

NON-TECHNICAL SUMMARY

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NON TECHNICAL SUMMARY

1. INTRODUCTION

On 3rd October 2003 RPS-MCOS on behalf of North Tipperary County Council informed the EPA of their intention to review Waste Licence 78-1 for Ballaghveny Landfill for an increase in post-settlement (restored) height of cells 3-5 from the currently approved 114mOD to 120mOD. On 22nd December 2003 the EPA notified that a full waste licence review application was not required and that an application should be made under the revised review process (as allowed for under Article 12(3)(d) of the Waste Management (Licensing) Regulations, 2000 as amended).

This Waste Licence Review Application is prepared in accordance with the Agency's requirements as set out in their correspondence dated 22nd December 2003.

This Waste Licence Review Application also includes for the following:

- Proposal to amend Condition 5.12.3 of the current Waste Licence regarding acceptance of treated sludges at the landfill (Section 7).
- Proposal to accept 10,000 tonnes of Construction and Demolition (C&D) waste for recovery as per Condition 5.17.2 of the current Waste Licence (Section 6).

2. WASTE ACCEPTANCE

Ballaghveny Landfill is classed as a non-hazardous waste landfill. The Classes of Waste Disposal and Recovery Activities in accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 as amended in S.I. 166, 1998 are outlined in Section 2.1 of the Waste Licence Review Application. The following waste types and quantities in Table 1 are accepted for disposal as per the current Waste Licence 78-1:

Table 1: Waste Types and Quantities

Waste Type	Maximum Tonnes Per Annum
Household	22,000
Commercial/Industrial	10,000
Sludge	3,500
Construction and Demolition	1,500
Total	37,000

As part of this Waste Licence Review Application, it is proposed to accept 10,000 tonnes per annum of Construction and Demolition waste for recovery as per Condition 5.17.2 of the current Waste Licence.

A Waste Acceptance Procedure is in place at Ballaghveny Landfill which ensures that prohibited wastes will not be accepted in accordance with Articles 52 and 54 of Waste Management (Licensing) (Amendment) Regulations, 2002.

3. MANAGEMENT OF THE FACILITY

The site will be operated in accordance with best international practice for similar facilities. An Environmental Management System (EMS) has been put in place to ensure that an effective system of management is in place at the landfill which will ensure that all appropriate pollution prevention and control techniques are in place and a process of continuous improvement can be implemented.

4. VISUAL IMPACT ASSESSMENT

A visual impact assessment of the proposed increase in final restored height of the landfill has been prepared by Mitchell and Associates, Landscape Architects and is contained in Appendix C. Mitchell & Associates concluded that the overall visual impact will not be significant and neutral in that the restored landfill will be rehabilitated as a grassland and will be visually integrated with the surrounding landscape. They also concluded that the 6 metre increase in height will not be discernible from the three viewpoints outlined and therefore the impact of the proposed increase in height of the landfill will be slight and neutral. A slight impact is defined as "an impact which causes changes in the character of the environment which are not significant or profound." A neutral impact is defined as "a change that does not affect the quality of the environment."

The proposed increase in the final restored height of cells 1-5 will have no effect on the volume of surface water runoff generated. Environmental control systems are in place which will ensure that the impact on the environment will be not significant.

5. FINANCIAL PROVISION

North Tipperary County Council through the gate fee revenue can meet the costs associated with the operation and management of the landfill and confirm that there are sufficient funds available for future restoration and aftercare works at the facility.

6. RECOVERY OF CONSTRUCTION & DEMOLITION WASTE

North Tipperary County Council propose to accept 10,000 tonnes per annum of Construction and Demolition (C&D) waste for recovery as per Condition 5.17.2 of the current Waste Licence 78-1. The activity will involve the use of a mobile crusher, screens and the stockpiling of segregated materials. Provision of this C&D waste recovery operation by North Tipperary County Council is in accordance with the recommendations of the Midlands Waste Management Plan. The Plan recommends that six locations in the Region be established for the recovery of C&D waste at existing or closed landfills with Nenagh recommended as one such location. Initially the local authority will use the crushed aggregate as raw material on development and infrastructural works and the surplus soil will be used for daily cover material, landfill remediation and restoration projects.

Ballaghveny Landfill is considered to be a suitable location for this C&D waste recovery operation for the following reasons:

- Current Waste Licence allows for the recovery of C&D waste as per Condition 5.17.2,
- Proximity to Nenagh Town,
- Site infrastructure is already provided at the landfill,
- The site is well screened from view and therefore will not cause a negative visual impact,
- Management and monitoring systems are in place at the landfill,
- The provision of this C&D waste recovery operation at Ballaghveny Landfill meets the requirements of the Midlands Waste Management Plan.

7. TREATED SLUDGE FOR DISPOSAL

North Tipperary County Council propose to amend Condition 5.12.3 of the current Waste Licence which states that "from 1 January, 2004, only treated sludges shall be accepted at the facility". North Tipperary County Council request that this date be extended to 1 January 2005 to allow for the proposed improvement works at Thurles Sewerage Scheme.

