

# Planning Report

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**Prepared on behalf of Kildare County Council  
to accompany an application for Planning Approval  
for the Kerdiffstown Landfill Remediation Project at  
Kerdiffstown, County Kildare.**

**Submitted to:  
An Bord Pleanála**

**Under the provisions of Section 175 of the Planning and  
Development Act, 2000 (as amended)**

**August 2017**



**Kildare County Council**  
Comhairle Contae Chill Dara



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# 1. INTRODUCTION

This Report has been prepared by AOS Planning on behalf of Kildare County Council, the applicant, in relation to the proposed remediation of the former landfill site at Kerdiffstown, County Kildare. The project is entitled the Kerdiffstown Landfill Remediation Project (KLRP) (hereafter referred to as the proposed Project or KLRP). The application proposes the implementation of a revised Remediation Strategy, which differs from the previously approved '*Land Restoration Project*' (Register Reference (Reg Ref) KCC 97/871 / ABP PL.09.105894 and amended by Reg Ref KCC 03/2355 / ABP PL.09.206726). These differences are set out in Section 1.4 below.

Kerdiffstown Landfill in County Kildare is a former quarry that has been progressively backfilled with wastes. In June 2010, the former operator of the landfill vacated the site and it was left in an unsecured condition. In January 2011, a major fire developed within the mass of mounded waste material present in the site. Responsibility for the site was then transferred to the EPA, and limited site remediation works were carried out using Section 56 of the Waste Management Act 1996 (as amended) emergency powers to control environmental, health and safety risks at the site.

Under the control of the EPA, the feasibility of implementing a site restoration strategy was examined. The Kerdiffstown Landfill Remediation Project - Remedial Options Report SKM (2013) was subject to detailed consideration by both the EPA and central Government – having been subject to a detailed discussion at Cabinet level.

In June 2015, the Minister for the Environment, Community and Local Government formally requested Kildare County Council to manage the remediation of Kerdiffstown on behalf of the State through a Memorandum of Understanding (MoU) – Appendix 1 provides a copy of this MoU.

The Government have been advised of project updates throughout. The Department has given a long term commitment to this project, and has also made the European Commission fully aware of future project plans.

Kildare County Council will implement remediation by taking ownership of the lands required to facilitate remediation of the site, and support the end-use development through Compulsory Purchase and the implementation of an overall remediation plan for the site - the Kerdiffstown Landfill Remediation Project (KLRP).

The landfill poses a number of risks due to large areas of uncapped waste, remnants of buildings and structures on-site, man-made ponds, steep slopes and the lined cell with a temporary cap. The former landfill requires remediation to reduce the risks to public health and safety and the environment. The proposed Project is to remediate the site by providing an engineered capping system, providing a landscaped profile and improving the management of landfill gas, leachate and surface water to ultimately provide a multi-use public park.

The overall objective of the proposed Project is to remediate the land contained within the Kerdiffstown Landfill site. Currently the site is in a disused state and poses a risk to the environment. Specific objectives of the proposed Project are:

- Removal of risks to public health and safety;
- A reduction in the environmental risk profile of the site to an acceptable level;
- Delivery of a remediation solution which is acceptable to the local community;

- Completion of the remediation works within 8 years; and
- Integration of sustainability and sustainable design principles and development in both the remediation and post closure works (operation of the multi-use public park).

The KLRP, as proposed, will ensure the long-term environmental improvement of this former waste disposal facility and facilitate the proposed future land use as a multi-use public park.

This Planning Report has been formulated as part of an interdisciplinary design approach, which takes specific site and strategic aspects into account. The report sets out the planning context for the subject planning application for Approval for the remediation of the former landfill at Kerdiffstown, Co. Kildare. It should be read in conjunction with the planning application documents, the Environmental Impact Assessment Report (EIAR) and other documentation that accompany this application.

Whilst the proposed Project does not comprise development which is of a class of infrastructure development as specified within the 7th Schedule of the Act (Strategic Infrastructure Development), it does however constitute Strategic Infrastructure as defined by the open sections of the Act where 'strategic infrastructure development' means –

*.....(b) any proposed development by a local authority referred to in section 175(1)....*

*.....(f) any scheme or proposed road development referred to in Section 215.....*

*.....(h) any compulsory acquisition of land referred to in Section 214, 215A, 215B or 215C, being an acquisition related to development specified in any of the preceding paragraphs of this definition.'*

The application is thus being made to An Bord Pleanála under Section 175 of the Planning and Development Act, 2000 (as amended). Section 175 (1) of the Act relates to development proposed by a Local Authority, where an Environmental Impact Assessment Report is required and where An Bord Pleanála is the consenting authority.

## **1.1 OUTLINE DESCRIPTION OF PROPOSED PROJECT**

The development proposed and comprising the Kerdiffstown Landfill Remediation Project is required to make the site safe for public health and to protect the environment from waste-derived pollution. The proposed Project seeks to remediate the site by providing an engineered capping system, providing a landscaped profile and improving the management of landfill gas, leachate and surface water to ultimately provide a multi-use public park.

An appraisal of technical remedial options (*'Kerdiffstown Landfill Remediation Project - Remedial Options Report'* (See Appendix 6), undertaken for the Environmental Protection Agency (EPA) considered general techniques and logistics for the remediation of the site. This report concluded that the most practical and sustainable remediation, with the least environmental impact, would involve capping the deposited wastes in-situ, following a minimum of excavation and re-deposition of wastes to achieve a suitable landform.

The preferred remediation and end-use option, to provide a multi-use public amenity park and sports pitches, which is the subject of this planning application, emerged following comprehensive public consultation and a significant amount of detailed engineering investigations. A number of alternatives were considered in assessing the remediation solution and these are described in Chapter 5 *'Consideration of Alternatives'*, of the EIAR.

In planning terms, the proposed Project is described as the implementation of a revised remediation plan, to that which was previously approved by Kildare County Council and An Bord Pleanála.

There are essentially two phases to the site remediation. First, there are works that have been on-going from 2011, which have been carried out by the EPA and latterly Kildare County Council under Section 56 of the Waste Management Act 1996 (as amended). These works have been exempt from the requirement for planning approval as they relate to works necessary to prevent and limit pollution from waste materials located therein – namely they are urgent works relating to initial phases of site restoration, and some of the aftercare and site management measures. These works are described in further detail in Sections 3 and 4 of this report and in Chapter 3 'Need for the Proposed Project' of the EIAR.

Second, there is the longer-term strategy (the subject of this planning application) to remediate the site and implement an after-care programme. The proposed remediation works will include; site access, demolition works, a landfill infrastructure compound, landfill gas and leachate management systems (reducing the risk of migration from the site), site re-profiling, engineered capping, a surface water drainage system and development of a multi-use public park.

The end-use of the site, representing the Operational Phase of the proposed Project, will be a public park including multi-use sports pitches, a building with changing rooms, public toilets and stores, car parking, a children's playground, informal trails and defined viewpoints. Section 4 of this report provides further detail of the proposed Project. A Landscape Masterplan also accompanies this application. The end-use proposal for the site is a multi-use public park and the site will still be 'operated' under an Industrial Emissions Activities Licence (IEAL) granted by the EPA. However, unlike other landfill facilities in which waste licences set conditions for the operation of an active landfill for the acceptance and disposal of waste, it is anticipated that the IEAL for the site will set conditions and emission limits for the ongoing aftercare of the end-use at the site. Kildare County Council, as the licence holder, will be required to adhere to these specific conditions to minimise potential environmental impacts from the site, and provide data and reports to the EPA to confirm compliance. As a result, there will be an ongoing requirement for access to gas, leachate and groundwater monitoring wells on and off site and for the recovery of surface water samples from within and outside of the site.

## 1.2 STRATEGIC PLANNING OVERVIEW

The Kildare County Development Plan (2017-2023), policies and objectives provide a clear spatial framework for the future land use planning of the site and surrounding area.

Within the above context, Naas is identified in the Regional Planning Guidelines for the Greater Dublin Area (RPG's GDA) and the County's settlement hierarchy, as a Large Growth Town 1 within the metropolitan area of Dublin, with a population in 2016 of 21,597 people (CSO Census, 2016). This is estimated to increase to 28,111 in 2023. Sallins is identified as a Small Town, with a population of 5,849 in 2016. The village of Johnstown has a population of 1,004 in 2016. Sallins has a Local Area Plan (2016-2022), and Johnstown has its own Village Plan within the KCDP.

Within the recently published Kildare County Development Plan (2017-2023), the Council has identified the strategic role of Large Growth Towns as *'important self-sustaining regional economic drivers, accommodating significant new investment in transport, housing, economic and commercial activity, while capitalising in international connectivity and high quality*

connections to Dublin City Centre. They also have a key role in supporting and servicing a wider local economy.’

The Council have outlined a number of strategic objectives, relevant to the settlement strategy for the County. The following are relevant to the subject proposal:

- *It is the policy of the Council “To provide a greater degree of co-ordination between large population centres and corresponding growth in employment, public infrastructure, strategic and local amenities, community facilities, schools, public transport etc. through a plan-led approach.”*

Within Section 7.6 (Environmental Services), Waste Management Policy WM16 is of specific relevance to the proposed KLRP:

- *“To work in conjunction with Government Departments and Agencies and all other relevant stakeholders to remediate Kerdiffstown Landfill in a socially, economically and environmentally sustainable manner that will both manage and reduce environmental risk and accommodate an appropriate end – use that is compatible with the established character of the area.”*

It is considered that the above planning framework sets a clear and unambiguous context for the positive consideration of the proposed Project in a co-ordinated, sustainable and planned manner.

### 1.3 PREVIOUS PLANNING PERMISSIONS

There are a number of entries within the Planning Register for lands/ sites within the subject application site. Table 1.1 provides a summary of these, and outlines the evolution of the site from its origins as a sand and gravel pit, to a waste management facility.

**Table 1.1 Summary History of Planning Applications within the Subject Application Site**

Reg. Reference	Development Description	Status
<b>KCC: 73/236 ABP: PL/9/5/23344</b>	Erection of 4 houses at Kerdiffstown for Roadstone Ltd.	KCC Refused Appeal Withdrawn
<b>KCC: 81/336*</b>	Change of use from gravel pit to controlled tip for commercial and industrial trade refuse at Kerdiffstown, Naas	KCC file records no decision on file but records show correspondence was received in relation to an application for a waste licence. This indicates permission was granted.
<b>KCC: 85/735 ABP: PL/9/5/74690</b>	Permission for dry industrial waste tip at Kerdiffstown, Naas	KCC Refused: 13/08/87 Appeal Withdrawn: 29/09/88
<b>KCC: 89/1089 ABP: PL/9/5/81196</b>	Outline Permission for 4 houses and 4 septic tanks at Kerdiffstown, Naas	KCC Refused: 3/11/89 ABP Refused: 1/8/90
<b>KCC: 97/42*</b>	Dormer bungalow and septic tank at Kerdiffstown, Naas	KCC Granted: 13/08/97
<b>KCC: 97/871* ABP: PL.09.105894</b>	Permission to retain existing landfill on a 5.7 Ha portion of the site and further extend waste disposal operations over an additional 8.7 Ha	KCC Granted: 6/02/98 ABP Granted: July 1998
<b>KCC: 98/754*</b>	Change of house type to split level dormer bungalow,	KCC Granted: 9/09/1998

Reg. Reference	Development Description	Status
	garage, septic tank on foot of approved permission 97/42 at Kerdiffstown, Naas	
<b>KCC: 01/133</b>	Permission for 2 new dwellings and incorporate new enviropack effluent treatment system	KCC Granted: 01/08/2001
<b>KCC: 01/366</b>	Variation to existing permission 97/871 / PL.09.105894 for the erection of a building for waste recycling and other ancillary development.	Application appears to have been withdrawn at an appeal stage
<b>KCC: 01/1364*</b> <b>ABP: PL.09.128896</b>	Variation to existing permission 97/871 / PL.09.105894 to allow for the development of an additional building for waste recycling.	KCC Granted: 4/02/02 ABP Granted: 4/03/02
<b>KCC: 01/2315*</b>	Variation to existing permission 97/871 / PL.09.105894 to allow for the excavation and processing of waste materials on the site and other ancillary development.	KCC Granted: 20/03/03 Appeal Withdrawn
<b>KCC: 03/2355*</b> <b>ABP: PL.09.206726</b>	Variation to existing permission 97/871 / PL.09.105894 to extend the facility with the development of a further 2.5 HA for use as an engineered facility for the recovery and disposal of waste and to complete restoration within a 10 year time frame.	KCC Granted: 09/03/04 ABP Granted: 21/09/04
<b>KCC: 03/917 **</b>	Retention of extension to existing sales/display area for the sale of mobile homes and caravans and all associated items including retention of hard cored surface.	KCC Granted: 16/01/04
<b>KCC: 05/961 **</b>	Retention of enlarged conservatory with rooflights to rear of existing dwelling on foot of previously approved permission 00/776 and permanent retention of single storey porch to front of dwelling.	KCC Granted: 27/07/05
<b>KCC: 05/1119 **</b>	Permission for construction of dormer bungalow and EPS treatment unit.	KCC Granted: 02/11/05
<b>KCC: 07/325 **</b>	Permission for sunroom extension to gable end of the existing dormer dwelling.	KCC Granted: 09/07/07
<p><b>Note:</b>                      KCC: Kildare County Council                      ABP: An Bord Pleanála                      * indicates the file is relevant to the KLRP strategy and has been considered in more detail in Section 3 (Subject Site Planning History) below.                      ** indicates additional sites to which the CPO relates.</p>		

## 1.4 NEED FOR THE PROPOSED PROJECT

Given the current impact the Kerdiffstown Landfill is having on the environment and the significant risk of future impacts, there is an environmental imperative to remediate the site. Chapter 3 of the EIAR, *'The Need for the Proposed Project'* provides further detail.

The proposed Project differs significantly from other land remediation plans previously considered and permitted, in that the choices available to Kildare County Council are constrained by the current site and the engineering and environmental challenges it poses. The consideration of alternatives has thus been a key element of the EIA process.

While the available options to act in a manner to protect the environment are limited by the challenges posed by the site, the proposal incorporates a solution that has been arrived at through a robust and extensive EIA process. In doing so, the EIAR has very clearly articulated what remedial and engineering options were considered, and why some were not feasible or preferable from an environment risk reduction standpoint. Further detail is contained in Chapter 5 of the EIAR, '*Consideration of Alternatives*'.

In terms of consultation with the public and commitment to the Aarhus Convention, Kildare County Council has clearly articulated how key decisions forced on the project by the constraints of the site have been arrived at, and how alternatives were considered and the grounds on which they were rejected in favour of the overall best environmental risk reduction profile. Chapter 6 of the EIAR, '*The Consultation Process*' provides further detail. Without implementation of the on-going emergency measures there are potentially significant long-term environmental risks related to the potential for off-site migration of gases/odours and leachate from the site.

A number of potential scenarios for long-term remediation of the site have previously been identified to address the key environmental liability issues. Remediation is considered necessary in order to meet the following broad objectives:

- Reduce or limit future leachate impact upon groundwater and surface water receptors and reduce/control the future production of leachate from the site;
- Ensure landfill gas is managed and controlled in such a way that it does not pose a future risk to nearby properties, residents and other identified receptors;
- Stabilise steep and undulating slopes across the landform;
- Address odour generation, both in the long term and during future remedial works; and
- Provide an end-use which fits within planning and any other relevant licencing conditions.

## **1.5 NEED FOR AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

This Planning Application is accompanied by an Environmental Impact Assessment Report (EIAR). The initial Environmental Impact Assessment (EIA) Directive was implemented in 1985 (85/337/EEC). This Directive, along with three amendments, was amalgamated into Directive 2011/92/EU in December 2011.

Proposed changes to the directive were adopted by the Council of the European Union in May 2014, with a 3-year period to transpose the changes. These changes form the first revision of the Directive 2011/92/EU and Ireland along with all other member states was due to adopt the revised directive by 16 May 2017. Ireland has not met this deadline and as a result a circular letter was issued by the Department of Housing, Planning, Community and Local Government on 15 May 2017. This letter sets out the requirements for applicants and competent authorities in advance of transposition of Directive 2014/52/EU into Irish law. In respect of applications for planning permission or other development consent received on or after 16 May 2017 falling within the scope of Directive 2011/92/EU, or within the scope of Directive 2014/52/EU, competent authorities are advised to consider applying the requirements of Directive 2014/52/EU by way of administrative provisions in advance of the transposition of Directive 2014/52/EU into Irish law.

In order to determine whether an environmental impact assessment is required for the proposed Project, it is necessary to determine whether it is a project listed in one of the Annexes to the Directive 2011/92/EU (as amended by Directive 2014/52/EU).



These Annexes have been transposed in to domestic law. The prescribed classes of development which require EIA are outlined in Schedule 5 of the Planning and Development Regulations 2001 (S.I. 600 of 2001, as amended). The proposed Project is not listed in Part 1 of that Schedule (or Annex 1 of the EIA Directive) and therefore an EIA is not mandatory. The relevant classes of development from Part 2 are as follows:

- 11(b): "Installations for the disposal of waste with an annual intake greater than 25,000 tonnes not included in Part 1 of this Schedule.";
- 13(c): Any change or extension of development being of a class listed in Part 1 or paragraphs 1 to 12 of Part 2 of this Schedule, which would result in the demolition of structures, the demolition of which had not previously been authorised, and where such demolition would be likely to have significant effects on the environment, having regard to the criteria set out under Schedule 7; and
- 15: Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.

As part of the proposed Project it is not anticipated that the site will accept waste for disposal at the site, however the construction works associated with the Remediation Phase will require the importation of engineering materials, such as aggregate, subsoil and top soil which may still be classed as waste, depending on its origin. In addition, some waste will be moved within the footprint of the proposed Project for deposition in the lined cell in Zone 3. On this basis, an application for an Industrial Emissions Activities Licence (IEAL) will be submitted by Kildare County Council to the EPA. Acceptance of such engineering material will be controlled under specifications and acceptance criteria, to comply with the IEAL regulated by the EPA. There will also be a requirement to re-profile and relocate some areas of existing waste within the site boundary in order to reduce the risk to health and safety and the risk of environmental harm.

