placed over the waste
- A permanent cap is later constructed when the cell is full.

Figure 2.5: Typical landfilling operation using waste compactor

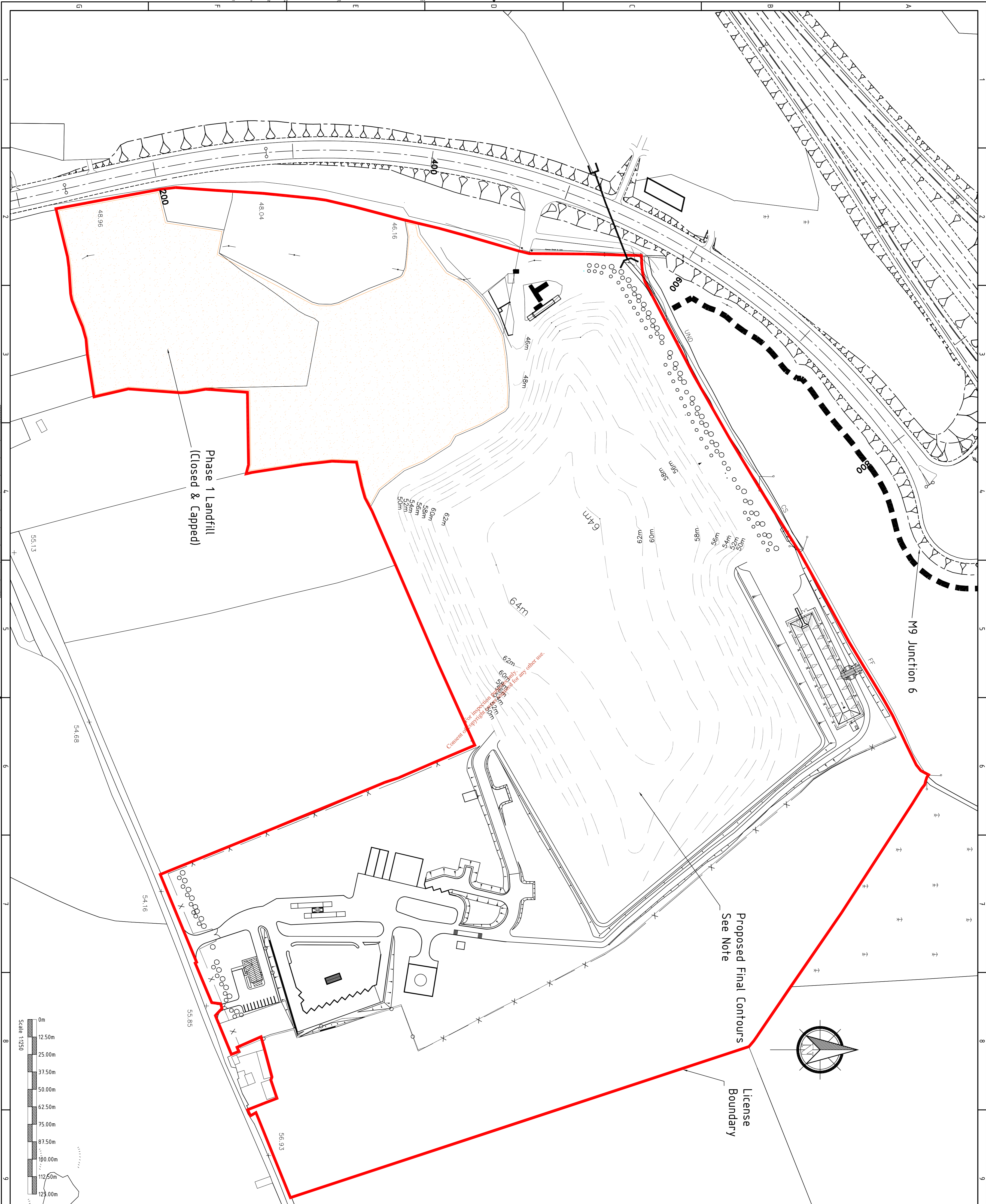


2.2 The Proposed Development

The proposed final profile of the landfill (when capped) is shown on Figure 2.6. The extension of time sought in this planning application will allow for waste to be landfilled in the already constructed landfill cells so that the profile of the site stipulated in the waste licence can be achieved.