1 INTRODUCTION

On 3rd October 2003 RPS-MCOS on behalf of North Tipperary County Council informed the EPA of their intention to review Waste Licence 78-1 for Ballaghveny Landfill for an increase in post-settlement (restored) height of cells 3-5 from the currently approved 114mOD to 120mOD. On 22nd December 2003 the EPA notified that a full waste licence review application was not required and that an application should be made under the revised review process (as allowed for under Article 12(3)(d) of the Waste Management (Licensing) Regulations, 2000 as amended).

This Waste Licence Review Application is prepared in accordance with the Agency's requirements as set out in their correspondence dated 22nd December 2003.

This Waste Licence Review Application also includes for the following:

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- Proposal to accept 10,000 tonnes of Construction and Demolition (C&D) waste for recovery as per Condition 5.17.2 of the current Waste Licence (Section 6).

In accordance with Article 5, 6 & 7 of the Waste Management (Licensing) Regulations, 2000 (SI 185/2000) and sub-article 12(4), the Waste Licence Review Application is accompanied by the following:

- A copy of the relevant page of the newspaper (Irish Independent published on 4th March 2004) in which the notice in accordance with Article 6 of the Regulations was published (Appendix A).
- A copy of the text of the site notice in accordance with Article 7 of the Regulations. The site notice was erected on 9th March 2004. (Appendix A).
- A copy of the site plan to identify the position of the site notice in accordance with Article 7 of the Regulations (Figure 1, Appendix A).
- Fee for the sum of € 16,506.59 (€12,697.38 for disposal of waste where the annual intake is less than 40,000 tonnes per annum and €3,809.21 for recovery of C&D waste).

The contact details for the applicant are as follows:

Name of Applicant: Environment Section,
North Tipperary County Council,
The Machinery Yard,
Nenagh,
Limerick Road,
Co. Tipperary.

Contact Person: Mr Frank O'Halloran, Senior Engineer.

Phone Number (067) 44786.

Fax Number (067) 32260.

This Waste Licence Review Application relates to Ballaghveny Landfill, which is located in the townlands of Ballaghveny and Woodville with a National Grid Reference of 196694E, 181844N.

2 WASTE ACCEPTANCE

2.1 CLASSES OF WASTE DISPOSAL AND RECOVERY ACTIVITIES

The Classes of Waste Disposal and Recovery Activities in accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 as amended in S.I. 166, 1998 as follows:

The principle activity carried out on the site is Class 5 of the Third Schedule.

Other activities carried out are:

Third Schedule

- Class 1 - Deposit on, in, or under land (including landfill).
- Class 2 - Land treatment, including biodegradation of liquid or sludge discards in soils.
- Class 4 - Surface impoundment, including placement of liquid or sludge discards into pits, ponds, or lagoons.
- Class 5 - Specially engineered landfill including placement into lined discrete cells which are capped and isolated from one another and the environment.
- Class 11 - Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
- Class 12 - Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
- Class 13 - Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection on the premises where the waste concerned is produced.

Fourth Schedule

- Class 2 - Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
- Class 3 - Recycling or reclamation of metals and metal compounds.
- Class 4 - Recycling or reclamation of other inorganic materials.
- Class 10 - The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.

Class 11 -Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.

Class 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.

2.2 LANDFILL CLASSIFICATION

Ballaghveny Landfill accepts that is non-hazardous waste as defined by the Waste Management Act and specified in Condition 5.1 of Waste Licence 78-1. Therefore Ballaghveny Landfill is classed as a non-hazardous waste landfill.

As Ballaghveny Landfill is classified as a non-hazardous landfill it can be used for the disposal of:

- (a) municipal waste.
- (b) non-hazardous waste other than municipal waste, that fulfils relevant waste acceptance criteria.
- (c) stable, non-reactive hazardous waste (such as that which is solidified or vitrified) with leaching behaviour equivalent to that of non-hazardous waste referred to in paragraph (b), that fulfils relevant waste acceptance criteria.
- (d) such wastes as may from time to time be determined in accordance with Annex 16 and Annex II of the Landfill Directive.
- (e) where hazardous waste of the type referred to in paragraph (c) is disposed of in a landfill for non-hazardous waste, it shall not be deposited in cells destined to be used for the disposal; of biodegradable non-hazardous waste.
- (f) the dilution or mixture of waste solely in order to fulfil relevant waste acceptance criteria is prohibited.

All of the above measures shall be implemented before 16th July 2009 in accordance with Article 52 and 54 of Waste Management (Licensing) (Amendment) Regulations, 2002.

2.3 WASTE TYPES AND QUANTITIES

The following waste types and quantities in Table 1 are accepted for disposal as per the current Waste Licence 78-1:

Table 1: Waste Types and Quantities

Waste Type	Maximum Tonnes Per Annum
Household	22,000
Commercial/Industrial	10,000
Sludge	3,500
Construction and Demolition	1,500
Total	37,000

As part of this Waste Licence Review Application, it is proposed to accept 10,000 tonnes per annum of Construction and Demolition waste for recovery as per Condition 5.17.2 of the current Waste Licence.