The existing Kerdiffstown development can be regarded as a development falling within Class 11(b) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended). The proposed Project involves changes to that development, including the demolition of certain structures. It can therefore be regarded as a development listed in Part 2 of the Schedule which does not meet a limit specified in the Schedule and/or as a change to an existing development involving the demolition of structures. In the circumstances, although a mandatory EIA is not triggered for the proposed Project, if it is likely to have a significant effect on the environment having regard to the criteria set out in Schedule 7, an EIA will be required.

The criteria set out in Schedule 7 require regard to be had to:

- The characteristics of the proposed development;
- The location of the proposed development; and
- The characteristics of potential impacts.

Having regard to those criteria and the matters more particularly set out in Schedule 7, it is considered that the works required to remediate the site and develop the proposed multi-use public park end-use, including the excavation and movement of waste material within the site boundary would be likely to have significant effects on the environment and that an EIA should be carried out to fully assess potential impacts and to make recommendations for mitigation measures to reduce or eliminate impacts.

The accompanying EIAR has been prepared in accordance with Schedule 6 of the Planning and Development Regulations, 2001 to 2015 (as amended), and conforms to the relevant requirements as specified therein. The EIAR has also been undertaken having regard to the following guidance:

- EPA Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002) (and revised and draft guidelines 2015/2017); and
- EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003a) (and revised advice notes 2015).

The scope of the EIAR has been developed throughout the design process. The final EIAR covers all of the topics discussed during the public consultation process. It also includes additional items that were added in response to issues that emerged during the detailed work involved in the EIA process.

Based on the available information and historical studies carried out at the site, it is considered that without mitigation, the current Kerdiffstown Landfill site poses a potentially unacceptable long term risk to the environment. The works required to remediate the site and develop the proposed multi-use public park end-use, including the excavation and movement of waste material within the site boundary, could lead to effects and an EIA should be carried out to fully assess potential impacts and to make recommendations for mitigation measures to reduce or eliminate impacts.

## **1.6 NEED FOR A NATURA IMPACT STATEMENT**

An Appropriate Assessment Screening under Article 6 of the Habitats Directive (92/43/EEC) was carried out to determine whether the proposed Project is likely to have a significant effect on the conservation of European Sites (the Natura 2000 Network). The Appropriate Assessment Screening Statement (AASS) has concluded that an Appropriate Assessment of the proposed Project is not required. It can be excluded, on the basis of objective scientific information, and in light of no implications for the conservation objectives of relevant sites from the proposed Project that the proposed Project, either individually or in-combination with other plans or projects, will have likely significant effects on any European site.

Chapter 11 *'Biodiversity'* of the accompanying EIAR and Appendix A11.10 of the EIAR contain further details and a copy of the Appropriate Assessment Screening Statement.

## **1.7 NEED FOR A FLOOD RISK ASSESSMENT**

A Flood Risk Assessment (FRA) has been undertaken in line with the Office of Public Works Guidelines for Planning Authorities 20: *'The Planning System and Flood Risk Management'* (OPW, 2009). The primary objective of the FRA was to assess the flood risk in the existing situation and with the proposed Project in operation.

An assessment was carried out using the existing Catchment Flood Risk Assessment and Management (CFRAM) fluvial (related to a river or stream) flood data for the area. Based on the initial surface water design, and accounting for the 1 in 10 year flood event and 1 in 100 year flood event, the increases in water level are considered to be negligible. The impact on fluvial flood risk to the Morell River as a result of the proposed Project is anticipated to be negligible.

The FRA has initially concluded that all across the study area, comparison of the existing and the proposed Project demonstrate that the proposed works does not increase the flood risk. The FRA is contained in Appendix A13.1 of the EIAR.

## 1.8 NEED FOR AN INDUSTRIAL EMISSIONS ACTIVITIES LICENCE

The Industrial Emissions Directive (IED), EU 2010/75/EU) was implemented in Ireland in 2013 by the following regulations:

- EU (Industrial Emissions) (Licensing) Regulations 2013 (SI No 137 of 2013) and
- EU (Industrial Emissions) Regulations 2013 (SI No 138 of 2013)

The IED includes licensing of the major waste management activities, such as landfill sites and their remediation, which previously required waste licenses under the Waste Management Act. The waste activities that are subject to the IED are contained in Annex I to the Directive, and set out in amendments to the First Schedule to the EPA Act, Section 11.5, Waste Activities. This sets out the following thresholds:

*“Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.”*

Note: Landfills that receive less than 10 tonnes of waste per day or less than 25,000 tonnes per year continue to be licensed by the EPA under the Waste Management Act.

As part of the proposed Project it is not anticipated that the site will accept waste for disposal at the site, however the construction works associated with the Remediation Phase will require the importation of engineering materials, such as aggregate, subsoil and top soil which may still be classed as waste, depending on its origin. Acceptance of such material will be controlled under specifications and acceptance criteria, to comply with the Industrial Emissions Activities Licence (IEAL) regulated by the Environmental Protection Agency (EPA). There will also be a requirement to re-profile and relocate some areas of existing waste within the site boundary in order to reduce the risk to health and safety and risk of environmental harm.

## 1.9 LIST OF DOCUMENTS ACCOMPANYING THE APPLICATION

A number of supporting documents are being submitted to An Bord Pleanála as part of this planning application process. These documents include the standard documents which normally accompany planning applications which are subject to environmental impact assessment, including:

- A Cover Letter
- A cheque for the appropriate Planning Fee
- A Planning Report (this document)
- Drawing schedule and drawings (Appendix 2 to this Planning Report)
- Copy of the site notice (Appendix 3 to this Planning Report)
- Copy of the newspaper notice (Appendix 4 to this Planning Report)
- Copy of the Notices sent to the prescribed authorities (provided with Planning Report)
- An Environmental Impact Assessment Report (EIAR) including Non-Technical Summary
- An Appropriate Assessment Screening Report (Appendix 11.10 of EIAR)
- Flood Risk Assessment (Appendix 13.1 of EIAR)
- Traffic Impact Assessment (Appendix 14.1 of EIAR)

- Landscape Masterplan Statement (Appendix 4.8 of EIAR)
- Letter from Irish Water (Appendix 7 to this Planning Report)

Two hard copies and one electronic copy of the documents and drawings are submitted.

It should be noted that an application for the compulsory acquisition of land under Section 76 of the Housing Act, 1966 and the Third Schedule thereof and Section 213 of the Planning and Development Act, 2000 (as amended) is also being lodged in tandem with this Section 175 planning application.

### **1.10 PLANNING FEE**

The Planning Fee has been confirmed with An Bord Pleanála in advance of lodgement of the application. The fee accompanying this Application by Kildare County Council under Section 175 of the Act is €30,000.

### **1.11 A NOTE ON DRAWING SCALES**

The drawings that accompany this application have been prepared to ensure that they are legible having regard to the scale of the site itself.

## 2. SUBJECT SITE LOCATION AND CONTEXT

### 2.1 SUBJECT SITE LOCATION

The site is located approximately 3km north-east of central Naas and the closest site boundary is approximately 400m north-west of Johnstown village as shown in Figure 2.1.



**Figure 2.1 Strategic Location of Subject Lands (outlined in red)**

The site is bounded to the western and southern boundaries by the L2005 Kerdiffstown Road connecting Sallins and Johnstown. The L2005 is a typical rural road, characterised by low-density one-off residential properties. The Morell River runs to the east of the site, adjoining the lands associated with Palmerstown Golf Course and Palmerstown Demesne. Naas Golf Club is to the North and to the northeast lie the lands associated with Kerdiffstown House; and to the south a number of residential properties – some of which were developed in association with the site. The nearest residential property is approximately 10m from the site boundary associated with the former redline boundary for waste licence W0047-02.



**Figure 2.2 Aerial view of the site (indicated in red) and proximate land uses**



## 2.2 BACKGROUND AND SITE HISTORY

Kerdiffstown Landfill is a former sand and gravel quarry which had been progressively backfilled with wastes by a variety of operators from the 1950s onwards (Evaluation of Environmental Liabilities at Kerdiffstown Landfill, SKM Enviros 2010). The site is located approximately 3km north-east of central Naas and the closest site boundary is approximately 400m north-west of Johnstown village as shown in Figure 2.1 above.

The facility at Kerdiffstown was operated under a local authority waste permit followed by a waste licence, W0047-01, issued by the EPA in 2003, with a revised licence W0047-02 issued in 2006. Most recently, the site consisted of an extensive recycling facility, a lined landfill cell which had been partially filled with waste and large areas of the site in which substantial quantities of waste have been deposited in a non-compliant manner. The main area of waste deposition is in the unlined northwestern area of the landfill. There are also smaller quantities of waste stockpiled around the site. The presence of such large quantities of waste and the lack of appropriate infrastructure to manage polluting emissions arising from this waste gives rise to significant risk of environmental pollution.

In June 2010 all waste disposal activities ceased when the former operator of the landfill vacated the site and it was left in an unsecured condition. In January 2011 a major fire developed within the mass of mounded waste material present in the centre of the site which

required the intervention of a number of state agencies, including Kildare County Council and the Environmental Protection Agency (EPA).

The site known as 'Kerdiffstown Landfill' is now in the early stages of remediation. Since February 2011 the EPA, and following the transfer of the project in June 2015 Kildare County Council, have been using powers under Section 56 of the Waste Management Act 1996 (as amended) to manage the site and put in place appropriate measures to prevent and limit pollution.

Section 56 of the Waste Management Act allows a local authority to take measures to prevent or limit environmental pollution caused by waste:

*"Where it appears to a local authority that measures are required to be taken in order to prevent or limit environmental pollution in its functional area caused, or likely to be caused, by the holding, recovery or disposal of waste, the local authority may take such steps, carry out such operations, recover or dispose of, or arrange for the recovery or disposal of, such waste or give such assistance as it considers necessary to prevent or limit such pollution or to mitigate or remedy the effects on the environment of any such activity."*

The Kerdiffstown Landfill Remediation Project (the proposed Project) is intended to remediate the former landfill to reduce risks to the environment and to public health and safety. The remediation of the proposed Project and development of the multi-use public park and sports pitches is anticipated to take approximately five to seven years with approximately four years of intensive construction works to remediate the site. Chapter 4 'Description of the Proposed Project' of the EIAR provides details on the outline phasing of the works and the scope of the proposed Project.

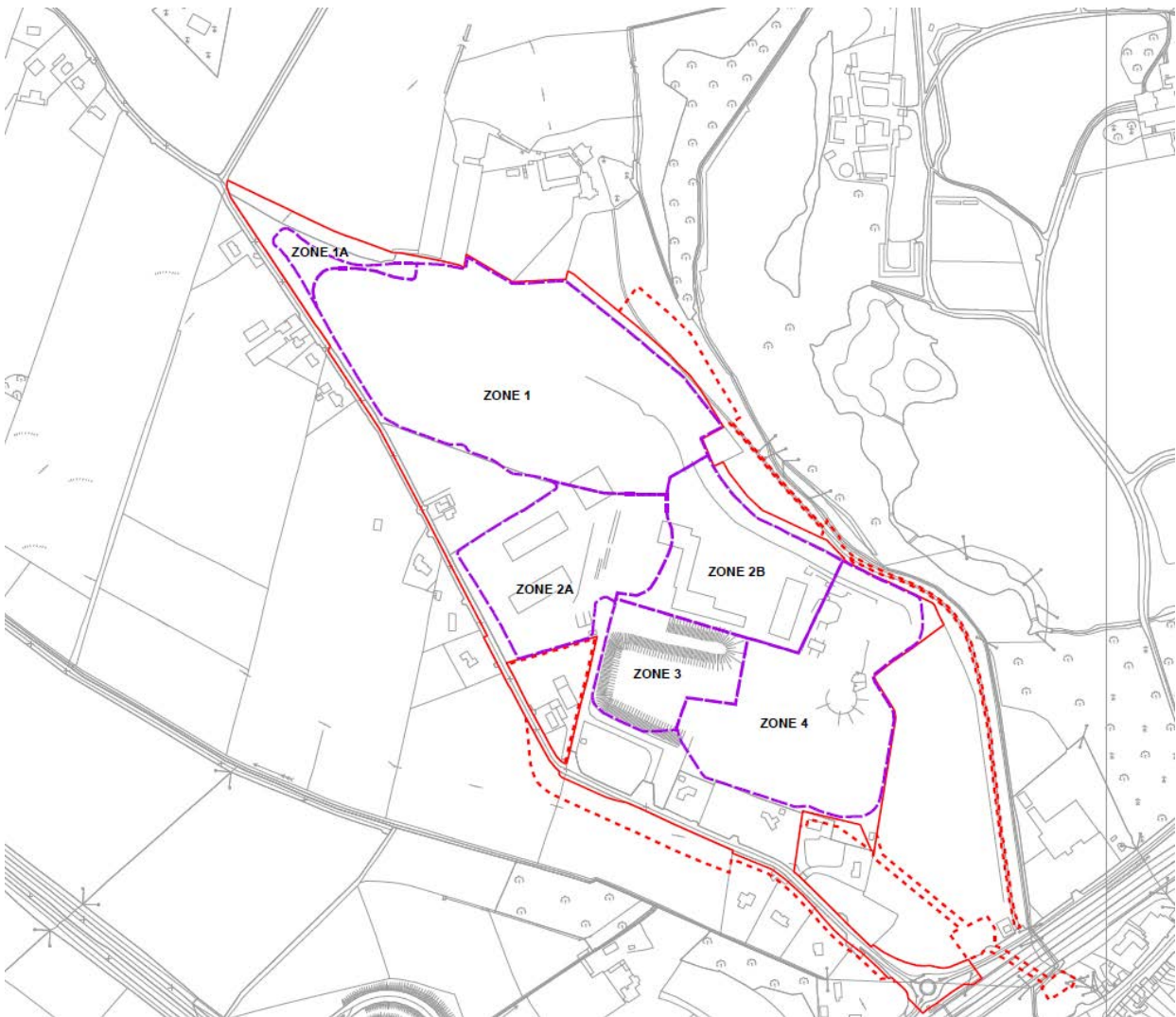
## **2.3 EXISTING SITE DESCRIPTION AND LAYOUT**

Currently on site, there is a series of infrastructure including:

- Residual concrete walls and hardstandings from buildings and structures used as part of the historical waste processing and concrete batching activities;
- Temporary buildings housing KCC project staff and site security;
- Roads and pathways;
- Landfill gas flares (2 No.) and associated gas wells/pipework;
- Temporary low permeability cap placed over the waste mass in the lined cell to limit fugitive landfill gas emissions;
- Environmental monitoring boreholes (gas, groundwater);
- Surface water drainage infrastructure (silt separation tank, interceptor etc.);
- Lighting infrastructure; and
- Leachate collection system in Zone 3 and leachate tankers for the storage of leachate prior to off-site disposal.

The current site layout is sub-divided into a number of discrete geographical areas or zones of activity each of which has its own unique characteristics. The layout of each zone, along with information on the key characteristics of the materials within each zone, is summarised in Table 2.1 below. The indicative location of these zones within the site is shown in Figure 2.3 below.

**Figure 2.3 Inferred Zones of Activity on the Kerdiffstown Site**



Chapter 3 of the EIAR *'The Need for the Proposed Project'* provides an assessment of the characteristics of each zone of activity on the site.



The key characteristics of the site can be summarised as follows:



- The total volume of waste present on the site is 3.1 million cubic metres;
- The waste materials found to date comprise inert non-hazardous wastes. No hazardous wastes have been identified.

Further details on the above are also provided within Table 2.1 below.