The continued operation of Powerstown landfill does not require the development of any new infrastructure or cells. This application seeks to obtain permission to extend the period of time during which landfilling can occur as well as increasing the annual waste intake from 40,000 tonnes to 50,000 tonnes. As well as applying to An Bord Pleanála for approval, Carlow County Council will be required to submit a waste licence review application to the Environmental Protection Agency for this increase in tonnage.

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Note: This Drawing is Based On Dwg 2005-120-01-012 Proposed Final Contours As Referenced in Condition 4.3.1 of Waste License Register No 25-3

Rev.	Drawn	Checked	App'd	Date	Description
A	ETM	ETM	ETM	03/11/11	ISSUE FOR PLANNING

Name of Client
 CARLOW COUNTY COUNCIL

Name of Job
 POWERSTOWN LANDFILL
 EIS FOR EXTENSION OF TIME

Title of Drawing
 PROPOSED FINAL CONTOURS

Scale Used	This Drawing was printed to
A1 1:1250, A3 1:2500	ISO A1

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3. THE MAIN IMPACTS OF THE DEVELOPMENT AND THEIR MITIGATION

The main potential impacts of the proposed continued operation of landfilling activities at an increased 50,000 tonnes per annum at Powerstown are outlined in the following sections.

3.1 Impacts on the Human Environment

3.1.1 Socio-economic Impacts

The existing Powerstown facility is located in the townland of Powerstown, approximately 8 km south of Carlow town and 7 km north of Bagenalstown. The town and villages of Nurney are c.2.5 km south east of the site, Leighlinbridge c.3.5 km south west of the site and Ballinabrannagh c.2.5 km north west of the site.

There are some 13 dwellings within 500 m of the site boundary and 41 dwellings within 1 km of the site boundary.

Land use beyond the Powerstown site is predominantly agricultural in nature.

There are three sand and gravel pits/quarries in the immediate vicinity of the site. One of these quarries abuts the boundary of the landfill, the second is located just south and a third is located further east of the site. Approximately 1 km north east, there is the significant Clonmelsh Quarry which is an open cast limestone quarry operated by Dan Morrissey Ireland Ltd.

The area surrounding Powerstown landfill has a high degree of amenity in the form of the backdrop of the Castlecomer Plateau, Killeshin hills and the River Barrow to the west.

Potential socio-economic impacts from the proposed development on local residents, community facilities, industry and commerce and amenity and tourism mainly occur from visual, noise, traffic and air impacts. Individual assessments of these impacts have been conducted and are outlined separately below. A positive socio-economic impact arising from the continued operation of the landfill will be the securing of employment and the ongoing need for local goods and services.

3.1.2 Noise Impacts

Baseline noise monitoring is carried out at the site on an annual basis. Results from monitoring undertaken at the site from 2009 - 2011 indicate that the Powerstown site is not impacting on the local noise environment.

As the proposed continuation of landfilling activities will not require the construction of any new infrastructure, there will be no impact on the noise environment from additional construction activities. Construction works will be associated with the permanent capping of Phase 3 of the project, but these potential impacts were assessed as part of the 2003/2004 application and subsequently permitted.

While the increased waste input of 50,000 tonnes per annum will not require any additional machinery/plant to deposit the waste, it will result in the generation of one additional heavy good vehicle per hour accessing the site. This will not have a significant impact on existing noise levels.

The facility will continue to conduct annual noise monitoring in accordance with the conditions sets out in the waste licence granted. These reports will be submitted to the Environmental Protection Agency and will also be kept on the file at the site office for inspection by the public.

3.1.3 Roads, Traffic & Transportation Impacts

The road infrastructure in the vicinity of the Powerstown site has improved significantly over the last number of years. Principally, these improvements have included the construction of the M9 motorway which has lead to a significant reduction in traffic volumes along the old N9 (now the R448) which runs along the western boundary of the site as indicated on Figure 2.3.

In addition, the junction of the R448 and the L3045 (access road to the landfill) have been improved in recent years in part due to clearing/widening of verges in the vicinity of the junction.

Approximately 500 m of this road from the site entrance to the R448 junction was upgraded in circa 2006 in line with the requirement of the 2004 An Bord Pleanála planning conditions. The upgrading works included widening the road to 7 meters, road resurfacing, road markings and the construction of footpaths and site lighting.