2.4 WASTES PROHIBITED FROM LANDFILL

The following wastes types will not be accepted or disposed of by landfill after 16th July 2009:

- Liquid waste;
- Waste which, in the conditions of landfill, is explosive, corrosive, oxidising, highly flammable or flammable as defined in Annex III of Council Directive 91/689/EEC;
- Infectious healthcare waste, assessed as likely to cause disease in humans or animals, arising from medical or veterinary establishments, and waste specified under category 14 of Annex 1.A of Council Directive 91/689/EEC;
- Any other waste which does not satisfy such waste acceptance criteria as shall, from time to time be determined in accordance with Annex II of Council Directive 91/689/EEC;
- Whole and shredded used tyres (other than tyres used on-site engineering material);
- Waste that has not been subject to treatment (other than inert waste for which treatment is not technically feasible, or any other waste the treatment of which will not reduce its volume or the risk of environmental pollution).

All of the above measures shall be implemented before 16th July 2009 in accordance with Articles 52 and 54 of Waste Management (Licensing) (Amendment) Regulations, 2002.

A Waste Acceptance Procedure is in place at Ballaghveny Landfill which ensures that prohibited wastes will not be accepted.

4 VISUAL IMPACT ASSESSMENT

4.1 INTRODUCTION

In September 1998 a Waste Licence Application and accompanying Environmental Impact Statement for the Remediation and Extension of Ballaghveny Landfill was prepared by MCOS on behalf of North Tipperary County Council and submitted to the EPA in accordance with the Waste Management (Licensing) Regulations, 1997. The EIS outlined remediation measures to reduce the impact of the existing landfill on the surrounding environment and proposed the development of an extension to the landfill consisting of lined cells with leachate collection, leachate lagoon, new entrance area and new site infrastructure including an administration building and civic amenity area. A Waste Licence (Register No. 78-1) was subsequently issued by the EPA in May 2001 for the operation of the facility allowing an annual waste intake of 37,000 tonnes.

To date the following contract works have been completed at Ballaghveny Landfill:

- Contract 1 - Construction of new lined cells 6, 7 & 8 & leachate lagoon (value €2.2m)
- Contract 2 - Site Infrastructure Works (value €1.1m)

Contract 3 will comprise the proposed restoration works for the landfill cells 1-5 as required under the conditions of the Waste Licence and a recommendation has been made to North Tipperary County Council by RPS-MCOS for the appointment of the Contractor to carry out the works subject to EPA approval. Contract 4 will include for the construction of additional lined cells.

4.2 EIS/WASTE LICENCE APPLICATION 1998 – VISUAL IMPACT

A preliminary report on landscape/visual impact was prepared by Mitchell & Associates, Landscape Architects, as part of the preparation of the EIS (1998) which provided an assessment of the site in visual terms and recommended mitigation measures to reduce the impact of the site on the surrounding landscape. At the time the height of the existing landfill (cells 3-5) was estimated at 112m OD.

This report referred to natural screening of the site being already in place due to its location behind an esker covered in woodland and that the only views were to the north which consists of extensive bogland behind a development of woodland. It also stated that 'views of the proposed landfill will be hidden by the natural screening of the woodland covered esker' and that 'additional native woodland species will be planted on the mound to blend in with the existing wooded eskers as well as providing additional screening to the boundary to the east.'

A final landscape layout was proposed for the existing and proposed extension areas which consisted of a mound running in a northerly direction at a height of 114mOD. The height of 114mOD was selected on the basis that there was sufficient available void space in the existing landfill for the remaining period until a new Waste Licence was issued and a new extension area was constructed.

4.3 RELATED DEVELOPMENTS

In early 2000 North Tipperary County Council realised that their remaining void space at the existing cells 3-5 was nearly exhausted and appointed MCOS to design and to prepare the necessary contract documents for the construction of additional cells 6-8. At this stage the maximum height of 114mOD in cells 3-5 had been exceeded. Although cells 1 and 2 were lower in height than 114m OD at this

3 MANAGEMENT OF THE FACILITY

The site will be operated in accordance with best international practice for similar facilities and in accordance with the Waste Management Act, 1996, Waste Management (Licensing) Regulations, 1997, 2000 and as amended, EPA Landfill "Operational Practices" Manual (1997), the EU Directive on Landfill of Waste 1999, Waste Licence 78-1 and the BAT Guidance Notes for Landfill Activities.

An Environmental Management System (EMS) has been put in place to ensure that an effective system of management is in place at the landfill which will ensure that all appropriate pollution prevention and control techniques are in place and a process of continuous improvement can be implemented.

Appendix B provides details on the Management Structure for Ballaghveny Landfill which outlines an experienced and competent management team who operate the facility. The above information is provided in accordance with matters specified in paragraphs (a) to (d) of section 40 (4) of the Act.