**Table 2.1 Key Characteristics of Material within each Zone**

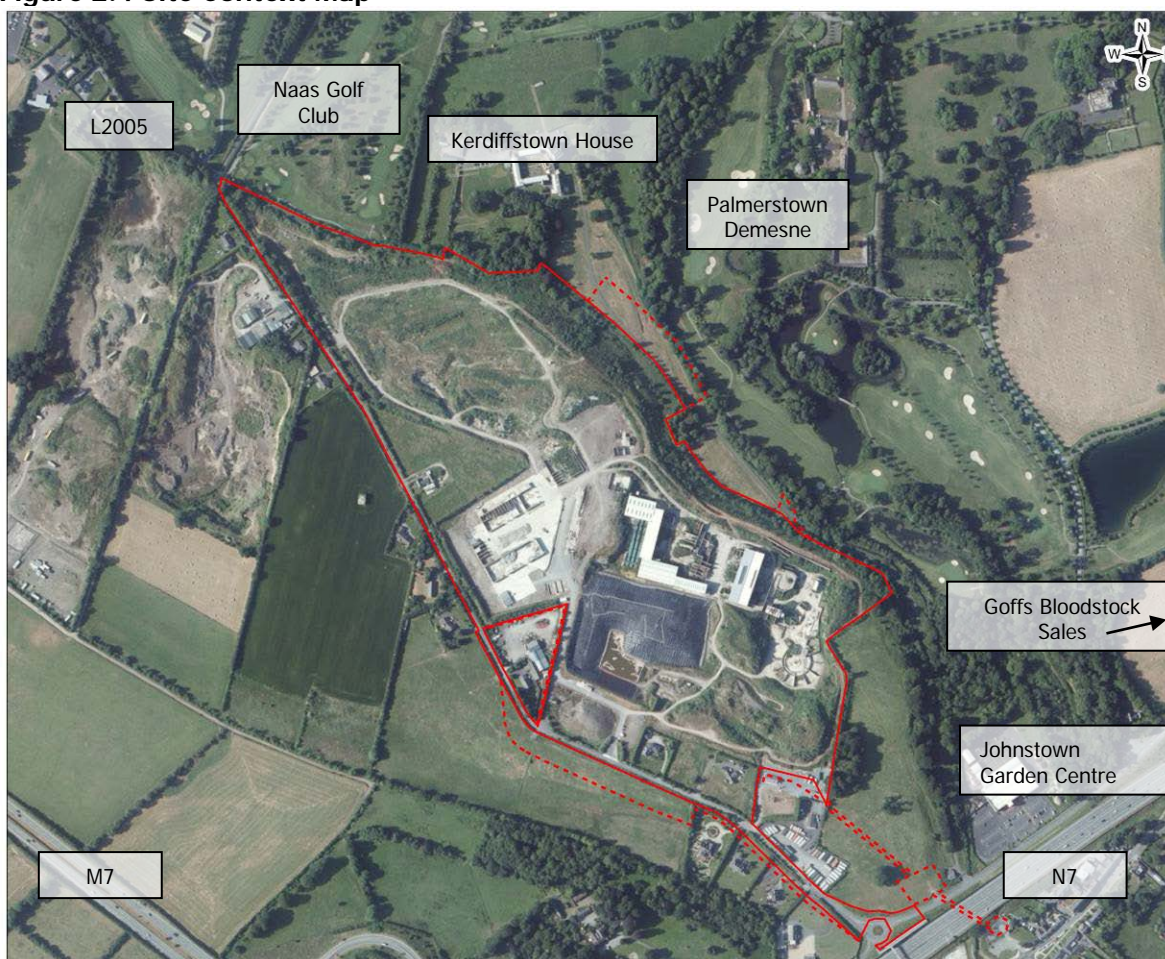
Zone Number	Zone Key Characteristics
<p><b>Zone 1;</b> comprising sub Zones 1 &amp; 1A</p> 	<ul style="list-style-type: none"> <li>• Estimated Area: 100,000m<sup>2</sup></li> <li>• Estimated Waste Volume: 2,023,000m<sup>3</sup></li> </ul> <p>Wastes deposited in Zone 1 located to the north-west area of the site accounts for approximately 65% of the entire estimated volume of waste on site. The wastes in this area are typically unprocessed, highly odorous and principally comprise non-hazardous mixed construction and demolition (C&amp;D) wastes and household / Municipal Solid Wastes (MSW). C&amp;D wastes are noted to contain varying amounts of clay, gravel, concrete, brick, wood, textile, plastic, rubber and metal. The MSW within this zone is described as having plastic, textiles, wood, ash paper, cables and steel in varying proportions. The MSW wastes are found over most of the zone, although there appears to be more C&amp;D waste in the north-west corner of the zone (e.g. borehole EMW12 and BH18). This area has therefore been designated as Zone 1A to reflect this reduced risk profile. To the southern end of Zone 1, wastes are observed to be more silty (e.g. BH11, BH12) with C&amp;D and MSW waste within the silt. Throughout Zone 1, where waste is encountered, it is considered that there is sufficient putrescible material (material that contains organic material which capable of decomposing) within the waste to class the wastes as non-hazardous biodegradable waste.</p> <p>Zone 1 is unlined and uncapped, with no means of limiting leachate generation or management.</p> <p>There are a series of landfill gas wells present across Zone 1, extracting gas to a flare. The average overall quality of gas from Zone 1, based on values recorded in the landfill gas extraction wells, is methane 23%v/v carbon dioxide 25% v/v and &lt;1% v/v oxygen. The gas wells cover selected areas of the zone based on targeting areas of odour generation.</p>
<p><b>Zone 2;</b> comprising sub Zones 2A &amp; 2B</p> 	<ul style="list-style-type: none"> <li>• Estimated Area: 83,000m<sup>2</sup></li> <li>• Estimated Waste Volume: 660,000m<sup>3</sup></li> </ul> <p>Zone 2 comprises largely flat areas with thick reinforced concrete hardstandings covering an area of approximately 58,000m<sup>2</sup> which form an impermeable layer over the wastes and prevent direct rainwater ingress. Walls from the former buildings of the waste processing facility also remain.</p> <p>Wastes in this zone were observed to be unprocessed non-hazardous mixed C&amp;D waste with varying amounts of clay, gravel, brick, concrete, wood, textile, paper, plastic, rubber and metal. Domestic waste (MSW) is also present in this area at varying depths mixed in with C&amp;D materials.</p> <p>This area was originally assessed as one zone, however, review of ground investigations and subsequent monitoring data confirms that wastes in Zone 2A comprise more MSW than that in Zone 2B. Initial readings of gas shown on borehole logs show that relatively high concentrations of methane and carbon dioxide have been present in Zone 2A and 2B with two locations exceeding 20% methane. Monitoring undertaken in May and June 2017 shows a variable picture in Zone 2A with the average methane concentration ranging between 1.4% and 30 % v/v. Zone 2B shows very low concentrations of methane between 0.0% v/v and 0.9% v/v.</p> <p>The majority of waste in Zone 2B is reported in the borehole logs to comprise unprocessed non-hazardous mixed C&amp;D waste with varying amounts of clay, gravel, brick, concrete, wood, textile, paper, plastic, rubber (including tyres) and metal but with MSW also present at varying depths mixed in within the C&amp;D materials.</p> <p>The wastes are generally described as being dry, although damp or wet wastes are identified closer to the groundwater table with saturated wastes shown in the boreholes where waste is at the lowest elevation in Zone 2B (e.g. in BH9 and BH50). No saturated wastes have been identified in Zone 2A.</p> <p>The areas beyond the hardstandings are uncapped in Zones 2A and 2B. Like Zone 1, there is no means of managing leachate generated in the waste although the presence of hardstanding will limit leachate generation through infiltration.</p>

Zone Number	Zone Key Characteristics
<p><b>Zone 3</b></p> 	<ul style="list-style-type: none"> <li>• Estimated Area: 24,000m<sup>2</sup></li> <li>• Estimated Waste Volume: 193,000m<sup>3</sup></li> </ul> <p>Zone 3 comprises a cell with engineered basal and side slopes lining system, and is referred to as the 'Lined Cell'. The wastes in Zone 3 comprise a mixture of waste similar to the wastes elsewhere on site including processed non-hazardous waste derived from composting tunnels, C&amp;D materials and unprocessed domestic waste mixed through. Substantial quantities of woodchip were used as daily cover for the waste in the cell.</p> <p>C&amp;D wastes contain varying amounts of clay, gravel, concrete, brick, wood, textile, plastic, rubber and metal. Non-hazardous waste excavated from the location of the fire at the site in 2011 was also deposited in the lined cell; volume approximately 35,000m<sup>3</sup>. Following demolition of the site buildings in 2016, non-hazardous wastes that had been stockpiled in and around the buildings was removed and deposited to the lined cell; approximate volume 14,000m<sup>3</sup>.</p> <p>Zone 3 has a temporary cap applied over the existing waste mass. Landfill gas wells extract gas to a flare. The average overall quality of gas from Zone 3, based on values recorded in the landfill gas extraction wells, is methane 25%v/v, carbon dioxide 25 %v/v and &lt;1%v/v oxygen. Pumps located within inclined risers extending to the base of the cell extract leachate for transfer to tankers and removal from the site.</p>
<p><b>Zone 4</b></p> 	<ul style="list-style-type: none"> <li>• Estimated Area: 45,000m<sup>2</sup></li> <li>• Estimated Waste Volume: 227,000m<sup>3</sup></li> </ul> <p>Zone 4 contains large waste stockpiles, redundant infrastructure and concrete tanks/bays/walls in the lower yard area, with thick reinforced concrete hardstandings covering an area of approximately 12,000m<sup>2</sup>. The area also contains a surface water soakaway lagoon which is cut into waste deposits and into which leachate from the adjacent waste stockpiles currently drains.</p> <p>Stockpiles comprise both processed and unprocessed non-hazardous mixed C&amp;D waste and household waste. The majority of waste in Zone 4 is reported in borehole and trial pit logs to comprise C&amp;D waste with a high proportion of inert material (predominantly reported as gravelly clay) with varying amounts of plastic, timber, textiles, steel, concrete, brick, PVC pipes. The logs (30 No.) do not generally report any MSW to be present (although the logs for BH4 to BH6 do describe the wastes as MSW. However, based on the actual description of the materials and proportion of these the materials are indicative of C&amp;D waste rather than MSW).</p> <p>Where gas readings have been taken and reported in the borehole logs, it is reported that methane and carbon dioxide concentrations are largely absent from the wastes or less than 1%v/v within this zone.</p> <p>The bottom 1 to 2m of wastes are below the water table in this area. The areas beyond the hardstandings are uncapped. The hardstandings will limit rainwater and surface water infiltration to an extent.</p>

## 2.4 LAND USES IN AND AROUND THE SITE

As Figure 2.4 below indicates, the primary land uses surrounding the KLRP Site are rural in nature. The surrounding roads are characterised by low-density one-off residential properties. The Morell River runs to the east of the site, adjoining lands associated with Palmerstown Golf Course and Palmerstown Demesne. Naas Golf Club is to the north of the site, to the north east lie the lands associated with Kerdiffstown House; and to the south a number of residential properties, some of which were developed in association with the site. The Johnstown Garden Centre is located to the south east; Goffs Bloodstock Sales is located to the north east and the N7/M7 national route and motorway run to the south and east of the site.

Figure 2.4 Site Context Map

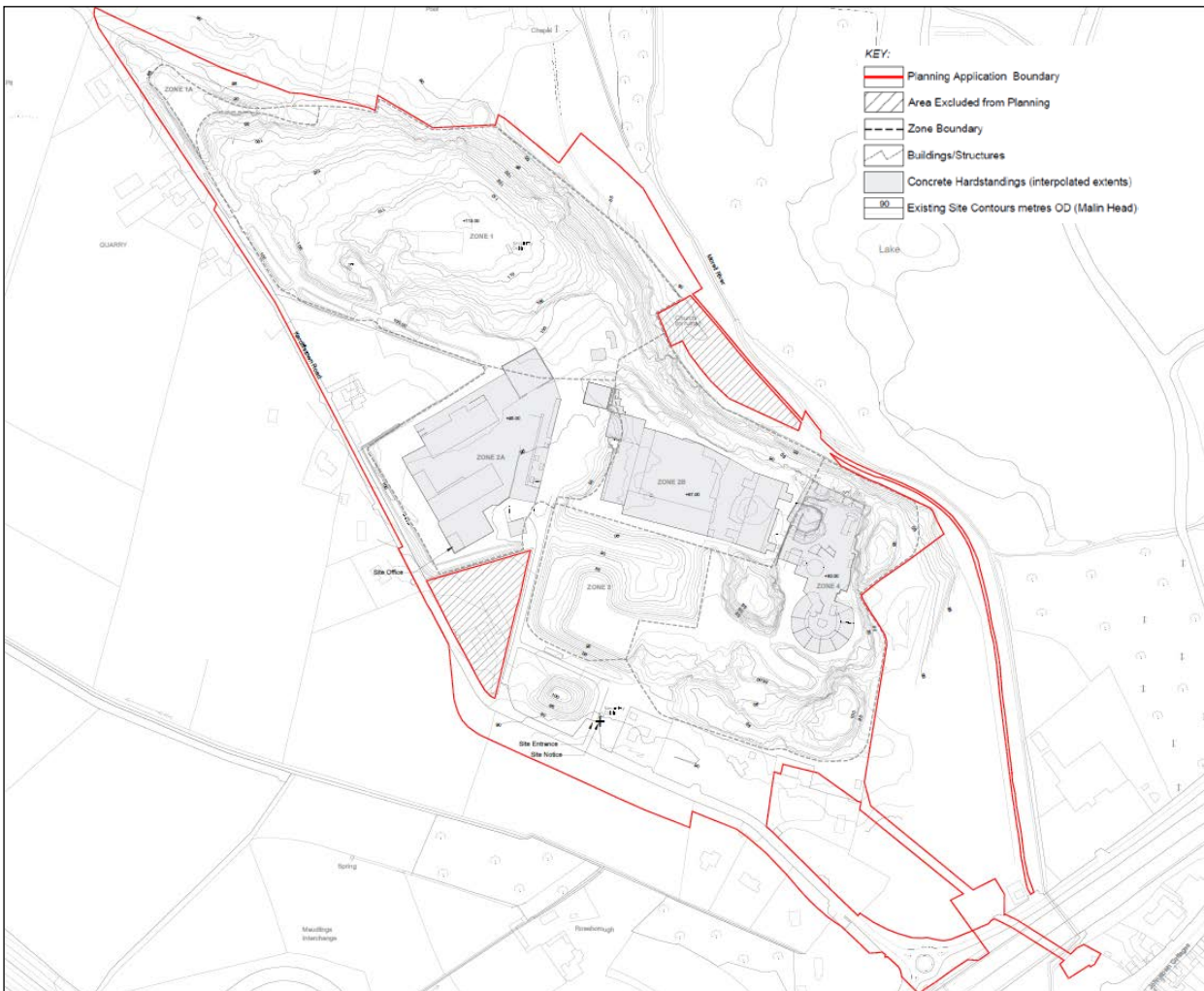




## 2.5 SITE OF THE PROPOSED PROJECT

The site of the proposed Project includes the site of the existing Kerdiffstown Landfill Site. In addition to the site of the previously permitted *Land Restoration Plan* (as outlined in Section 3.1 of this report), the current proposal also includes lands to be compulsorily acquired, works to adjoining roads, and temporary and permanent wayleaves. The redline boundary for the current planning application and the current site layout are outlined in Drawing 1 and Figure 2.5 below. Section 1.1 above and Chapter 4 of the EIA *Description of the Proposed Project*, provide additional information regarding each aspect of the proposed Project and its associated location.

**Figure 2.5 Site Plan**



### 3. SUBJECT SITE PLANNING HISTORY

This section of the planning report provides a brief description of the planning application files most relevant to the subject planning application and proposed Project. Section 1.3 above previously provided a summary of all available entries into the Planning Register for the subject lands.

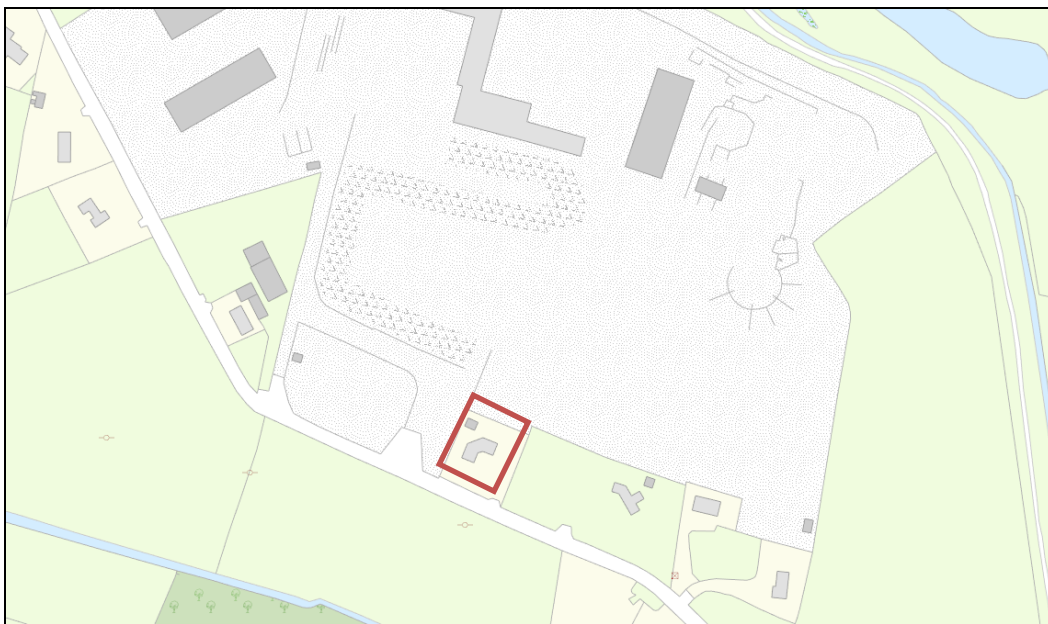
#### 3.1 PLANNING HISTORY FOR THE SUBJECT SITE

- **Register Reference KCC 81/336:** *Permission to change use of the gravel pit to controlled tip for commercial and trade refuse.*

This planning permission comprised the initial authorisation for establishment of disposal activities on the site.

- **Register Reference KCC 97/42 and KCC 98/754:** *Permission to develop a residential unit and associated permission (Reg Ref KCC 98/754) to modify that development.*

These permissions relate to the development, and later re-design of the western dwelling house to the south of the site (shown below), proximate to Zone 4.

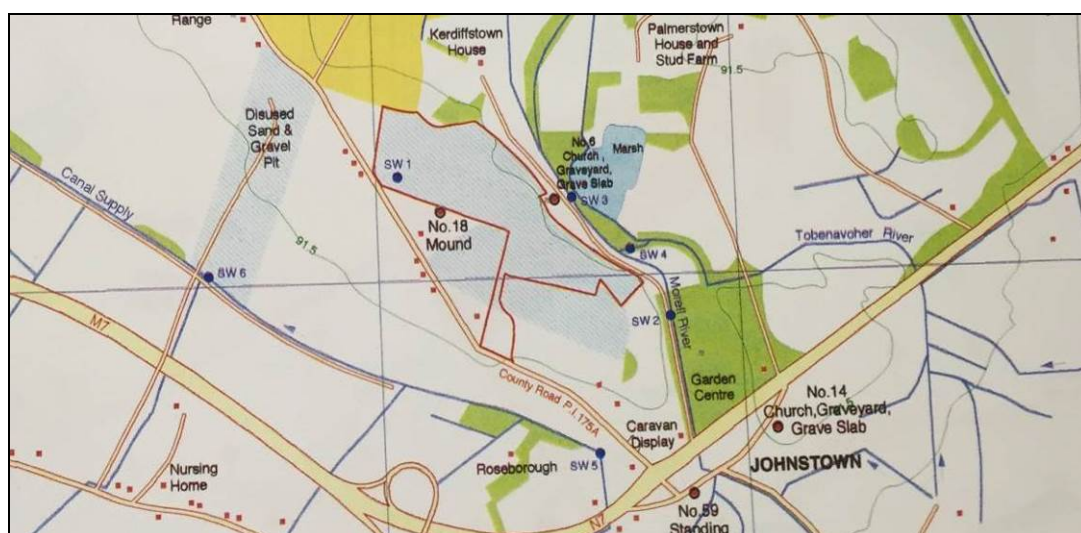


**Figure 3.1 Dwelling house permitted under Reg Ref KCC 97/42 and modified under Reg Ref KCC: 98/754**

It is noted that this dwelling-house – and the adjacent house to the east of it, were initially in separate ownership and developed independently of the waste facility. However, by the time of the 2003 application to extend landfilling operations to the land immediately north of these houses, they were in the control of Neiphin Trading and the use of both was linked to the operation of the waste site by Condition no. 5 attached to Reg Ref *KCC: 03/2355/ ABP: PL.09.206726*.