An increase in the waste intake by 10,000 tonnes per annum will lead to one additional heavy good vehicle visiting the site per hour which will not have a significant impact on the local road network.

3.1.4 Impacts on Air & Climate

Decomposing waste generates gases such as methane and carbon dioxide. Other gases are also produced in small quantities. These are collectively known as landfill gas.

The potential sources of air emissions from the continued operation of landfilling activities include dust emissions, landfill gas and odours.

Monitoring of dust emissions is carried out five times a year as specified in the sites waste licence. Monitoring conducted at the site from 2009 - 2011 did not show any exceedance of the licence limits. This can be attributed to the good housekeeping methods applied at the site.

While it is acknowledged landfilling results in the production of significant quantities of greenhouse gases, the continued operation of the Powerstown landfill will not alter the overall quantity of landfill gas produced at the site.

With respect to the controls of odours, a number of changes have been made at Powerstown landfill since the 2004 application which has resulted in a significant reduction in the number of odour complaints. The positive benefit of these improvements is reflected in the fact that only three odour complaints were received in 2010 and none in 2011. This is in contrast to some 19 odour complaints in 2009, 29 in 2008 and over 300 in 2006.

3.1.5 Conclusion

The potential impacts on the socio-economic environment from the continued operation of landfilling activities at Powerstown are not expected to be significant. Positive impact will be seen in terms of securing employment in the area and demand for goods and services. Impacts from noise will be insignificant while good housekeeping measures will mitigate against any potential impact on the air quality in the area. While a minor increase in traffic will result from the increase in waste acceptance, impacts will not be significant.

3.2 Impacts on Geology & Hydrogeology

The groundwater underlying the site is classified as a Regionally Important by the Geological Survey of Ireland. As a consequence extensive consultation took place with the Environmental Protection Agency during the application process for Phase 3 and it was agreed with the Agency that a double lining system be installed under the four new cells in this area. This lining system provides protection levels five times greater than that required by law for non-hazardous landfills.

Rainwater that percolates through waste becomes leachate. Leachate is a potential pollutant of both surface water and groundwater if not managed appropriately.

Groundwater quality in and around the site is monitored on a quarterly basis in eight groundwater wells and two private wells.

Results of this monitoring data indicate that the quality of groundwater downgradient of the facility may have been impacted by the unlined landfill (Phase 1) of the landfill. In the event that the site was to cease landfilling operations in 2012 as stipulated under the current planning permission, the impact on groundwater quality would continue.

The monitoring results from the two private wells to the north and north west of the site indicate that the landfill is not impacting on the quality of these wells.

The proposed increase in waste acceptance from 40,000 tonnes per annum to 50,000 tonnes per annum will result in a slight reduction in annual leachate generation quantities as the additional waste input will increase absorption values of the placed waste.

3.3 Impacts on Hydrology & Water Quality

Powerstown Stream, which is a tributary of the River Barrow, runs along the northern boundary of the site. The water quality of Powerstown stream is monitored on a quarterly basis in accordance with the site's waste licence. The results of this monitoring indicate that in general, the operation of Powerstown Stream is not impacting on surface water quality.

Surface water is generated by rainfall. The rainfall that falls on the landfilled area will percolate through the waste body and will emerge as leachate. Leachate is controlled on site by the existing leachate collection system. Rainfall that falls on any other area of the site is known as surface water run-off.

The surface water run-off from Phase 3 of the landfill drains to Powerstown Stream via a pond. The outlet of this pond has a control device which controls the flow from the pond to the stream. There is an automatic monitoring probe linked to the outlet from the pond. If the monitoring probe detects certain key pollutants in the water above allowable emission limits, the outlet automatically closes thus preventing any pollutants reaching Powerstown Stream. If this occurs, contaminated surface water is taken offsite by tanker for further treatment. The discharge from the pond will continue regardless of whether the facility remains closed.

There are no incidents of flooding recorded in the vicinity of the site.

3.4 Impacts on Flora & Fauna

The proposed development is located within 10 km of five designated sites, three of these being proposed Natural Heritage Areas, one Special Protection Area and one Special Area of Conservation. The closest designated site is the River Barrow and River Nore Special Area of Conservation which is located some 300 m from the outlet of the on-site surface water pond to Powerstown stream.

An ecological assessment of the Powerstown Site was conducted in August 2011. While three bat species were recorded foraging at the site but no bat roosts were located, no rare or protected species of high conservation concern were recorded.