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time it was considered that cells 3-5 were better suited to accepting waste given that they were engineered cells with a leachate collection system and gas venting.

During 2000 a revised landscape plan was submitted to the EPA proposing a final post-settlement height of 120mOD. The EPA stated, however, that they could not consider this submission at that stage of the licence process but that North Tipperary County Council would have an opportunity to resubmit this appeal following the issue of the Proposed Decision (PD). The PD was issued on 11th December 2000 and on 5th January 2001 North Tipperary County Council sought the increase in the post settlement height from 114m OD to 120m OD. However, the relevant Condition 8.2 of the Waste Licence remained unaltered when the Waste Licence was finally issued on 18th May 2001.

In September 2001 waste disposal activities commenced in the new cell 6 following EPA approval. At this point due to continued filling during the period 1998-2001 the waste level within cells 3-5 was approximately 119mOD.

4.4 TOPOGRAPHICAL SURVEY & SETTLEMENT

Appendix C shows the measured amounts of settlement using a computer software ground modelling package called SCC (Survey Control Centre). The initial survey of October 2001 and the August 2003 survey have been compared and the areas of settlement in 0.25m intervals are identified. Figure 2 shows that there has been minor settlement of the order of 0-0.25m within cells 1 and 2 which is expected given that they are older and have been filled since 1990's. The most settlement (within the range 0.5-0.75m) has occurred within the central area of cells 3, 4 and 5 which again is to be expected given the amount of waste deposited within the cells, the final height of the cells and the fact that waste was deposited here until September 2001. Within these cells some further settlement has occurred within the range 0.75-1.0m as shown on Figure 2. Settlement within the range 0.25-0.5m has mainly occurred around the perimeter of cells 3, 4 and 5.

Drawing No. DG0122-01 provides a topographical survey for the landfill (dated August 2003) with cells 1-8 defined.

4.5 REVISED RESTORATION PROFILE

A more detailed restoration layout including planting schemes and sections has been prepared by Mitchell & Associates in 2002 based on an updated topographical survey which forms the basis of the draft Restoration and Aftercare Plan. The proposed layout for Cells 1-5 of the existing landfill and Phase 1 of the extension area includes for two mounds, one at 120mOD and one at 114mOD, creating a form that mimics other natural forms in the area with the scale and sweep of the landscape absorbing the mass of the mound into its natural fabric (Drawing No. DG0120-01). The increased height of the restored landfill is a result of the continued disposal of waste at the landfill during construction of cells 6-8 and in the period since the issue of the Waste Licence.

The proposal includes for the provision of woodland screen planting consisting of a number of different natural species such as *Alnus glutinosa* ("Black Alder"), *Crataegus monogyna* ("Common Hawthorn") and *Fagus sylvatica* ("Common Beech") along the north, eastern and southern boundaries of the site. In particular the existing views into the site from the local county road along the eastern boundary will be screened. Additional scrub woodland species will be planted along the slopes to blend in with the existing native planting while a wildflower mix will be planted along the lower slopes and around the base of the woodland planting. The remaining area will be seeded with grass to restore to pastureland. A specification for final planting and vegetation maintenance has also been detailed.

It is proposed to retain the profile of the restored levels of Cell 1 and 2 which is mainly a level area fully grassed. Dense woodland will be provided around the existing entrance area and along the site boundary adjacent to the local county roads.

4.6 CONTRACT 3 REMEDIATION WORKS

The scope of the works for Contract 3 at Ballaghveny Landfill can be summarised as follows:

- Regrading of cells 3-5,
- Capping of Cells 3-5 with a gas drainage geocomposite layer, a geosynthetic clay liner, a surface water drainage geocomposite layer, subsoil and topsoil,
- Capping of Cells 1 and 2 with a 1m thick layer of subsoil and topsoil,
- Draining of the leachate lagoon adjacent to Cell 5, removal of the liner and any contaminated material and installation of a HDPE pumping chamber to collect leachate from cells 3, 4 and 5,
- Installation of a surface water management system,
- Construction of 2 no. LLDPE lined surface water lagoons,
- Construction of outlet pipework from the lagoons to surface water courses.

The design of the final capping system and the final contoured surface has had regard to the revised restoration layout prepared by Mitchell & Associates. A maximum final pre-settlement height of 121mOD has been identified in the design documents on the basis that settlement will reduce this height below 120mOD.