- Planning Register Reference KCC 97/871 / ABP PL.09.105894:** Application for Planning permission: "i). To retain complete land filling with materials arising within EWC code 170000 at construction and demolition sites, including surplus topsoil and subsoil from road construction in a 5.7 hectare area.; ii). To retain a 200sqm wheel wash and an 18sqm single storey gatekeeper's office; iii). To deposit the same landfill material in an 8.7 hectare area; iv) to convert the gatekeeper's office to include a tea room and toilet accommodation; v) to install a septic tank, and v) to construct 850sqm of modified macadam access to a 16 hectare site at Kerdiffstown Road (PL.175A), Johnstown<sup>1</sup>.

This related to retaining a 5.7 Ha landfill area, and ancillary site development including a wheel wash; single storey gatekeeper's office; and extend landfill operations over an additional 8.7 Ha area and other minor development including conversion of the gatekeeper's office to include tea-room and toilet; install a septic tank and construct an 850sqm macadam access.



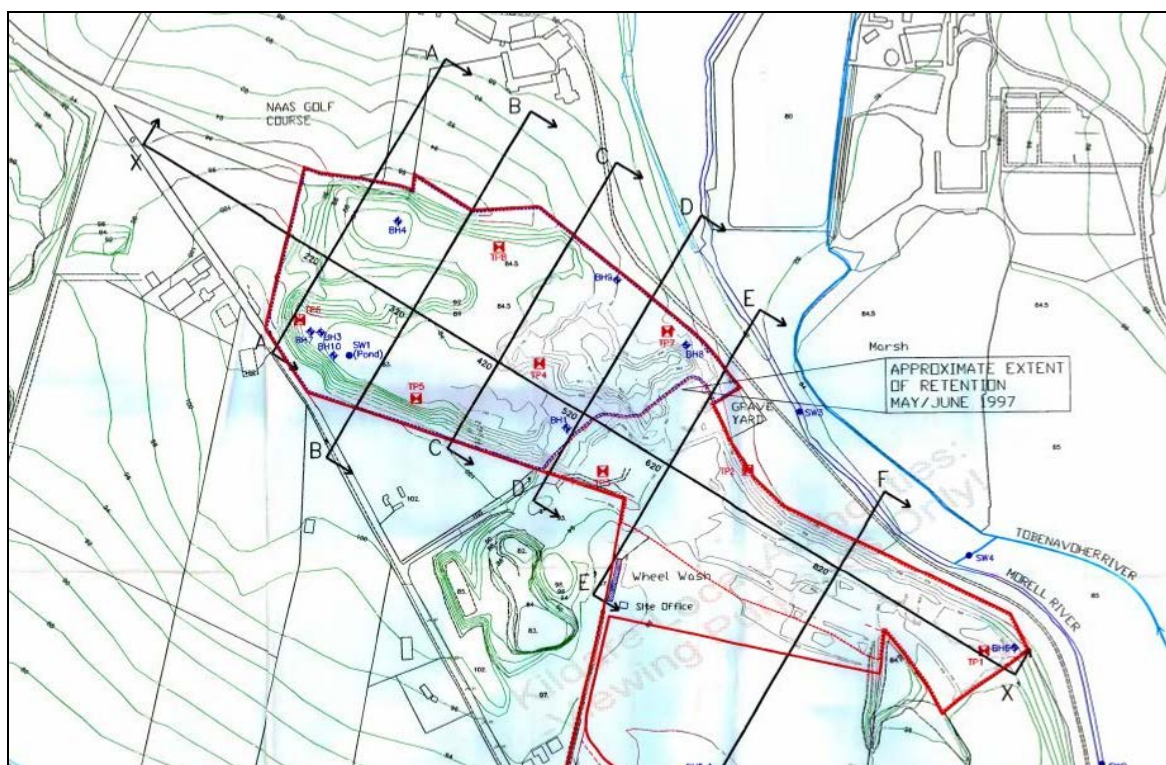
**Figure 3.2 Application area associated with Reg. Ref. KCC 97/871 / ABP PL.09.105894 extracted from drawings on the planning file**

<sup>1</sup> ABP development description: "Permission to retain/ complete landfill and associated works, Kerdiffstown Road, Johnstown, Naas, Co. Kildare.



The application documents indicate that the area subject to the application for retention was the existing landfill to the north of the wheel-wash extending north-west of the site. The application documentation described activity in this 5.7 Ha area as *'retention/ completion of landfilling with materials arising within EXC Code 17 00 00 at construction and demolition sites, including surplus topsoil and subsoil from road construction'*. This is understood to mean that the landfill activity within this portion of the site would continue in-line with the submitted restoration plan, and the approved landforms would be achieved using C&D waste.

The 'new' extension to the facility was located to the north-west. This is principally the area referred to as Zone 1 in the subject Kerdiffstown Landfill Remediation Project as discussed above in Section 2.3. The EIAR accompanying the application states permission sought to deposit 'the same landfill material' i.e. C&D wastes, in this 8.7Ha area.



**Figure 3.3 Application drawings from Reg. Ref. KCC 97/871 / ABP PL.09.105894**

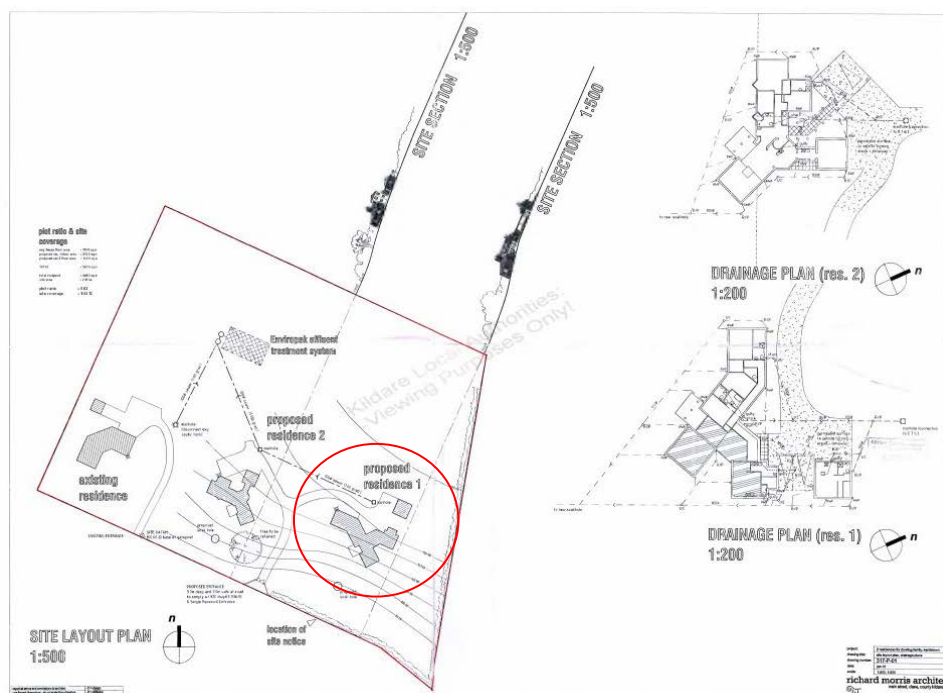
A grant of permission by Kildare County Council for this development was the subject of a first party appeal – principally relating to the duration of the permission and the associated development levies. The final grant of permission issued by An Bord Pleanála, permitted the development for an 8-year period, with modified conditions.

When considering the planning status of the site, this planning permission is arguably the most significant of the planning consents for the subject application site. It is referred to in subsequent applications as the **'land restoration project'** permission as it establishes the restoration and landscape plan for the site which was only modified in minor ways by permissions in 2001 and 2003 (see below) but which remains highly relevant in assessing the planning status of the site today.

The permitted 'Land Restoration Project' was resubmitted and updated as part of compliance submissions in planning applications Reg. Ref. KCC 01/2315 and 03/2355.

- **Register Reference KCC 01/133.** *Permission for 2 new dwellings and incorporate new enviropack effluent treatment system.*

Whilst this planning application was for 2 new dwelling houses, and permission for these was granted, only the dwelling house to the east of the site (dwelling No. 1) was constructed. As has been noted above under planning register references *KCC: 97/42 and 98/754*, this dwelling was initially in separate ownership and developed independently of the waste facility. However, by the time of the 2003 application to extend landfilling operations to the land immediately north of these houses, they were in the control of Neiphin Trading and the use of both was linked to the operation of the waste site by Condition no. 5 attached to Reg Ref *KCC: 03/2355/ ABP: PL.09.206726*.



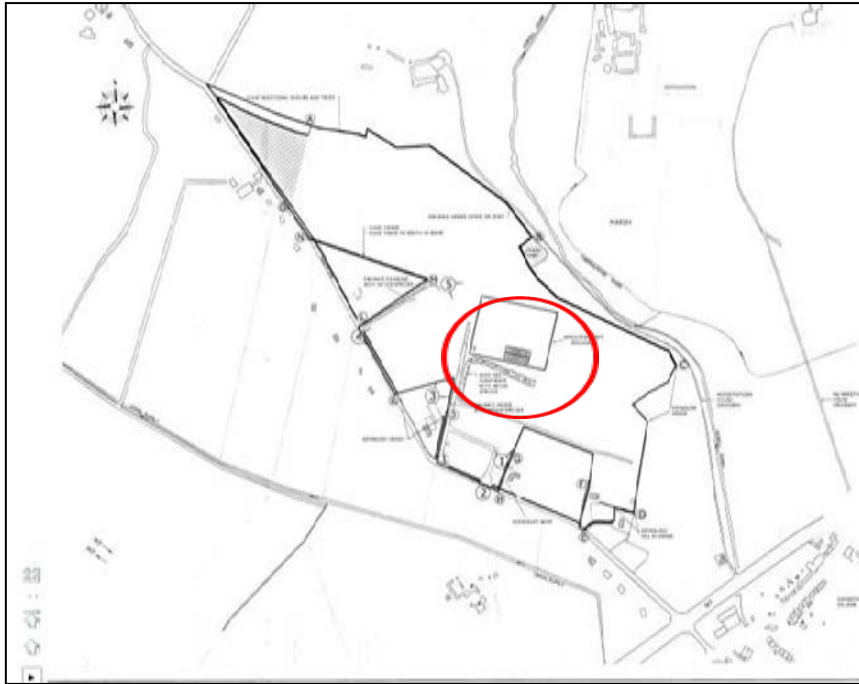
**Figure 3.4 Application Site Layout Plan from Reg. Ref. KCC 01/133 indicating the location of the permitted dwellings, and the dwelling constructed**

- **Register Reference KCC 01/1364 / ABP PL.09.128896<sup>2</sup>:** *Permission to modify the existing permission to allow for the development of an additional building for waste recycling.*

Permission was sought to modify the 1997 permission to allow for the erection of a building (c. 25m wide, 50m long and 14.5m high) for use for waste recycling with an associated area of hardstanding (c. 1400 sq.m) on 1.8 Ha site, on a south-eastern portion of the site.

<sup>2</sup> Permission for: "Erection of a building c. 125m wide, 50m long and 14.5m high for use for waste recycling, c.1400sqm of hardstand on 1.8 ha site."





**Figure 3.5 Application drawings from Reg. Ref. KCC 01/1364 / ABP: PL.09.128896 indicating the location of the permitted building**

The final decision to grant permission was issued by An Bord Pleanála, subject to 26 conditions, the most relevant of which are:

**Condition No. 5** states that the permitted use as a C&D waste recycling area will be for 5 years only, unless extended by another consent.

**Condition No. 7** required the Applicant to submit a revised site layout plan showing the berming of all boundaries of the site and/or land within the applicant's control and a detailed landscaping and planting scheme for the site, within two months of a grant of permission. This condition required the written agreement of the Planning Authority.

**Condition No. 9** required the Applicant to submit a detailed aftercare management plan including a restoration plan; strategy for environmental monitoring and maintenance, for the site within two months of a grant of permission. This condition required the written agreement of the Planning Authority.

**Condition No. 11** required that there would be no effluent or gaseous emissions from the shed.

**Condition No. 12** required that there would be no litter or run-off of any sort emanating from this site.

**Condition No. 13** required that only clean uncontaminated surface water should be discharged to the surface water system or adequately sized soak pits, and that all surface water from the hardstand area shall be passed through adequately sized and located petrol/oil inceptors before being discharged to surface water systems.

Following the final grant of permission compliance submissions were made to Kildare County Council. Pursuant to *Condition 7*, a revised site layout and landscape plan was submitted and agreed by the Council. That plan shows proposed treatment of the permitted recycling building and proposals in relation to the berming of all boundaries, as

well as a detailed landscaping and planting scheme for all lands within the application site and also under the control of the applicant. The landscape scheme for the overall site was broken down into two phases. Phase I works relates to the reinforcement of the site boundaries with appropriate hedgerow and tree species, while Phase II relates to the overall rehabilitation plan and establishes final contours for the lands within the Applicant's control. Pursuant to *Condition 9*, details were submitted in relation to aftercare and management of the site. Again, these details were updated by the approval of *Reg. Ref. 03/2355* where they were resubmitted and updated as part of a compliance submission.

- **Register Reference KCC 01/2315:** *Permission to modify the existing permission to allow for the excavation and processing of waste materials on the site and other ancillary development.*

This planning permission modified the 1997 permission by allowing for the excavation, storage, recovery and recycling of builders wastes and other ancillary development including: provision of a weigh-bridge, a biotec effluent treatment system and percolation area, areas of hardstanding, ancillary site works, landscaping; the use of mobile recycling plant and retention of temporary mobile recycling plant and picking lines.

The excavation and recovery operations specifically relate to the excavation of a maximum of 220,000 tonnes per annum of C&D waste from within the site. This would then be processed along with 100,000 tonnes per annum of imported C&D waste at a mobile recycling plant. Both of the waste streams – some of the recyclable materials and all of the residual waste would thereafter be used in the implementation of the previously approved 'Land Restoration Project'. Other recyclable materials and top soils would be exported from the site.



**Figure 3.6 Application drawings from Reg Ref KCC 01/2315 showing the location of Areas A, B, and C**

The application proposed that the excavation and processing of in-situ wastes would be phased as shown on Figure 3.6 above. However, Condition no. 2 of the final grant of planning permission modified the approved development by restricting the recovery

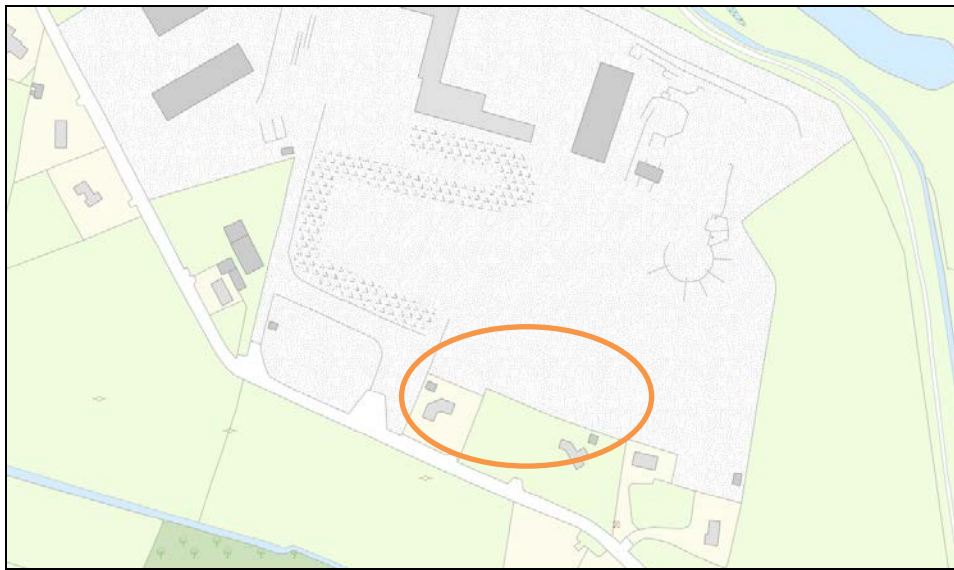


The final decision to grant permission was issued by An Bord Pleanála, subject to 7 conditions, the most relevant of which include:

**Condition No. 2** that the conditions of planning reg. ref. 01/2315 shall apply to the development except where modified by this permission.

**Condition No. 3** that prior to commencement of any other phase of development, all landscaping and screening shall be completed to the satisfaction of the planning authority.

**Condition No. 5** that the use of the dwelling houses on site would be for residential purposes in association with the operation of the waste management facility. For clarity, it is noted that the dwelling houses referred to therein are as shown in Figure 3.8 below.



**Figure 3.8 The dwelling houses associated with the Kerdiffstown site and to which Condition no. 5 of Reg Ref KCC 03/2355/ ABP PL.09.206726 applies**

As part of this application modifications were made (and approved), to the final restoration Plan for the site – the *“Land Restoration Project”*. Therefore, the drawings and documents submitted at that time formed the approved final restoration strategy for the site.

Restoration was to be phased, leading to the eventual removal of buildings and the capping of the site with ‘restoration layers’ comprising topsoil and subsoil to a depth of 1m which would be seeded with grasses. Site contours and areas of planting permitted in the approved ‘Land Restoration Project’ are as set out in Figure 3.9 and Figure 3.10 and as detailed in Table 3.1 and Table 3.2.