Surface water discharge from the site into the adjacent Powerstown Stream has the potential to impact on the River Barrow Special Area of Conservation if contaminated. A Natura Impact Statement (NIS) has been prepared to determine whether the proposed continued landfilling activities would impact on this designated site. The statement concludes that there are no impacts arising and that the existing surface water management system is adequate.

3.5 Impacts on Landscape & Visual Assessment

The landscape surrounding the landfill is dotted with farmsteads, individual dwellings and a number of archaeological sites and monuments of interest. The River Barrow is the predominant surface water feature in the landscape meandering in a north south direction to the west of the site.

The Carlow County Development Plan identified one scenic route and five scenic views in the vicinity of the sit as well as two landscape amenity areas, the latter being the River Barrow and Valley and the Castlecomer Plateau.

The existing site is giving rise to significant visual impacts for road users along the R448 and the M9 motorway as well as to a number of dwellings to the south, east and north of the site. These impacts are permanent due to height of the landfill body itself.

The operation of the landfill beyond 2012 would result in additional impacts mainly from the traffic delivering waste as well as the placement of waste. The higher tonnage of 50,000 tonnes will allow faster filling of the remaining void space thus reducing the duration of this element of the visual impact.

It must be noted however, that the visual impacts that will arise from the final capping of cells 15 and 16 will occur regardless of whether the site remains closed as these capping works are required under the existing waste licence for the facility (W0025-03).

Currently, Phase 1 and 2 of Powerstown landfill have been permanently capped and restored, while cells 15 and 16 have been filled with waste and areas of these cells have a temporary cap. If the landfill remains closed, Phase 3 of the site would not be restored in accordance with the profiles set out in the waste licence for the facility (refer to Figure 3.7) as cells 17 and 18 would not be filled to the required height.

The intended after use for the facility is sheep grazing with the landfill body being planted with species of grasses for meadows and pastures and wildflowers. It is also intended that the surface water pond will be planted with species appropriate to a wetland location.

3.6 Impacts on Archaeology & Cultural Heritage

A desk based assessment of archaeological features within 1 km of the facility was undertaken. Using a number of information sources including Sites and Monument Record (SMR), the Record of Monuments and Places (RMP), the County Carlow Development Plan, the National Inventory of Architectural Heritage (NIAH) and the Environmental Impact Statement for the M9 motorway, it has been identified that there are no features of archaeological interest within the site. There are however 9 recorded monuments within 1 km of the site. Three of these records are now redundant due to the construction of the M9 motorway.

As there will be no construction activities required for the continued operation of landfilling activities, there will be no impact on the archaeological, architectural or cultural heritage resource of the local area.

With regards to the recorded site and monuments in close proximity to the landfill, there are potential indirect visible impacts from the existing landfill and the existing motorway development. The proposed development will not alter the visibility from these sites and therefore there will be no further impact on these sites due to the continued operation of Powerstown landfill.

3.7 Material Assets

Services in the vicinity of the Powerstown site include a number of electricity lines (10 kV) and telecommunications lines which service the local community and main administration buildings onsite. Potable water for use in the canteen, welfare facilities and for general site cleaning is sourced from Local Authority mains supply. The continued operation of the landfill will not impact on any of these services.

As the proposed development is a continuation of the operation of the existing landfill, impacts on property values due to the proposed development are not predicted.

3.8 The Development & its Impacts in context

The proposed continued operation of landfilling activities at 50,000 tonnes per annum at the Powerstown site has the potential to cause both positive and negative impacts on the receiving environment. Examples of the negative impacts are increased traffic volumes along with increase in noise emissions. The predicted traffic volume increase due to the proposed development is estimated at 6 vehicles per day; however, this increase in traffic can be accommodated within the existing road network.

The environmental impacts from this increase are considered imperceptible especially considering the large traffic volumes currently using the M9 motorway and the large reduction in traffic volumes on the R448 since the M9 motorway opened.

In the short term, if the life span of the landfill is extended, the visual impacts of everyday operation at the landfill will be extended. This will be adverse in the medium term however; impacts on visibility will not be greater than that experienced from the existing development. In the long term, the proposed development will ensure that the constructed landfill cells are filled and restored in conjunction with the rest of the landfill.

Positive impacts from the proposed development include the continuance of the payment of the community fund to support community facilities in the area, continued employment.

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