The capping system on cells 3-5 will consist of the following:

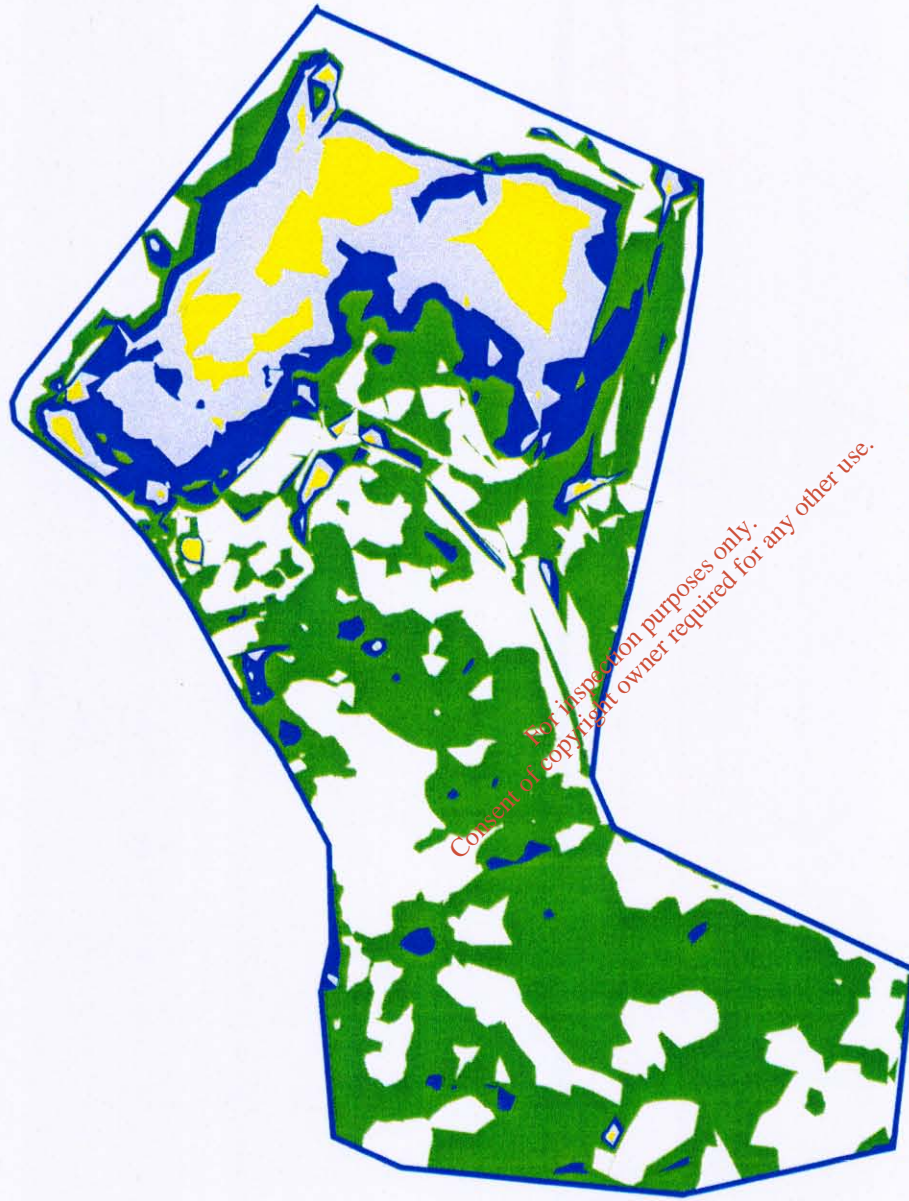
- 0.15m topsoil on
- 0.85m subsoil on
- geocomposite surface water drainage layer on
- geosynthetic clay liner (GCL) on
- geocomposite gas collection layer on
- re-shaped waste.

This capping system contains approved artificial layers (geocomposite drainage layers, GCL) giving a capping depth of 1m. This system was preferred over providing a 'natural' cap (low permeability clay, granular drainage layers) which would result in a 2.4m thick cap which would further increase the final height.

The maximum quantity of waste to be reshaped as part of the restoration works has been measured at 14,231m³. This quantity comprises mainly of waste to be deposited following regrading of the existing side slopes to 1:2.5. On average the depth of the reshaped waste will be 1m deep over the surface of cells 3, 4 and 5.

The design for Contract 3 for the restoration of cells 3-5 has shown that the proposed maximum pre-settlement height of 121m OD is acceptable from an engineering point of view. The proposal to use artificial materials ensures that the capping system will be placed correctly and existing slopes will be regraded to more acceptable gradient which will provide greater slope stability of the waste and will assist in blending the final restored form into the surrounding landscape.

The design for Contract 3 also includes for the provision of a surface water management system consisting of 150mm diameter slotted collection pipework laid at the toe of the regraded slopes around cells 3-5 and at the edge of cells 1 and 2. This system has been designed to collect and manage surface water runoff from the restored landfill at a maximum height of 121mOD and connects to two proposed surface water lagoons for settlement prior to discharge to the local network. Drawing DG0121-01 provides details on the proposed surface water management system.



LEGEND

- 0.0-0.25m Settlement
- 0.25-0.5m Settlement
- 0.5-0.75m Settlement
- 0.75-1m Settlement



In engineering terms, the design of Contract 3 has taken account of the proposed increased pre-settlement height of 121mOD and has included for surface water management, the regrading of slopes to provide stability and a 1m thick capping system to approved EPA standards.