Figure 3.9 Approved site levels as per Reg Ref KCC: 03/2355/ ABP: PL.09.206726

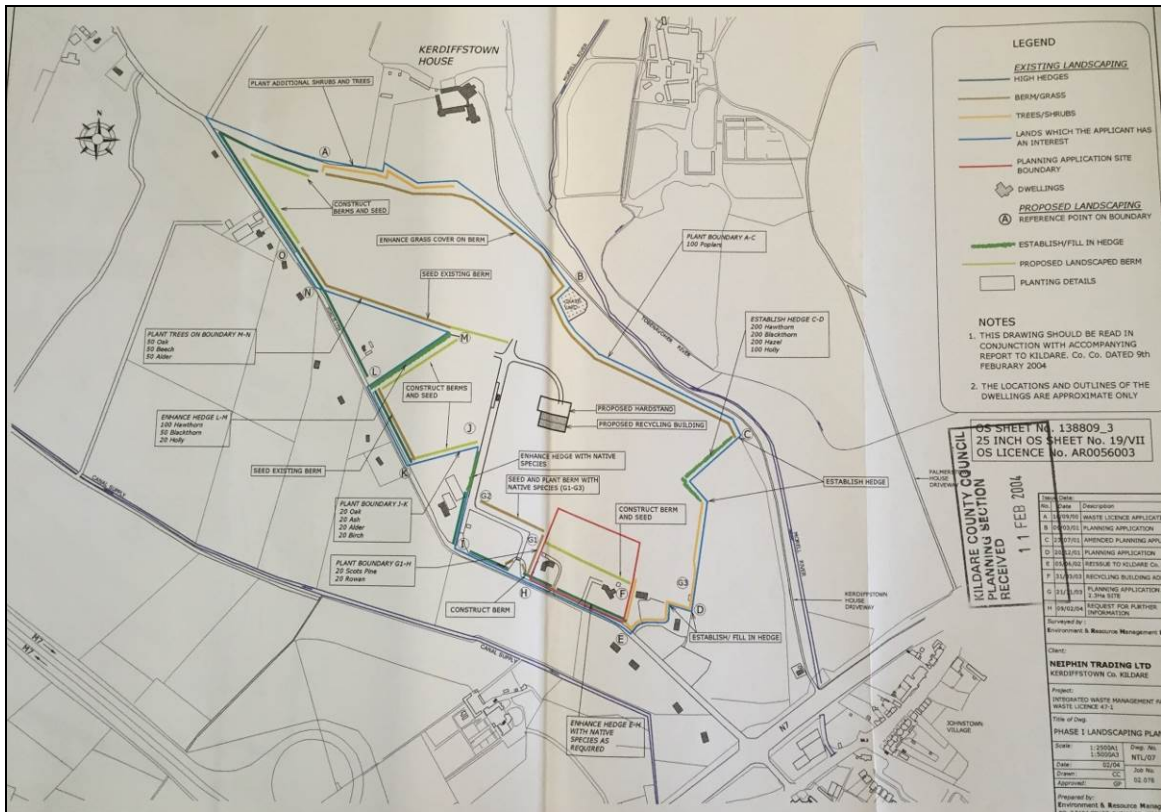


Figure 3.10 Approved Land Restoration Project, as per Reg Ref KCC 03/2355/ ABP PL.09.206726

<b>Table 1: Description of Current and Proposed Landscaping around the landholding (see also Drawing NTL/07 Rev G)</b>			
<b>Zone #</b>	<b>Location</b>	<b>Current Landscaping</b>	<b>Proposed Landscaping</b>
A-B	North west boundary of property	<ul style="list-style-type: none"> <li>• High ridge/berm throughout</li> <li>• Trees, shrubs on the eastern portion</li> <li>• Grassed berm on western portion</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance grass cover of berm</li> <li>• Plant trees where possible along north base of berm</li> </ul>
B-C	North east boundary of property	<ul style="list-style-type: none"> <li>• High berm throughout</li> <li>• Grassed</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance grass cover of berm</li> <li>• Plant trees where possible along north base of berm</li> </ul>
C-D	Northeast corner to Southeast corner of site adjacent to pasture	<ul style="list-style-type: none"> <li>• North Strip has no landscaping</li> <li>• Shrubs and some trees along Southern strip</li> </ul>	<ul style="list-style-type: none"> <li>• Establish hedge along northeast strip</li> <li>• Repair fencing</li> </ul>
D-E	Southeast corner of property along house and second unimproved driveway onto property to P.I 175	<ul style="list-style-type: none"> <li>• Plantings along this entire section as well as behind house.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain existing hedges</li> <li>• Fill in hedge as required</li> </ul>
E-F	P.I 175A North to fence line	<ul style="list-style-type: none"> <li>• High hedges and some trees along this section</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain hedges</li> </ul>
G1-G2	Berm	<ul style="list-style-type: none"> <li>• Berm only</li> </ul>	<ul style="list-style-type: none"> <li>• Plant grass on berm</li> <li>• Plant trees along berm</li> </ul>
G1-H	From G1 south to P.I 175A	<ul style="list-style-type: none"> <li>• Currently there is a fence along this boundary</li> </ul>	<ul style="list-style-type: none"> <li>• Construct a low berm</li> <li>• Plant grass on the berm</li> <li>• Plant trees on the berm</li> </ul>
E-H	Point from E east to Point H along P.I 175	<ul style="list-style-type: none"> <li>• High hedges and some trees along this section</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance hedge with native species as required</li> </ul>
H-I	Along P.I 175 to old site entrance	<ul style="list-style-type: none"> <li>• High hedges along this section</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure safe exit of vehicles the hedge to the west of the exit has been trimmed back</li> </ul>
I-J	North from P.I 175A to south eastern tip corner of disused sand and gravel quarry	<ul style="list-style-type: none"> <li>• High hedges and some trees along this section of the old entranceway</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance hedges with native species</li> </ul>
J-K	West from Point J to P.I 175A	<ul style="list-style-type: none"> <li>• No landscaping. Some scattered shrubs</li> </ul>	<ul style="list-style-type: none"> <li>• Construct berm</li> <li>• Seed berm</li> <li>• Plant boundary</li> </ul>
K-L	Northwest along P.I 175A	<ul style="list-style-type: none"> <li>• High hedges long this section with a n internal berm</li> </ul>	<ul style="list-style-type: none"> <li>• Shape and seed berm</li> </ul>
L-M	Northeast from P.I 175A to Point M. Along old quarry entrance	<ul style="list-style-type: none"> <li>• High hedges and trees along this section</li> </ul>	<ul style="list-style-type: none"> <li>• Entrance hedges close to M</li> <li>• Construct and seed berm</li> </ul>
M-N	East from Point M to P.I 175A	<ul style="list-style-type: none"> <li>• To the north of boundary there is a berm</li> </ul>	<ul style="list-style-type: none"> <li>• Plant grass</li> <li>• Plant trees on the berm</li> </ul>
N-O	Northeast along P.I. 175A	<ul style="list-style-type: none"> <li>• High hedges along this section</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain hedges</li> </ul>
O-A	North cutting across boundary of disused quarry	<ul style="list-style-type: none"> <li>• Along the border of the property there are trees and hedges. The edge of the triangular portion of land to the west has high hedges along it.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain trees and hedges</li> <li>• Construct and seed berms</li> </ul>

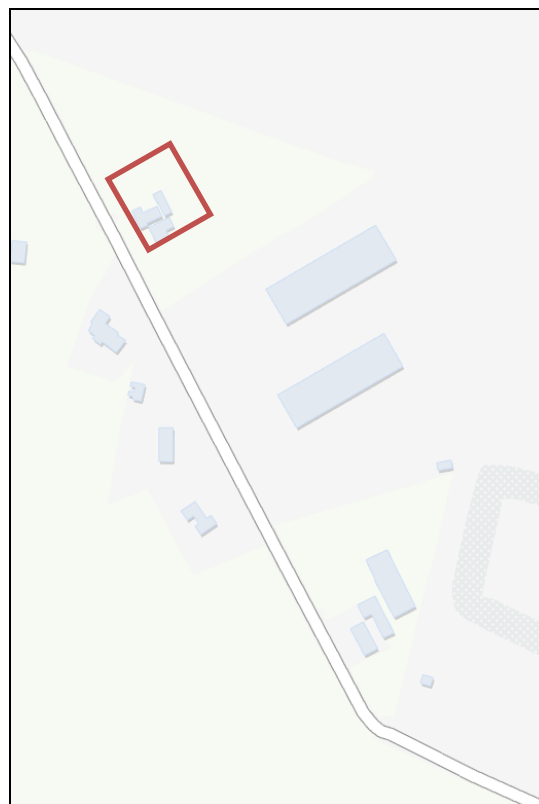
Note above Table 3.1 transcribed from image from original planning application document. Stamped as received by Kildare County Council Planning Section 21 Nov 2003.

**Table 3.1 Landscape Details as per the final approved Land Restoration Project KCC 03/2355/ ABP PL.09.206726**

Table 2: Proposed Phase I Plantings			
Zone #	Total Trees	Total Hedging	Number of Each Species
A-C	100		100 <i>Populus balsamifera</i> at 10 metre spacing at bottom slope
C-D		700	200 <i>Crataegus monogyna</i> Hawthorn 200 <i>Prunus spinosa</i> Blackthorn 200 <i>Corylus avellana</i> Hazel 100 <i>Ilex aquifolium</i> Holly
G1-G2		300	100 <i>Crataegus monogyna</i> Hawthorn 100 <i>Prunus spinosa</i> Blackthorn 100 <i>Ilex aquifolium</i> Holly
G1-G2	75		30 <i>Fraxinus excelsior</i> Ash 30 <i>Alnus glutinosa</i> Alder 15 <i>Pinus sylvestica</i> Scots Pine
G1-H	40		20 <i>Pinus sylvestica</i> Scots Pine 20 <i>Sorbus aucuparia</i> Rowan at 4 metre centres
J-K	80		20 <i>Quercus petraea</i> Oak 20 <i>Fraxinus excelsior</i> Ash 20 <i>Alnus glutinosa</i> Alder 20 <i>Betula pendula</i> Birch
L-M		170	100 <i>Crataegus monogyna</i> Hawthorn 50 <i>Prunus spinosa</i> Blackthorn 20 <i>Betula pendula</i> Birch
M-N	150		50 <i>Quercus petraea</i> Oak 50 <i>Fagus sylvatica</i> Beech 50 <i>Alnus glutinosa</i> Alder

Note above Table 3.2 transcribed from image from original planning application document.

**Table 3.2 Landscape Details as per the final approved Land Restoration Project Reg Ref KCC 03/2355/ ABP PL.09.206726**



**Figure 3.11 Dwelling house located within "Tunney's Field"**

No historical planning records exist for the above-illustrated dwelling. It is therefore believed that it was constructed and existed prior to the Local Government (Planning and Development) Act, 1963. It is noted that this dwelling-house was initially in separate ownership and developed independently of the waste facility. However, the dwelling is currently in the ownership of Neiphin Trading Ltd.

### **3.2 RELEVANT PLANNING ENFORCEMENT HISTORY**

There is a history of enforcement action taken by Kildare County Council against the operators of the Kerdiffstown facility.

A warning letter was issued [*KCC Ref. UD 1807*] in January 1997 with respect to unauthorized works associated with the extraction of sand and gravel and backfilling of an existing pit with inert dry waste at Kerdiffstown, Naas, Co. Kildare. This action was followed with the submission of a planning application [*Reg. Ref. 97/871*] which sought to regularize those works. As permission was granted, the enforcement file would have been closed without giving rise to any further action.

In May 2005, an unauthorised development file [*KCC Ref. UD 3831*] was opened by Kildare County Council resulting from legal proceedings between the developer and the Environmental Protection Agency. It would appear from the documents available on the file, that no enforcement proceedings were issued by Kildare County Council. A complaint was made to the Ombudsman regarding maladministration on the part of Kildare County Council. The Office of the Ombudsman investigated the matter and concluded that it was satisfied that the stated intention of Kildare County Council to liaise with the EPA in relation to unauthorised structures on the lands at Kerdiffstown was a reasonable attempt to resolve the issue. Given the complexity of the case involving the two authorities and the two cases of court proceedings, the Ombudsman considered that the delay on the part of Kildare County Council in initiating enforcement proceedings could be considered reasonable and therefore would not constitute maladministration. The unauthorised development file was closed by Kildare County Council on 15<sup>th</sup> August 2013.

At present, there are no open enforcement files in relation to this site.

### **3.3 CURRENT PLANNING STATUS OF THE SITE**

The most recent grant of permission Reg Ref **KCC 03/2355 / ABP PL.09.128896**, permitted activity on the site to continue for a limited period and for the site to be restored in-line with the approved Land Restoration Project within a ten-year period. With a grant date of 21<sup>st</sup> September 2004 that planning permission – where it was acted upon, would have effect until 20<sup>th</sup> September 2014, unless otherwise extended by another planning consent.

The site was effectively abandoned in 2010, without the permitted development – as per a number of extant planning consents, being completed. Specifically, interim stages of site profiling; installation of site infrastructure and the final stages of site remediation were not initiated. In the absence of an extension of duration of the planning permission or another planning consent being granted in the interim, the final stages of the development were incomplete and there is no new planning permission to act upon.

It is noted from surveys of the site that the existing landform differs from that approved under the permitted Restoration Plan (Reg Ref KCC 03/2355 and ABP PL.09.128896).



Arising from the environmental hazards present on the site and the differences between the existing and approved development, there is a requirement to either comply with the permitted development or to use provisions under the Planning and related Acts to bring the site into compliance with consents – whether extant or new.

In this instance, following emergency measures taken by the EPA and Kildare County Council under the Waste Management Act to stabilise the site, it has been decided to apply to An Bord Pleanála for permission for a new remediation solution (i.e. the subject application - 'Kerdiffstown Landfill Remediation Project'). Considering the environmental risks associated with implementing the previously permitted remediation plan and in order to establish a baseline from which a valid new planning application could be presented to the Board for consideration, a number of actions were required to be undertaken by the EPA and Kildare County Council. These are detailed in Section 3.4 below.

### 3.4 ESTABLISHING THE CONSENTING BASELINE

Initial plans for site remediation were advanced under the control of the EPA. The **Remedial Options Report** (Appendix 6 of this report) established the parameters for site remediation and provided an initial basis for the identification of a strategy for site rehabilitation. Kildare County Council now seeks to implement the proposed Project through the appropriate planning and licencing consents.

The planning history of the site shows a series of planning applications which have been acted upon and complied with to varying extents. The planning history demonstrates that an unauthorised development has historically existed on the site due to:

- Non-compliance with elements of the permitted development; and / or
- 'Material' non-compliance with conditions of the grant of permission.

As a result of this history there are two primary issues that the site presents, site profile and waste disposal activity. These issues have been resolved following legal advice, utilising powers available to the EPA and Kildare County Council under Section 56 of the Waste Management Act 1996 (as amended). These works are described in Section 3.4.1 and have contributed to establishing a baseline from which a new planning consent can be sought.

#### **Site Profile**

To the north of the site, the most recent approved remediation plan [Reg Ref KCC 03/2355 / ABP PL.09.206726] indicated the highest permitted ground level at 108m OD, relative to the Poolbeg Datum. Allowing for the stated difference (Source OSI) of 2.7m between the Poolbeg and Malin data, this permitted ground level is therefore more correctly reported as c. 110.7mOD (Malin). The current elevation of waste at this area of the site is 113.5mOD (Malin). Capping this area will further increase the level, and raises the issue of the planning status of the ground above the 110.7mOD level. This is limited to Zone 1 of the site and is discussed in greater detail in Section 3.4.1 and Section 4.2 below.

#### **Waste Disposal Activity**

The requirement for the use of fill material in order to re-profile the site as part of the remediation strategy may potentially be interpreted as a re-establishment of waste disposal activity on the site. It is considered that there will be no disposal of waste on the site, but rather a re-use of inert material. Construction works associated with the

Remediation Phase will require the importation of engineering materials, such as aggregate, subsoil and top soil which may still be classed as waste, depending on its origin. Acceptance of such material will be controlled under specifications and acceptance criteria, to comply with the Industrial Emissions Directive Licence (IEAL) regulated by the Environmental Protection Agency (EPA). There will also be a requirement to re-profile and relocate some areas of existing waste within the site boundary in order to reduce the risk to health and safety and risk of environmental harm.

As already previously highlighted, in order to create a consenting baseline, from where the programme of works can seek planning permission in order to enable the implementation of the proposed Project, the EPA and subsequently Kildare County Council have carried out various works under Section 56 of the Waste Management Act. These are outlined below.

### **3.4.1 WORKS CARRIED OUT UNDER SECTION 56 OF THE WASTE MANAGEMENT ACT (AS AMENDED)**

Following legal counsel, interim works have been carried out by KCC to establish a 'consenting baseline' for the KLRP, delivered by Kildare County Council in accordance with Section 56 of the Waste Management Act, 1996 (as amended).

Section 56 of the Waste Management Act, 1996 (as amended) outlines the powers of the local authority to take measures to prevent or limit environmental pollution caused by waste.

*56. (1) Where it appears to a local authority that measures are required to be taken in order to prevent or limit environmental pollution in its functional area caused, or likely to be caused, by the holding, recovery or disposal of waste, the local authority may take such steps, carry out such operations, recover or dispose of, or arrange for the recovery or disposal of, such waste or give such assistance as it considers necessary to prevent or limit such pollution or to mitigate or remedy the effects on the environment of any such activity.*

*(3) nothing in this Act or an instrument made thereunder or any other enactment shall prejudice the taking of necessary action by a local authority in pursuance of the powers under this section.*

#### **Site Profile**

Kildare County Council has undertaken works to address the existing levels across parts of the site which are higher than those levels permitted under extant permission Reg Ref KCC 03/2355 / ABP PL.09.206726. This principally relates to the 1.28 Ha portion of Zone 1 located in the north-west of the Kerdiffstown site and comprises some 4.26% of the overall site area.

The technical engineering report<sup>3</sup> that accompanies this application, clearly shows that bringing the site into compliance with those extant permissions would require the removal of c. 18,790 m<sup>3</sup> of highly odorous waste material over an area of 12,815 m<sup>2</sup>. Data

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<sup>3</sup> Review of Proposed Adjustment of Existing Waste Profile in Zone 1 (June 2016)

collected from the site has been used to estimate the impacts arising from this material removal and relocation. This assessment concludes that:

- the odour and greenhouse gas impacts associated with the works would be significant and are also unavoidable as there is no possibility that the removal of highly odorous material can be avoided;
- there would be impacts on the gas extraction infrastructure on the site necessitating additional development works to facilitate collecting gas from the altered terrain;
- the exposure of materials during construction would give rise to additional volumes of contaminated surface water run-off and leachate; and
- the works would achieve no material landscape impact (either negative or positive) as the additional 2.8m of height above the permitted landfill level is imperceptible when viewed in context.

Arising from this assessment, it was concluded that any works to reduce the ground levels within this portion of Zone 1 would give rise to significant environmental impacts, both in terms of odour and greenhouse gas emissions, as well as potential breaches of future licence conditions precluding such odour incidents. Conversely, Kildare County Council, acting within its powers under Section 56 of the Waste Management Act, are obliged to take whatever *measures are required to prevent or limit environmental pollution caused, or likely to be caused, by the holding, recovery or disposal of waste* on the site.

With respect to Section 56, the Act notes that such 'measures' may comprise such steps, operations, recovery or disposal of waste, or the giving of such assistance as Kildare County Council considers necessary to prevent or limit such pollution or to mitigate or remedy the effects on the environment. Clearly, undertaking works that would give rise to, rather than mitigate or minimise, such impacts, would conflict with the responsibility bestowed by the Act. It was therefore incumbent on Kildare County Council to consider alternative approaches.

The principal mitigation against an impact arising is to 'do nothing', with the secondary option to only do those works necessary while avoiding the impacts. Following significant engineering, planning and legal investigations and advice, it was recommended that the best way to achieve this was to store and manage the 18,790 m<sup>3</sup> of waste material located within the aforementioned 1.28 Ha of Zone 1, between the 110.7m OD and the 113.5m OD, at its current location. The works necessary to facilitate this alternative<sup>4</sup> comprised:

- permanently storing the waste material in-situ; and
- implementing odour and gas management protocols by installing additional landfill gas extraction wells connected to the existing flare unit.

Undertaking these works prevents the potential environmental impacts associated with the excavation and relocation of 18,790m<sup>3</sup> of odorous material– namely odour and leachate impacts, from occurring and therefore protects the environment from the significant pollution that would have been associated with its excavation. These works as carried out by Kildare County Council using its powers under Section 56 of the Waste

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<sup>4</sup> Specification for Additional Monitoring and Gas Extraction Walls, Jacobs Engineering, January 2016

Management Act, 1996 have regularised the baseline levels on the site for the purposes of this new planning application.

The Chief Executive Order [CE10770] issued on 17<sup>th</sup> February 2017, setting the baseline topographic level for the Kerdiffstown Landfill Remediation Project is attached as Appendix 5 to this report.

### **Fill Material**

The implementation of the KLRP will require an IEAL. The remediation of the site requires the importation of fill material (comprising inert aggregate and soil) in order to give effect to the proposed landform.

The remediation strategy is based on the optimisation of the re-use of materials on-site in order to minimise the requirement for import of materials from off-site sources. However, it is recognised that there will be a need to import materials to meet the requirements for provision of a suitably engineered site and to meet the proposed end-use condition.

The primary requirement for raw materials will be in the provision of capping material. During site re-profiling, excavated material will be physically sorted to separate out suitable capping material. Where required, additional capping material will be specified and sourced from the local area where possible. The site will not be operated as a landfill site. Any materials required to be imported to the site for re-use as part of the remediation works will be engineering grade aggregate, sub-soil and top-soil. The relocation of some existing waste areas within the site boundary in order to facilitate land re-profiling and capping requires an application to the EPA for an Industrial Emissions Activities Licence. Further details of import materials are included in Chapter 4 '*Description of the Proposed Project*' of the EIAR.

As outlined in detail in Chapter 4 '*Description of the Proposed Project*' of the EIAR and in technical reports that accompany this application, the proposed Project is a superior replacement for the previously approved remediation plan – the Johnstown Land Restoration Project KCC Reg. Ref. 03/2355 / ABP PL.09.128896. The proposed KLRP provides a highly superior technical solution from both an environmental and a planning perspective.

## **3.5 CONCLUSION**

Kildare County Council are making an application to ABP facilitating a transparent and participative planning route for the proposed Project. Kildare County Council is therefore submitting this application, under Section 175 of the Planning and Development Act 2000 (as amended), to ABP for their Approval to carry out the works required to implement the KLRP.

Following the initial remediation works previously carried out under Section 56 the Waste Management Act, 1996 (as amended), the Council now seeks Approval from ABP for the proposed works, under the baseline established under this legislation.

## 4. THE PROPOSED PROJECT

In summary, the proposed Project will consist of the implementation of a revised Remediation Strategy, which differs from the previously approved Johnstown Land Restoration Plan (as originally approved under KCC 97/871 / ABP PL.09.105894 and subsequent permissions, the most recent of which is KCC 03/2355 / ABP PL09.206726) to ensure the long-term environmental improvement of this former waste disposal facility and facilitate its long-term use as a multi-use public park.

The works will comprise: remedial works to stabilise wastes on the site; works to ensure the integrity of existing waste disposal infrastructure on the site; the provision of site infrastructure including: site management infrastructure including gas, odour and surface water controls; and the installation of environmental monitoring controls; the provision of a high quality cap comprising grassed topsoil across the entire site; the implementation of the Landscape Masterplan to provide end use as a public park and multi-use sports pitches; aftercare and management works; and all ancillary site development works.

In providing a description of the proposed Project, it is considered that works can be categorised into three main stages of development as follows:

- Current Operations (Environmental Controls Undertaken to Date under Section 56 of the Waste Management Act)
- Remediation Phase
- Aftercare Phase

A description of each stage of work is outlined below. A fully detailed Project description is available in Chapter 4 '*Description of the Proposed Project*' of the EIAR. A copy of the full Site Notice is included within Appendix 3 of this Planning Report.

### 4.1 DETAILED DESCRIPTION OF THE PROPOSED PROJECT

#### 4.1.1 SITE STABILISATION - ENVIRONMENTAL CONTROLS UNDERTAKEN TO DATE

The Kerdiffstown Landfill Remediation Project (the proposed Project) is intended to remediate the former landfill to reduce risks to the environment and to public health and safety. An appraisal of the '*Kerdiffstown Landfill Remediation Project - Remedial Options Report*<sup>5</sup> undertaken for the Environmental Protection Agency (EPA) considered general techniques and logistics for the remediation of the site.

The 2013 report concluded that the most practical, sustainable and cost-effective remediation with the lowest impact would involve capping the deposited wastes in-situ, following a minimum of excavation and re-deposition of wastes to achieve a suitable landform.

As part of the site remediation, emergency works have been on-going from 2011, which have been carried out by the EPA, and latterly Kildare County Council, under Section 56 of

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<sup>5</sup> SKM (2013) (on behalf of the Environmental Protection Agency). Kerdiffstown Landfill Remediation Project - Remedial Options Report

the Waste Management Act 1996 (as amended). These works have been exempt from the requirement for planning permission as they relate to works necessary to prevent and limit pollution from waste materials located therein – namely they are urgent works relating to initial phases of site restoration, and some of the aftercare and site management measures.

The principal interim measures put in place under Section 56 to prevent and limit environmental pollution are summarised as follows:

- Control of landfill gas through the use of gas well fields and gas flares. Currently only one flare is required (known as the 250 flare), and operates 24 hours a day seven days a week, fed from two independent gas fields: one within the lined cell (Zone 3) and one across Zone 1.
- Reduction of odours generated from the landfill through use of the gas management system. Gas and odour generation is, to a large degree, interlinked. Wastes in Zone 1 are not capped and thus gas (and odours) freely vent to atmosphere in absence of controls.
- Temporary capping of waste in the lined cell (Zone 3). Wastes generated from the post-fire clean-up operations were deposited to the lined cell (Zone 3). Further wastes removed from within the buildings and structures demolished in 2016 have also been transferred to the lined cell. The temporary capping system limits landfill gas and odour release as well as reducing leachate generation.
- Provision of leachate extraction facilities in the lined cell. Leachate collected in the base of the cell is extracted via pumps in inclined risers, for temporary storage in tanks. Road tankers then extract the leachate from the tanks on a daily basis for off-site disposal at Ringsend Wastewater Treatment Plant.
- Demolition of unsafe buildings and structures on the site. Several supporting structural members had been previously removed from buildings and structures which were part of the former waste processing facility in a theft at the site. The buildings were thus unsafe to access and represented a health and safety risk.
- Employment of a full-time site manager. The Site Manager is involved in the daily management of the gas and leachate systems and oversees a number of other key environmental monitoring and surveillance activities at the site (e.g. monitoring of surface water, supervision of appointed contractors and liaison with interested third parties).

A detailed description of these measures can be found in Chapter 3 *'The Need for the Proposed Project'*, of the Environmental Impact Assessment Report. These measures are currently maintaining a stable condition in terms of environmental impacts. However, the measures are insufficient to fully mitigate the risks to public health and safety and the environment, and are not technically or commercially viable, nor sustainable, in the longer term. The proposed Project is the long-term strategy to remediate the site and implement an aftercare programme.

#### **4.1.2 PROPOSED SITE REMEDIATION WORKS**

Having assessed the need for the proposed Project, and having considered a number of alternatives (Chapter 5 *'Consideration of Alternatives'* of EIA), the remediation solution presented involves the reduction of waste footprint at the site, minimisation of nuisance impacts (such as odour, dust, noise), provision of a stable landform and installation an

engineered capping system to break the pathway associated with risks to human health by preventing direct contact with waste materials and to reduce the infiltration of rainwater.

The proposed remediation strategy is discussed in detail in Chapter 4 'Description of the Proposed Project' of the EIAR. The main elements and supporting infrastructure are outlined in Table 4.1 below. Drawings supporting this planning application are detailed in Appendix 2 Drawing Schedule.

**Table 4.1 Overview of main features of the Proposed Project**

Main Feature/ Infrastructure	Outline Description	Reference
Site Access	New roundabout and realignment of the L2005 Kerdiffstown Road, including provision of footpaths and cycleways, to facilitate continued safe passage via L2005 Kerdiffstown Road during Remediation Phase and Operational Phase.	See EIAR Figure 4.10 to 4.12
Demolition Works	Demolition of 3 houses and outbuildings and the removal of remaining concrete walls, to provide areas for storage/ stockpiling of imported and processed materials (short-term) and giving an opportunity to re-use crushed and screened materials in the remediation of the site.	See Planning Drawings 2-5
Landfill Infrastructure Compound	Construction of new landfill gas and leachate management facilities in one location as well as a site office and storage area for the management and maintenance requirements of the site.	See EIAR Figure 4.13 to 4.15
Site Re-profiling	Re-profiling the site to address current over-steep slopes to permit installation of an engineered capping and/or soil cover system, to allow for surface water drainage, and provide mitigation of long-term settlement of the waste mass.	See EIAR Figure 4.2 to 4.7
Engineered capping and soil cover systems	Capping predominant areas of waste to prevent infiltration of rainwater, reducing leachate production, and to enable management of landfill gas and odour. Soil cover systems to provide suitable growing media for the landscaping of the site, providing stability to slopes and an opportunity for future enhancement in end-use proposals.	See detail in EIAR Section 4.2.7
Leachate and landfill gas management systems	Improved leachate management systems to remove and transfer leachate to a wastewater treatment plant via the public sewer network.	See EIAR Figure 4.16 to 4.18
	Gas management to be improved across the site following capping works, with extraction being undertaken from predominant, gas generating wastes reducing the risk of migration from the site.	See EIAR Figure 4.18
Surface water drainage system	Surface water drainage to manage runoff post-capping completion, to treat and control discharges from the site.	See EIAR Figure 4.19

The remediation of the site and development of the multi-use public park is anticipated to take approximately five to seven years, with approximately four years of intensive construction works to remediate the site:

Phase 1

- Demolition of existing residential properties (REC010, REC011 and REC016).
- Construction of new site entrance;
- Realignment of L2005 Kerdiffstown Road;
- Provision of new footpath and cycleway adjacent to realigned road extents;
- Installation of new perimeter fencing to site boundary;

- Installation of new foul and leachate pipeline connections to Johnstown Pumping Station;
- Construction of a new Landfill Infrastructure Compound;
- Demolition of concrete structures in Zone 2A, Zone 2B and Zone 4, including demolition of the retaining wall to form a future link to the Morell River;
- Removal of existing site connection to Canal Feeder Stream;
- Establishment of crushing and screening area in Zone 2B for processing of site generated concrete from demolition activities;
- Removal of stockpiles of materials in Zone 4;
- Re-profiling of current over-steep slopes in Zone 4, including removal of wastes where identified;
- Processing of materials from Zone 4 where identified as opportunity to recovery of soils and re-use on site;
- Re-profiling of Zone 1/ 1A to accommodate surplus material derived from Zone 4;
- Stockpiling of imported fill material in Zone 2A; and
- Filling of Zone 3 with wastes from Zone 4.

#### Phase 2

- Continued re-profiling of slopes in Zone 4;
- Installation of a capping system in Zone 1A;
- Temporary stockpiling of Zone 4 material in Zone 2B for processing;
- Continued filling of Zone 3 with wastes from Zone 4;
- Continued re-profiling of waste in Zone 1 including filling with surplus material from Zone 4;
- Installation of a new or supplementary gas wells in Zone 1A; and
- Placement of imported low permeable soils to Zone 4.

#### Phase 3

- Removal of subsoil stockpile located adjacent to the new site entrance;
- Construction of temporary surface water retention pond in Zone 4;
- Installation of a capping system in Zone 1;
- Installation of a capping system in Zone 3;
- Installation of a new or supplementary gas wells in Zones 1 and 3; and
- Placement of imported low permeable soils to Zone 4.

#### Phase 4

- Construction of surface water retention pond in Zone 1A;
- Continued re-profiling and installation of a capping system in Zone 1;
- Continued progressive installation of new or supplementary gas wells in Zone 1; and
- Removal of the processed material stockpile from Zone 2B.

#### Phase 5

- Removal of the existing flare stack in Zone 1, commencing use of new flare stack in the new landfill infrastructure compound;
- Continued re-profiling and installation of a capping system in Zone 1;
- Re-profiling and installation of a capping system in Zones 2A and 2B;
- Inspection and repair of concrete hardstandings in Zone 2B;
- Installation of gas venting measures in Zone 2B;



- Continued progressive installation of new or supplementary gas wells in Zone 1; and
- Removal of existing perimeter screening bund in Zone 1.

#### Phase 6

- Construction of surface water soakaway in Zone 1A;
- Continued progressive installation of new or supplementary gas wells in Zone 1;
- Continued re-profiling and installation of a capping system in Zone 1;
- Reduction in material stockpiled in Zone 2A;
- Re-profiling and installation of a capping system in Zones 2A and 2B;
- Inspection and repair of concrete hardstandings in Zone 2A; and
- Installation of gas venting measures in Zone 2A.

#### Phase 7

- Cleaning of surface water management pond in Zone 1A and commissioning of soakaway;
- Continued progressive installation of new or supplementary gas wells in Zone 1;
- Removal of stockpiled materials from Zone 2A;
- Removal of concrete stockpiles from Zone 2B;
- Cleaning of surface water management ponds in Zone 4, installation of ecological enhancements and final commissioning of the ponds; and
- Remediation works complete.

#### Phase 8

- Installation of multi-use sports pitches;
- Construction of building with changing rooms, public toilets and stores;
- Creation of a children's playground; and
- Construction of car parking, informal trails and defined viewpoints.

### **4.1.3 PROPOSED END-USE**

The end-use of the site, representing the Operational Phase of the proposed Project, will be a public park including multi-use sports pitches, a building with changing rooms, public toilets and stores, car parking, a children's playground, informal trails and defined viewpoints as shown on the indicative Landscape Masterplan. The proposals provide landscape improvements and present an opportunity for further ecological enhancements.

An overview of the main components of the multi-use public amenity park are outlined below, with a detailed description included in Chapter 4 'Description of the Proposed Project' of the EIAR and the Landscape Masterplan Statement in Appendix A4.8 of the EIAR.

- Vehicular and pedestrian/cycle main entrance, with double gates;
- Semi-ornamental planting to roundabout;
- North-west pedestrian entrance, with security gate;
- Vehicular 6m wide, tarmac access road within the park, with a minimum 2m wide footway;
- Public walkways and informal tracks within the site of varying widths (typically 1.2m-1.8m), constructed of unbound stone. These paths would vary in gradient, with some steps required in steeper sections, requiring confirmation on review of the final achieved site profiles;

- Maintenance tracks, 4m in width, constructed of unbound, imported stone, or combined with reinforced grass to reduce visual impact (north flank; Zone 1).
- One main car park for approximately 100 spaces, with opportunity for additional mobility impaired and coach/mini-bus parking. This would be constructed in tarmac, with the bays formed in Grasscrete or similar approved.
- One overspill car park for approximately 100 spaces, with close access to informal footpaths/cycle paths. This would be constructed in unbound stone, with the bays formed in Grasscrete or similar approved.
- Changing rooms (4 No.) and public toilet facilities;
- Store room for materials required in use of sports pitches;
- Playground area adjacent to the main changing room building;
- Bicycle parking provision;
- Three synthetic (or similar approved surface) pitches, two sized 90m by 145m suitable for multiple codes including GAA, rugby and soccer, which can be subdivided, each lit by 6 No. x 18m high, hinged masts; the third pitch offering flexibility as a training pitch or as 3 No. five-a-side pitches, lit by 6 No. x 8m high, hinged masts;
- Ball-retention fencing (12m high x 30m wide) installed to one end of each pitch, to prevent balls going onto Kerdiffstown Road or into the attenuation ponds;
- Enhancement of the three attenuation ponds, with use of marginal aquatic species planting and grouped trees;
- Surface water ditches and swales, enhanced by filling with stone or seeded with wet grassland species;
- Surface water reed bed area, filled with gravel and soil substrate and planted with native reed and marginal aquatic species;
- Native mix woodland, trees, scrub, shrub and hedgerow planting;
- Native or naturalised parkland trees;
- Semi-ornamental amenity tree and shrub planting to the main entrance and roundabout;
- Two designated wildlife areas, fenced off from public access;
- Ecological enhancement and mitigation features such as hibernacula, nesting boxes and log piles;
- Defined viewpoint areas with a trigonometric plinth at the top of the site; and
- Outlet to the Morell River, with a stone clad headwall to integrate visually into the bank.