4.7 ENVIRONMENTAL IMPACT

A visual impact assessment of the proposed increase in the final restored height of the landfill has been prepared by Mitchell and Associates, Landscape Architects and is contained in Appendix C attached. This assessment includes photomontages superimposed on the existing landfill profile and views into the facility from relevant local dwellings. The photomontage images of the proposed profile for the three views into the facility were updated with the final landscape levels of 120m and 114m shown.

Given the landscaping proposals including woodland screen planting and, in particular, the additional planting proposed to screen views from the eastern boundary, the proposed maximum pre-settlement height of 121mOD is not considered by Mitchell & Associates to impact negatively on the surrounding environment. It is also considered that the revised height will not cause any other negative environmental impact.

Mitchell & Associates concluded that the overall visual impact will not be significant and neutral in that the restored landfill will be rehabilitated as a grassland and will be visually integrated with the surrounding landscape. They also concluded that the 6 metre increase in height will not be discernible from the three viewpoints outlined and therefore the impact of the proposed increase in height of the landfill will be slight and neutral. A slight impact is defined as "an impact which causes changes in the character of the environment which are not significant or profound." A neutral impact is defined as "a change that does not affect the quality of the environment."

To reduce the existing height of cells 1-5 to 114mOD would involve the excavation and disposal of large quantities of waste (30-40,000m³) into the current cell 8. Given that the remaining life in cells 6-8 is estimated to last until September/October 2004, any proposal to dispose excavated waste into these cells would create a waste disposal crisis for North Tipperary County Council as well as creating serious financial implications to the local authority and impacting severely on their ability to manage the facility in accordance with the Waste Licence.

It was stated by North Tipperary County Council in the appeal to the EPA in January 2001 on this height issue that any removal of waste from cells 3-5 would cause severe odour and handling difficulties and this situation still applies. It is considered that North Tipperary County Council have a good relationship with the local people as a result of their open approach, communication forums and effort and there is concern that any activities involving large scale waste removal at Ballaghveny Landfill may impact negatively on the local population.

4.8 HYDROLOGICAL IMPACT

The design for Contract 3 restoration works also includes for the provision of a surface water management system consisting of 150mm diameter slotted collection pipework laid at the toe of the regraded slopes around cells 3-5. This system has been designed to collect and manage surface water runoff from the restored landfill at a maximum pre-settlement height of 121mOD and connects to two proposed surface water lagoons for settlement prior to discharge to the local network. Drawing DG0121-01 provides details on the proposed surface water management system.

Peak surface water runoff rates were calculated for three catchment areas of the landfill which are shown in Drawing No. DG0121-01. The calculation was based on a reduced equation from the Flood Studies Report (1975). The formula was $Q_{bar} = 0.00066 \times [area]^{0.92} \times (\text{Soil Factor}) \times [SAAR]^{1.22}$

where: $Q = 1.2 Q_{\text{bar}}$,
 Q_{bar} = estimated flow (litres/sec),
 Q = peak flow (litres/sec),
Soil Factor = percentage absorption,
SAAR = Average Annual Rainfall.

Based on this equation, the surface water runoff from the restored landfill separated into three catchment areas is calculated as follows:

Northern Catchment = $3.95 \times 10^{-3} \text{ m}^3/\text{sec} = 3.95 \text{ litres/sec}$
Eastern Catchment = $1.36 \times 10^{-3} \text{ m}^3/\text{sec} = 1.36 \text{ litres/sec}$
Southern Catchment = $2.7 \times 10^{-3} \text{ m}^3/\text{sec} = 2.7 \text{ litres/sec}$

The proposed increased in the final restored height of cells 1-5 will have no effect on the volume of surface water runoff generated. Environmental control systems are in place which will ensure that the impact of the restored landfill on the environment will be not significant.

4.9 ENVIRONMENTAL CONTROL SYSTEMS

Cells 3-5 were constructed using a composite lining system with leachate collection which has operated effectively since the mid-1990's.

It is proposed to install a landfill gas management system at Ballaghveny Landfill consisting of gas extraction wells connected to a gas flare which is already in place. This system will be installed once the restoration works in cells 1-5 are completed since the collection pipework is to be laid within the capping system. Currently there are perimeter gas monitoring boreholes in place to monitor the risk of gas migration beyond the site boundary.

A leachate management system has also been provided consisting of a leachate collection system in cells 3-5 connected to a storage lagoon. The proposed restoration works contract includes for the decommissioning of this lagoon and connection of the leachate system to the new lagoon constructed to the north of cells 6-8. A leachate rising main has previously been installed to facilitate the transfer of collected leachate from cells 3-5.

In addition, a total of 11 no. leachate monitoring/extraction boreholes have been installed within cells 1-5 as required by the Waste Licence for the extraction of leachate from the waste body. A telemetry control system is also proposed to monitor leachate levels within the landfill and the lagoon and to provide a control to the leachate management system.