At the detailed design stage, the provision of trails would also be considered, which would mark out set trail lengths within the park of 1000m and 2000m with colour coded way-markers. Future provision of outdoor fitness equipment could be implemented along these trails, along with occasional seating, cycle racks and bin provision.

Drainage of foul and grey waters from the changing rooms building will be directed to the sewer installed during the Remediation Phase. Further detail is provided in the Surface Water Management Plan contained in Appendix A4.6 of the EIAR.

#### **4.1.4 SITE MANAGEMENT AND MAINTENANCE**

The park will be open to the public for use as an amenity area. Park Opening hours will be subject to hours of daylight and dictated by park operations with the times specified below the latest closing time permitted to be used.

Period	Sports Pitches	Park
Monday to Friday	08:00 – 21:00	09:00 – 20:00
Saturdays / Public Holidays	08:00 – 21:00	09:00 – 20:00
Sunday	09:00 – 18:00	10:00 – 17:00

The end-use design for the site has considered the health and safety of visitors and details are included in Chapter 4 'Description of the Proposed Project' of the EIAR.

Kildare County Council will retain ownership of the park and will have overall responsibility for managing and maintaining the site. A site manager will be based on site to maintain overseeing control of the monitoring and control mechanisms on the landfill infrastructure at the site.

There will also be infrastructure required for the continued control of emissions from the landfill, namely the gas flare, a leachate management system and ongoing monitoring of groundwater and surface water. The landfill infrastructure compound will also be maintained during the aftercare period. A series of management plans will be prepared to account for the continued operations at the site including maintenance requirements, to be regulated by the EPA under the sites Industrial Emissions Activities Licence (IEAL).

Due to the nature of material deposited during the landfilling activities at the site, degradation of the waste over time will result in settlement – a process by which the volume of material decreases. As part of the remediation design a “post-settlement profile” of the planned final profile of the landfill after all settlement has taken place has been estimated for the Project using numerical predictive waste settlement modelling. Following the remediation works regular inspections of the site will be required to check for signs of settlement, such that maintenance can be undertaken without delay.

## 4.2 LANDFORM VARIATIONS FROM PREVIOUSLY APPROVED REMEDIATION PLAN

The most recent previously approved permission [KCC 03/2355 / PL09.206726] and the associated Remediation Plan differ from the currently proposed Remediation Plan. The finished site levels and extents of the respective land forms as proposed in the current Remediation Plan are significantly reduced from those previously permitted.

The previous planning permission had a top height at Zone 1 of 108m OD (Poolbeg). Adjusting this level to the current datum of Malin Head would give a top height of 110.7mOD (Malin). The remediation profile proposed in the current application, requires a suitable landform for capping and surface water management, and is based on a top height at Zone 1 of 115.15m OD (Malin Head). Assessments undertaken to support the design of the proposed Project indicate that a final (post-settlement) profile height for Zone 1 will be 110.5mOD (Malin Head). It is not known whether a similar assessment had been undertaken to support the previous planning applications.

The extents of the respective landforms are considerably reduced for the current proposed Project in comparison with those previously approved. This is outlined in Table 4.2 below.

**Table 4.2 Extent of Landform Areas**

Height (mOD Malin Head)	Previous Planning Permission [KCC 03/2355 / PL09.206726]	The Proposed Project (pre-settlement)	Commentary
Over 104	68,022m <sup>2</sup>	49,200m <sup>2</sup>	Previous Permitted Landform was to extend across the entire site area. Revised Landform is restricted to Zone 1 only.
Over 110.7	4,500m <sup>2</sup>	20,400m <sup>2</sup>	Revised Landform limited to Zone 1 only. Previous Landform included two peaks above 110mOD in Zone 1 and across Zones 3 and 4.

A review of the previous planning permission (KCC 03/2355 / PL09.206726) shows that the site profile was largely above 98.7mOD (Malin Head). The revised landform for the proposed Project has only two local areas of the site above this level – Zone 3 (maximum height 110mOD pre-settlement) and Zone 1 (maximum height 115.15mOD pre-settlement).

The approximate comparison of levels across each zone is outlined in Table 4.3 below:

**Table 4.3 Comparison of Levels Across Each Zone**

Zone	Previous Planning Permission [KCC 03/2355 / PL09.206726]	The Proposed Project (pre-settlement)
1	110.7mOD	115.15mOD
2A	104mOD	97mOD
2B	104mOD	93mOD
3	110mOD	110mOD
4	104mOD	85mOD

The volume of waste required to achieve the previously permitted levels would have been significantly greater than the current site volume of 3.1Mm<sup>3</sup>.

### 4.3 ALTERNATIVES CONSIDERED

A number of technical options for the remediation of the site were assessed. These options are described in detail in Chapter 5 '*Consideration of Alternatives*' of the EIAR and take account of the '*EPA Guidelines on the Information to be Contained in Environmental Impact Statements*' (EPA, 2002) (and revised and draft guidelines 2015/2017).

The guidelines also recognise that there are aspects for which alternatives may not be applicable to a particular project. When considering the nature of the proposed Project, there are a number of alternatives which are not relevant. No consideration has been given to options that would potentially leave the site in breach of relevant environmental legislation. In addition, the 'Do nothing' and 'Do Minimum' scenarios were not considered

on the basis that the environmental risks associated with the site require substantial mitigation. Typical alternatives that were considered for the proposed project include:

- Alternative Locations
- Alternative Layouts
- Alternative Designs
- Alternative Processes

Chapter 5 '*Consideration of Alternatives*' of the EIAR discusses each alternative in detail.

## 5. PLANNING AND DEVELOPMENT POLICY

The following Section of this report demonstrates that the proposed Project fully complies with the detailed requirements of all relevant statutory County Plans and Policies, which in turn, comply with national and regional planning and infrastructural development strategies. The Documents considered are:

- The National Spatial Strategy (2002 – 2020)
- The Regional Planning Guidelines for the Greater Dublin Area (RPGGDA), 2010 – 2022
- Kildare County Development Plan (2017 – 2023)
- Eastern-Midlands Regional Waste Management Plan (2015 – 2021)
- A Resource Opportunity – Waste Management Policy in Ireland (2012)

### 5.1 NATIONAL SPATIAL STRATEGY (2002-2020)

It is noted that the Government has committed to the preparation of a new National Planning Framework (NPF) as a successor to the National Spatial Strategy (NSS). Pending the publication of the NPF, the NSS remains in place and is reviewed herein. It is understood that the NPF may be published during the consideration of this application.

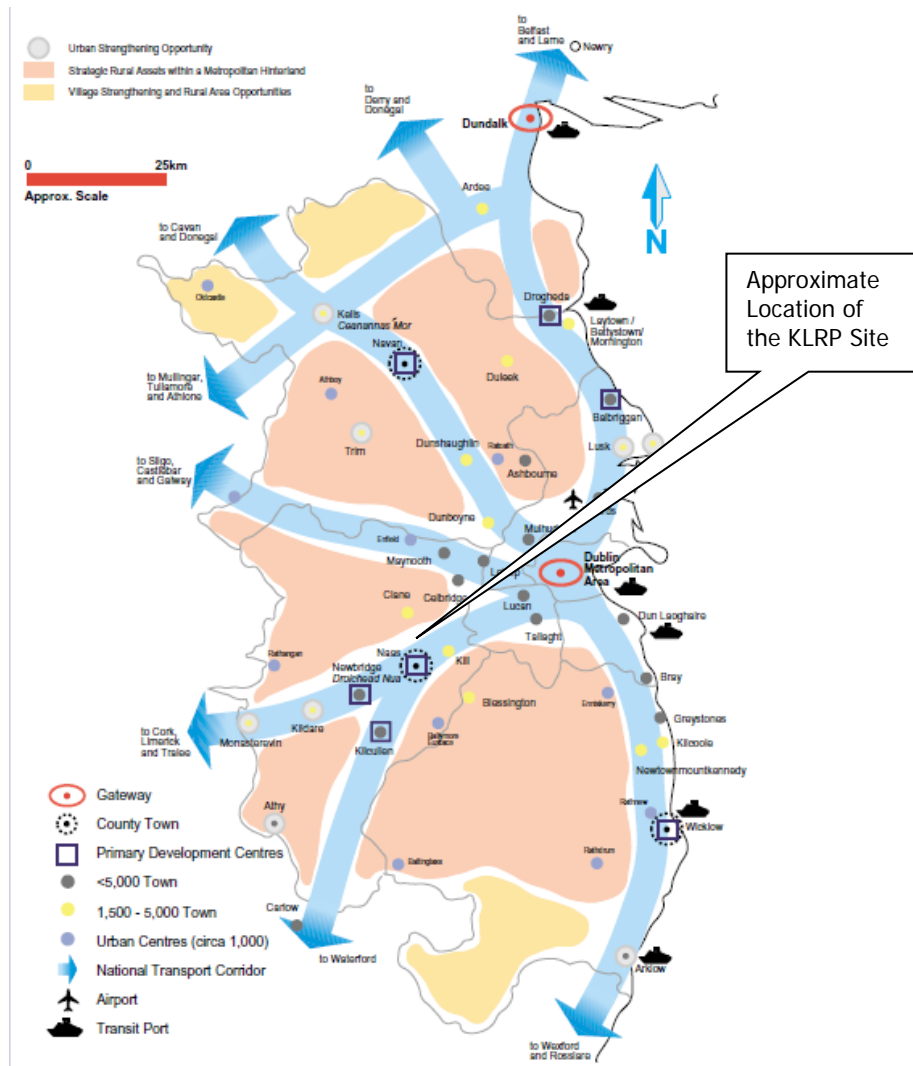
The NSS is a 20-year planning framework which aims to achieve a better balance of social, economic and physical development across Ireland, supported by more effective planning. The NSS informs all other planning policy documents including the Regional Planning Guidelines (RPG GDA), and County Development Plans.

In order to drive development in the regions, the NSS proposes that areas of sufficient scale and critical mass will be built up through a network of gateways and hubs. The NSS recognises the importance of the Greater Dublin Area (GDA) comprising Dublin and the Mid-East Region, as an area essential to the economic stability of the country.

The NSS recognises that balanced regional development must be supported by appropriate local land use policies and these should be economically, socially and environmentally sustainable. The NSS intends to support a better balance of activity and development between areas, support spatially balanced provision of key social and economic infrastructure and set out general principles of good spatial planning practice to help develop ways in which the location of people and employment and the use of environmental resources can best serve sustainability and a high quality of life.

#### *Project Response*

The proposed Project will limit the significant environmental risk posed by the current landfill site. It will also support the provision of key social and recreational infrastructure for one of the Country's primary development centres and support the sustainability and quality of life for those living within the wider hinterland. Its location along a National Transport Corridor also allows for the facility to serve a significant population within the GDA.



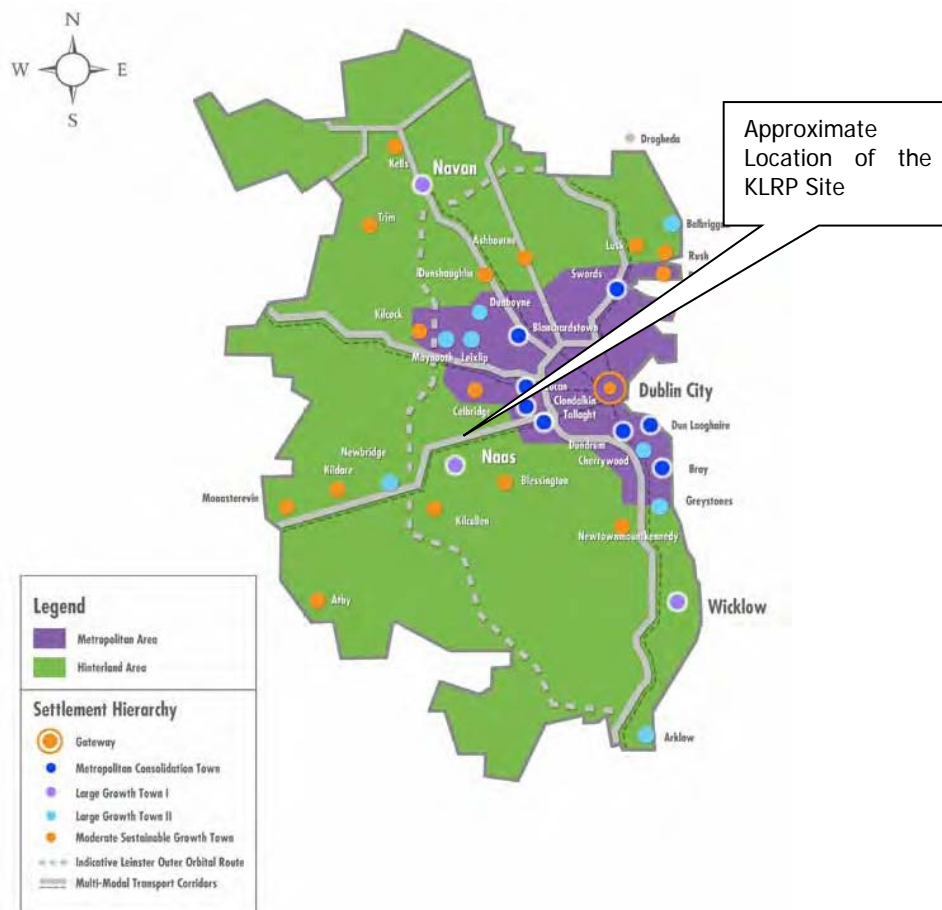
**Figure 5.1 RPG GDA Settlement Hierarchy**

Source: National Spatial Strategy, page 79, Map 5: Dublin & Mid East Regions

## 5.2 REGIONAL PLANNING GUIDELINES FOR THE GDA (2010-2022)

The Regional Planning Guidelines (RPG) set out the planned direction for growth within the Greater Dublin Area up to 2022 by giving regional effect to national planning policy under the National Spatial Strategy (NSS).

The Regional Strategy Vision is that the GDA by 2022 is an economically vibrant, active and sustainable international Gateway Region, with strong connectivity across the GDA Region, nationally and worldwide; a region which fosters communities living in attractive, accessible places well supported by community infrastructure and enjoying high quality leisure facilities; and promotes and protects across the GDA green corridors, active agricultural lands and protected natural areas.



**Figure 5.2 RPG GDA Settlement Hierarchy**

Source: Regional Planning Guidelines for the Greater Dublin Area, p. 89 Settlement Strategy for the GDA

In the RPGs Naas and Newbridge are identified as principal economic growth towns as part of an economic cluster with the adjoining towns of Kilcullen and Sallins. According to the RPGs a key advantage of this cluster is its location on a multimodal transport corridor, served by improving rail and national road networks. This cluster has established synergies with the equine, agriculture, tourism and manufacturing industries.

As regards specific policies and objectives outlined within the RPGs, local authorities are encouraged to seek the re-use of secondary aggregates as physical infrastructure construction bases or the potential re-use of suitable soil material in amenity projects or landfill restoration. *Policy PIR40* recommends that waste management facilities should be appropriately managed and should maximise protection to human health and the natural environment.

With regards to Green Infrastructure, the RPG's strategic *Policy GIP6* seeks to ensure the protection, enhancement and maintenance of the natural environment and recognise the health benefits as well as the economic, social and environmental and physical value of green spaces through the development of and integration of green infrastructure planning and development in the planning process.



*Project Response*

The proposed Project is fully in accordance with the RPG GDA as this proposal will provide for the environmental protection and improvement of a former landfill site. The proposed Project will also ensure the protection, enhancement and maintenance of the natural environment and will provide for improved environmental, social and health benefits for the surrounding community and the population of the wider region.

**5.3 KILDARE COUNTY DEVELOPMENT PLAN (2017-2023)**

The preferred development strategy of the Kildare County Development Plan (KCDP) has been informed by the Regional Planning Guidelines and the environmental sensitivities of the county. It is based on building strong urban centres while protecting the rural hinterlands.

The KCDP contains a specific policy in relation to the proposed Project. *Policy WM16* states that the Council will work in conjunction with Government Departments and Agencies and all other relevant stakeholders to remediate the Kerdiffstown Landfill in a socially, economically and environmentally sustainable manner that will both manage and reduce environmental risk and accommodate an appropriate end-use that is compatible with the established character of the area.

*Project Response*

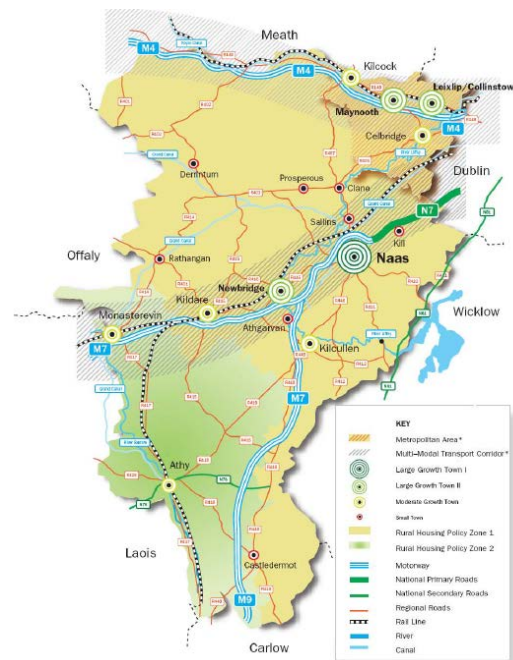
The proposed Project is located in proximity to the Large Growth Town 1 of Naas and within the multi-modal transport corridor. The proposal will ensure that the environmental risks will be managed on the site, while providing an appropriate end-use that will benefit the local and wider community and environment and will be in keeping with the character of the area.