Other environmental control systems at the facility include dust monitoring and bird and vermin control which have been provided by North Tipperary County Council to meet the requirements of the Waste Licence.

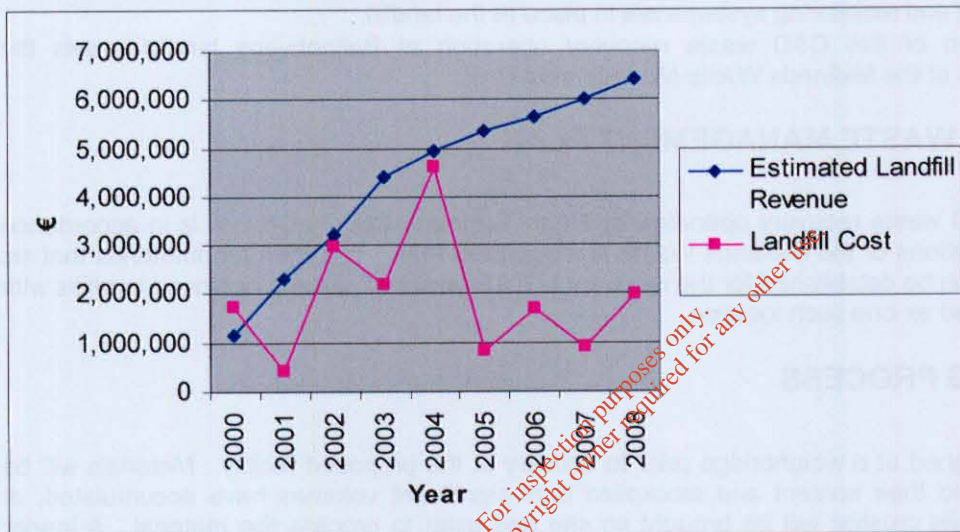
It is considered therefore that the proposal to provide a final maximum pre-settlement height of 121mOD at cells 3-5 is acceptable given the existing and proposed environmental control systems both within cells 3-5 and within the boundary of the facility.

5 FINANCIAL PROVISION

The Agency has requested that North Tipperary County Council provide information under Article 55 of Waste Management (Licensing) Regulations, 2000 as amended. Currently the gate fee at Ballaghveny Landfill is € 133.50 (excluding landfill levy) per tonne for an annual waste intake of 37,000 tonnes. Figure 3 below provides a graphical representation of estimated landfill revenue compared to landfill operational cost over the period 2000-2008.

This graph confirms that North Tipperary County Council can meet the costs associated with the operation and management of the landfill and that there are sufficient funds available for future restoration and aftercare works at the facility. The Council's Annual Estimates set aside a sufficient sum towards the restoration of the landfill (for example €222,000 was set aside in 2004).

Figure 3: Estimated Landfill Revenue V's Landfill Cost



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6 RECOVERY OF CONSTRUCTION & DEMOLITION WASTE

North Tipperary County Council propose to accept 10,000 tonnes per annum of Construction and Demolition (C&D) waste for recovery as per Condition 5.17.2 of the current Waste Licence 78-1. Only inert non-hazardous C&D Waste will be accepted. Figure 4 provides details the location of the C&DW recovery area. The activity will involve the use of a mobile crusher, screens and the stockpiling of segregated materials.

Ballaghveny Landfill is considered to be a suitable location for this C&D waste recovery operation for the following reasons:

- Current Waste Licence allows for the recovery of C&D waste as per Condition 5.17.2,
- Proximity to Nenagh Town,
- Site infrastructure is already provided at the landfill,
- The site is well screened from view and therefore will not cause a negative visual impact,
- Management and monitoring systems are in place at the landfill,
- The provision of this C&D waste recovery operation at Ballaghveny landfill meets the requirements of the Midlands Waste Management Plan.

6.1 MIDLANDS WASTE MANAGEMENT PLAN

Provision of this C&D waste recovery operation by North Tipperary County Council is in accordance with the recommendations of the Midlands Waste Management Plan. The Plan recommends that six locations in the Region be established for the recovery of C&D waste at existing or closed landfills with Nenagh recommended as one such location.

6.2 RECYCLING PROCESS

Materials will be weighed at a weighbridge prior to delivery at the proposed facility. Materials will be classified according to their content and stockpiled until significant volumes have accumulated, at which stage the mobile crusher will be brought on site and used to process the material. A loader feeds the raw material into the crusher. The crushed material will then be fed into a screen to extract any oversized materials which may get through the crusher. Residual materials such as timber and metal will be stored on site prior to removal off-site for recycling.

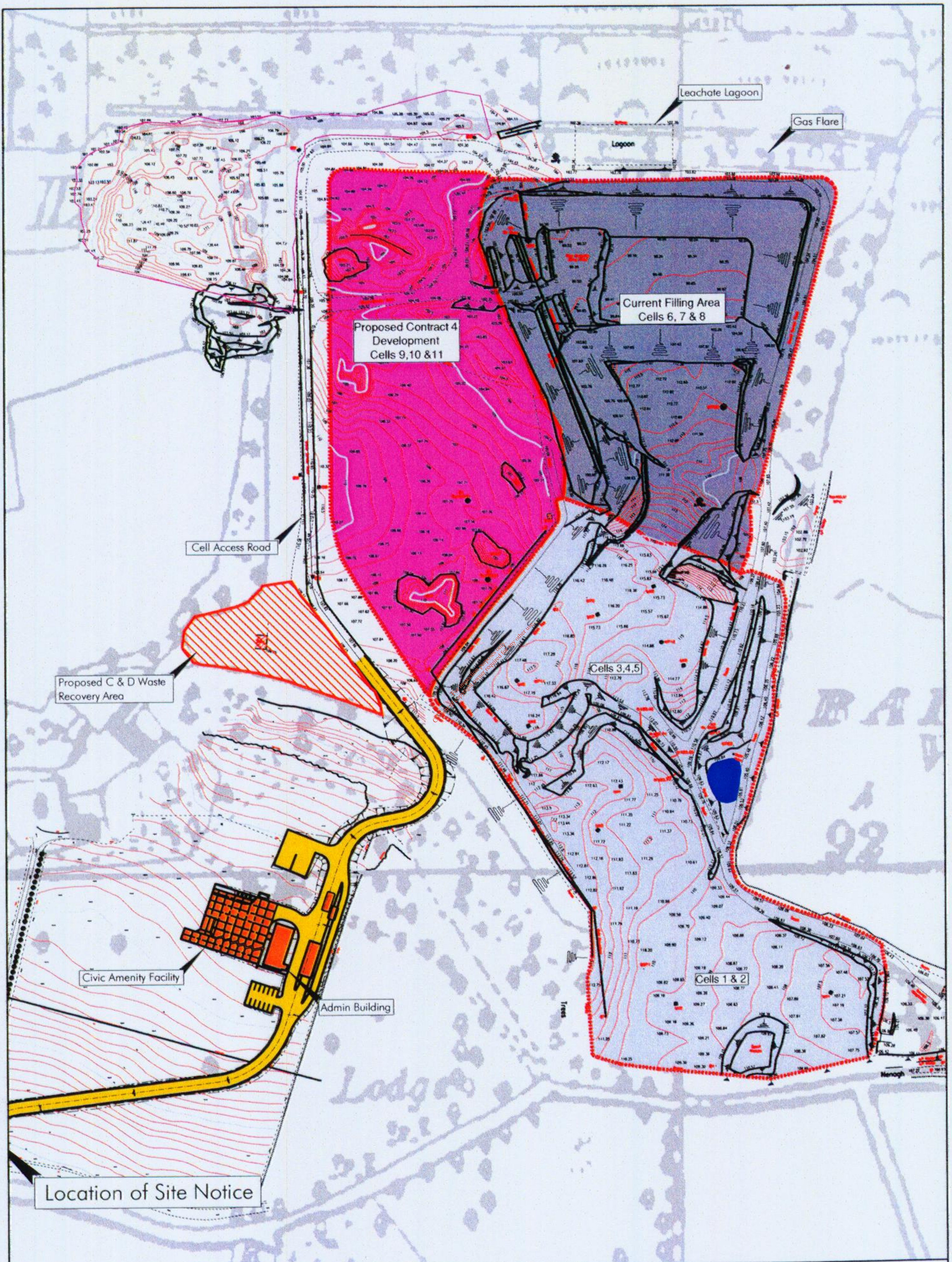
6.3 USES OF RECYCLED C&D MATERIALS

Initially the local authority will use the crushed aggregate as raw material on development and infrastructural works and the surplus soil will be used for daily cover material, landfill remediation and restoration projects.

Other end uses for recycled C&D waste include:

- Landscaping,
- Site roads, car parks and hardstanding area,
- Ground consolidation,
- Mine infilling,
- Sea defence and river bank protection,
- Infilling depressions and foundation voids,
- Landfill cover.

New specifications for the use of recycled aggregates in building materials are due to come into operation in June 2004. These include specifications for mortar, concrete, and aggregates for use in civil engineering work and road construction. These will create new markets and outlets for recycled materials.



Ballaghveny Landfill - Site Layout Showing
 Proposed Location of C & D Waste Recovery Area

Fig.4

7 TREATED SLUDGE FOR DISPOSAL

North Tipperary County Council propose to amend Condition 5.12.3 of the current Waste Licence which states that "from 1 January, 2004, only treated sludges shall be accepted at the facility". North Tipperary County Council request that this date be extended to 1 January 2005 to allow for the proposed improvement works at Thurles Sewerage Scheme.

Appendix D contains information on the Sludge Management Proposals at Thurles Sewerage Treatment Works, which was prepared by White Young Green Ltd on behalf of North Tipperary County Council. Thurles Plant Improvement Works Contract should be fully commissioned by December 2004.

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