Kerdiffstown Landfill remediation team have engaged with local residents, interested groups, other local commercial interests and Government Departments and Agencies since 2011. In 2016, a formal consultation process was undertaken in two key phases:

- Public and stakeholder consultation on the proposed end-use, which included letters, consultation events and a defined consultation period; and
- EIA Scoping consultation.

The result of the public consultation process reaffirmed support for the multi-use public park and associated amenity, in particular for the playing pitches.

Kildare County Council is committed to continuing engagement with key stakeholders and the public after the planning application for the proposed Project has been submitted, and will continue to address any issues or concerns raised by the public or stakeholders.



**Figure 5.3 Kildare County Development Plan Hierarchy**

Source: Kildare County Development Plan, Chapter 2-17, Map 2.6

Aside from setting the broad development framework for the county as a whole, the KCDP also outlines additional specific land use, planning and environmental policies which must be taken into account when considering any application for planning permission. These policies, in the context of the proposed Project, are considered in more detail in Section 6 of this report 'Sectoral Policies and Objectives.'

## 5.4 A RESOURCE OPPORTUNITY – WASTE MANAGEMENT POLICY IN IRELAND (2012)

Current National Waste Management Policy - *'A Resource Opportunity – Waste Management Policy in Ireland, 2012'*, notes the further investment required by the State to deal with landfill sites and illegal landfill sites. A 2005 European Court of Justice judgement, which found systematic failures in the waste management regulatory regime, dealt with such illegal landfill sites through an agreed programme of measures. While the proposed Project did not form part of the judgement, the commitment to the programme of measures demonstrates the States ongoing commitment to investing in the remediation of problem sites.

The document also requires that landfills reaching the end of their lifespan must have assurances that the necessary aftercare has been both planned for and is underpinned by the necessary financial provision being put in place.

Furthermore, the policy commits to reviewing options in relation to the beneficial use of closed landfill facilities. These will be considered in light of the outcome of projects under the EPA Research programme, Science, Technology, Research and Innovation for the Environment (STRIVE) as well as other research.

### *Project Response*

The proposal will manage the environmental risk that exists on the site, while providing an appropriate end-use that will benefit the local and wider community and environment. The proposed Project is being funded by the State through a Memorandum of Understanding with effect from the 5th June 2015. The Minister for the Environment has requested that Kildare County Council manage the remediation of Kerdiffstown Landfill on behalf of the State.

The Minister has confirmed that the Department of the Environment will fund the costs of remediation and ongoing management costs of remediation, estimated to be € 30 Million. In carrying forward the remediation project the Minister agreed that the Department of the Environment will act as Sanctioning Authority for the purposes of the Public Spending Code, and Kildare County Council will act as the Project Sponsor. The direct funding role will end when the site has been remediated and this has been confirmed by the EPA to the Minister.

The Council accepts responsibility for the aftercare maintenance and environmental monitoring costs. Furthermore, the Minister indemnifies the Council with respect to any unforeseen environmental or related risks that arise in the period from the transfer date to certification by the EPA that remediation is complete and the after-care period has commenced.

## **5.5 EASTERN-MIDLANDS REGIONAL WASTE MANAGEMENT PLAN (2015 – 2021)**

In 2012, the Government established three new Waste Management Planning Regions. The Eastern Midlands Region, serving a population of 2,249,603 includes the administrative area of Kildare County Council. The objective of the Regional Waste Management Plans is to set out a framework for the prevention and management of wastes for a defined regional area.

*Section 5.3.7 of the EMRWMP advocates the protection of the environment and health of citizens in the region from potential adverse impacts resulting from waste management activities. The strategic objective agreed by the Local Authorities is to 'apply the relevant environmental and planning legislation to waste activities in order to protect the environment, in particular European Sites and human health against adverse impacts of waste generated'.*

Section 13.3 of the EMRWMP recognises the need to address legacy, historic and closed landfills in the region. The risk to environmental receptors, such as groundwater and surface water, from waste buried at these sites needs to be tackled and minimised. Local authorities are committed to targeting and addressing the highest risk sites as soon as possible and subject to funding from the Department being made available.

*Policy G2 commits to 'roll-out the plan for remediating historic closed landfills prioritising actions to those sites which are the highest risk to the environment and human health'.*

*Section 16.4.3 of the EMRWMP outlines policies for waste disposal. It is recommended that prior to Policy E11 being implemented, a feasibility study or similar study is undertaken of the closed or uncommenced landfills in the region to determine what*

activities may or may not be appropriate for consideration at each site based on site and surrounding sensitivities. It is acknowledged that the policy specifically refers to consideration of the Natura 2000 network and this is considered positive. The feasibility study should also consider environmental sensitivities under the wider environmental scope of SEA.

Policy E11 of the EMRWMP 'supports the consideration of appropriate alternatives future land uses at authorised inactive landfills (un-commenced, permanently-closed, or temporarily-closed) – subject to amendments of existing approvals being put in place. Any development proposals shall be subject to Appropriate Assessment Screening in accordance with the requirements of the EU Habitats Directive to ensure protection and preservation of the Natura 2000 Network.

Potential activities include:

- Waste treatment activities including pre-treatment, thermal recover, biological treatment, reprocessing or preparing for re-use;
- On-site temporary storage of waste and materials;
- Co-location of utility services such as wind farms or other energy generating activities;
- Development of public and recreational amenities;
- Co-locating recycling, reuse waste enterprises on site; and
- Resource mining;
- Contingency capacity for crisis events such as risks to the environment and the health of humans and livestock.'

Section 16.4.4 outlines policies in relation to backfilling. Backfilling activities (of inert waste), which meet the recovery definition and are in compliance with Articles 4 and 13 of the Water Framework Directive (WFD), sit on the other recovery tier of the waste hierarchy. Local authorities in the region authorise such activities through the award of WFPs and CoRs. Similarly, the EPA authorises significant backfilling of inert waste at large sites such as old quarries for restoration purposes.

Policy E13 states that 'Future authorisations by the local authorities, the EPA and An Bord Pleanála must take account of the scale and availability of existing back filling capacity.'

Policy E14 states that 'The local authorities will co-ordinate the future authorisations of backfilling sites in the region to ensure balanced development serves local and regional needs with a preference for large restoration sites ahead of smaller scale sites with shorter life spans. All proposed sites for backfilling activities must comply with environmental protection criteria set out in the plan.'

With regards to financial implecations, it is the policy of the EMWR to ensure that adequate funding is being diverted to activities which deliver the highest environmental outcome. It is the objective of Policy G1 to 'ensure the highest environmental and human health benefits are achieved by prioritising the implementation of the upper tiers of the waste hierarchy and ensuring these actions are funded appropriately.'

### *Project Response*

The proposed Project fully complies with the EMRWMP, by providing a full remediation strategy for an abandoned landfill, prioritising actions to a site which presents a high level of risk to the environment and human health.

The overall objective of the proposed Project is to remediate the land contained within the disused Kerdiffstown Landfill site through: the removal of risks to public health and safety; reduction in the environmental risk profile of the site to an acceptable level; delivery of a remediation solution which is acceptable to the local community; completion of the remediation works within 8 years and integration of sustainability and sustainable design and development in both the remediation and post closure works.

Recognition for the level of environmental and human health risk posed by the site is established at State level and this is reflected in the financial commitment from the Minister for the remediation of the site. The proposed end use is also in compliance with the EMRWMP's list of potential alternative future uses for public and recreational activities.

## **5.6 OVERALL COMPLIANCE WITH PLANNING POLICY**

In conclusion, it can be seen that the proposed Project fully accords with the overall development principles set out in the above-outlined relevant planning policy documents.

The subject proposal will ensure that the Kerdiffstown Landfill site is fully remediated and ensures that a stable planning and environmental outcome is achieved.

The proposed Project:

- Is fully in accordance with the RPG GDA as it will provide for the environmental protection and improvement of this abandoned landfill site;
- It is suitably located within proximity to the identified strategic growth centres of Naas and other urban areas in Kildare such as Johnstown and Sallins, as the focal point for a public recreation and amenity facility, which is lacking in the County as a whole;
- Is fully supported by the policies and objectives of the Eastern-Midlands Regional Waste Management Plan 2015-2021.

The following section considers the Development Plan policies and objectives in further detail and demonstrates how the subject proposal fully complies with all policies and objectives as well as Development Control standards.

## 6. SECTORAL POLICIES AND OBJECTIVES

This section of the report will demonstrate how the proposed Project fully accords with all relevant Kildare County Development Plan sectoral policies and objectives.

It should be noted that while a complete assessment of all sectoral policies and objectives in the relevant Development Plan was carried out, the following sections address those policies and objectives which are of greatest relevance to the proposed Kerdiffstown Landfill Remediation Project. Furthermore, all of the policies and objectives as requested in the Scoping Response Documents are considered and addressed.

### 6.1 KILDARE COUNTY DEVELOPMENT PLAN 2017-2023

The Kildare County Development Plan 2017-2023 (KCDP) sets out the overall vision, strategies, policies and objectives for the county as a whole.

The KCDP takes the form of a written statement, with accompanying maps. It comprises of 3 No Volumes: Volume 1 contains 17 Chapters; Volume 2 contains Land Use Plans for Small Towns, Environs, Villages and Rural Settlements, including the Johnstown Village Plan; and Volume 2 contains the Appendices. The most relevant chapters in Volume 1 for the purposes of this review are those that set out detailed policies and objectives namely:

- Chapter 2 – Core Strategy
- Chapter 4 – Housing
- Chapter 6 – Movement and Transport
- Chapter 7 – Infrastructure
- Chapter 8 – Energy and Communications
- Chapter 10 – Rural Development
- Chapter 11 – Social, Community and Cultural Development
- Chapter 12 – Architectural and Archaeological Heritage
- Chapter 13 – Natural Heritage and Green Infrastructure
- Chapter 14 – Landscape Recreation and Amenity

Chapter 17 of the KCDP sets out the development management standards to be applied to future development proposals in the county. According to the KCDP, the purpose of these standards and objectives is to guide and assist the formulation of development proposals and to regulate the impact of development on the environment.

The following pages provide a summary of how the proposed remediation plan for the Kerdiffstown Landfill site fully accords with the relevant policies and objectives set out in each of these chapters.

#### 6.1.1 CHAPTER 2 – CORE STRATEGY

The Core Strategy of the KCDP aims to respond in a coherent sustainable, spatial fashion to the challenges facing the county, while building on its strengths and providing a more focused approach to planning for future growth. The Core Strategy facilitates a more consolidated compact urban form, maintenance and improvement of a sustainable economic base, and the creation of sustainable and integrated communities, together with the balancing of our natural and built environment with sustainable and appropriate development.

*Section 2.16.3, Sustainable and Integrated Communities*, promotes and facilitates the development of sustainable communities through land use planning.

- **Policy CS9** states that it is the policy of the Council to provide *for land uses capable of accommodating employment, community, leisure, recreational and cultural facilities having regard to the quality of the environment, including the natural environment, landscape character and the archaeological and architectural heritage.*

Section 2.16.4, outlines the policies and objectives to ensure Balancing the Environment with Sustainable and Appropriate Development.

- **Policy CS12** states that it is the policy of the Council *to protect and conserve the natural environment* and in **Policy CS14** *to promote and enhance biodiversity throughout the County.*

#### *Project Response*

The proposed Project will provide a multi-use leisure and amenity facility for the local and wider community. It will also mitigate the current environmental risk presented by the site and will provide a sustainable solution while enhancing biodiversity and improving the natural environment.

### **6.1.2 CHAPTER 4 – HOUSING**

Section 4.3, Sustainable Communities, recognises that sustainable neighbourhoods and communities must incorporate quality living spaces, amenity areas and green infrastructure. The provision of such social facilities and services involves a number of agencies and requires an inter-agency response to ensure the timely delivery of necessary infrastructure.

### **6.1.3 CHAPTER 6 – MOVEMENT AND TRANSPORT**

*Section 6.3, Movement and Transport*, aims to promote ease of movement within and access to County Kildare, by integrating sustainable land use planning with a high quality integrated transport system; to support improvements to the road, rail and public transport network, together with cycleway and pedestrian facilities and to provide for the sustainable development of aviation travel within the county in a manner which is consistent with the proper planning and sustainable development of the county.

- **Policy MTO2** states that it is the policy of the Council to *prepare a Strategic Land Use and Transportation Study for: ....(b) the central towns of Naas, Newbridge, Kilcullen, Kildare Town and Clane; In consultation with the NTA, DTTS, TII and other stakeholders to inform the strategic development of these areas and to identify the roads and transportation infrastructure that is required to support the future development of these areas.*

*Public Transport* policies are outlined in *Section 6.4*. Relevant policies include:

- **Policy PT1** states that it is the policy of the Council *to promote the sustainable development of the county by supporting and guiding national agencies in delivering major improvements to the public transport network and to encourage*

*public transport providers to provide an attractive and convenient alternative to the car.*

- **Policy PTO7** states that the Council will *examine existing public transport links within the county with a view to promoting and facilitating improvements where feasible.*
- **Policy PTO1** states that it is the policy of the Council to *actively seek funding for projects under the NTA's "Sustainable Transport Measures Grants" programme that contribute to improving the transport offer for those choosing alternatives to the private car.*

Section 6.5, Walking and Cycling, encourages the improvement of connectivity and public health throughout the County in order to encourage higher levels of walking and cycling.

- **Policy WC1 and Policy WC4** state that it is the policy of the Council to *prioritise sustainable modes of travel by the development of high quality walking and cycling facilities within a safe street environment and to ensure that all new roads and cycle routes implement the National Cycle Manual, with a focus on a high level of service for cyclists and encouraging a modal shift from car to cycling.*
- **Policy WCO6** seeks to *provide secure cycle parking facilities in public areas in towns and at public service destinations.*

Section 6.6, Road and Street Network, outlines the policies in relation to the county's road network.

- **Policy RS5** aims to *ensure that all existing and new developments in proximity to Motorways, National and Regional routes are designed in such a way as to prevent light overspill onto adjacent un-lit public roads.*

Section 6.6.4 of the Plan outlines the policies in relation to *local roads*.

- **Policy LR1** states that it is the policy of the Council to *ensure that the safety and capacity of the local road network is maintained and improved where funding allows and to ensure that local streets and roads within the county are designed to a suitable standard to accommodate the future needs of the county. The design of these roads and streets should balance the needs of place and movement with providing a safe street environment for all road users.*
- **Policy LR2** seeks to *improve the quality of the pavement of local roads.*

Section 6.7, sets out the Council policy in relation to *Parking*. Relevant policies include:

- **Policy PK1** states that it is the policy of the Council to *take a balanced approach to the provision of parking with the aim of meeting needs of businesses and communities.*
- **Policy PK2** seeks to *design car parking layouts in accordance with DMURS 2013.*
- **Policy PK3** will *carefully consider the number of parking spaces provided to service the needs of new development.*
- **Policy PK7** seeks to *ensure that car parking does not detract from the comfort and safety of pedestrians and cyclists or the attractiveness of the landscape.*
- **Policy PK8** seeks to *encourage the use of materials and engineering solutions that optimise natural surface water drainage as part of Sustainable Urban Drainage Systems (SUDS) associated with large scale car parks.*



The Council also outlines a number of objectives in relation to parking, **Objective PK02** seeks to *identify areas for the provision of public car parking spaces, including adequate and appropriately located spaced for people with disabilities.*

Section 6.9, relates to Traffic and Transportation Management. Relevant policies include:

- **Policy TM4** seeks to *minimise the impact of new developments on the county road and street network by implementing mobility management initiatives.*
- **Policy TM5** states that it is policy to *support the use of Intelligent Transport Systems (ITS) technology for pedestrian, cyclist and vehicular traffic, public transport and parking management in all new developments.*
- **Policy TM6** requires all major developments to submit *Traffic Impact Assessments and Mobility Management Plans.*
- **Policy TM7** states that there will be *a requirement for the inclusion of a Road Safety Impact Assessment as part of any proposed development /project of a significant scale which may have potential implications on major transport infrastructure. Such assessments shall be in accordance with the TII publication 'NRA HD 18 Road Safety Impact Assessment'.*

Section 6.10, *Public Lighting*, includes a number of policies in relation to public lighting. Those most relevant to the proposed Project include:

- **Policy PL1** states that *all street lighting should be provided in accordance with Kildare County Council's 'Street Lighting and planning guidance' policy document.*
- **Policy PL2** seeks to ensure that *all new developments are connected to the public footpath network and that adequate public lighting is provided.*
- **Policy PL3** seeks to ensure that *planned landscape planting takes cognisance of the need to protect the area surrounding street light installations to avoid possible adverse affects on the delivery of effective street lighting.*
- **Policy PL4** seeks to ensure *future street lighting installations are not adversely impacting on sensitive physical, environmental, natural and heritage resources within the county.*
- **Policy PL6** seeks to ensure that *future street lighting provisions in the county will comprise 'white light' delivered by LED luminaries. The LED lights will provide greater colour rendering and provide sharper contrast and improved safety for road users.*

The KCDP (*Section 6.11*) provides policies and objectives on Aviation, including general development restrictions in the vicinity of aerodromes. The proposed Project is identified as being located within the outer horizontal surface of the Baldonnell Casement Aerodrome, as illustrated in Figure 6.1 below. Policies for consideration in the proposed Project include:

- **Policy CA1** states that it is the policy of the Council to *safeguard the current and future operational, safety and technical requirements of Casement Aerodrome and to facilitate its ongoing development for military and ancillary uses within a sustainable development framework.*
- **Objective CAO1** seeks to *refer significant / major new development within approximately 6km of Casement Aerodrome) or at Killeel, to the Department of Defence.*

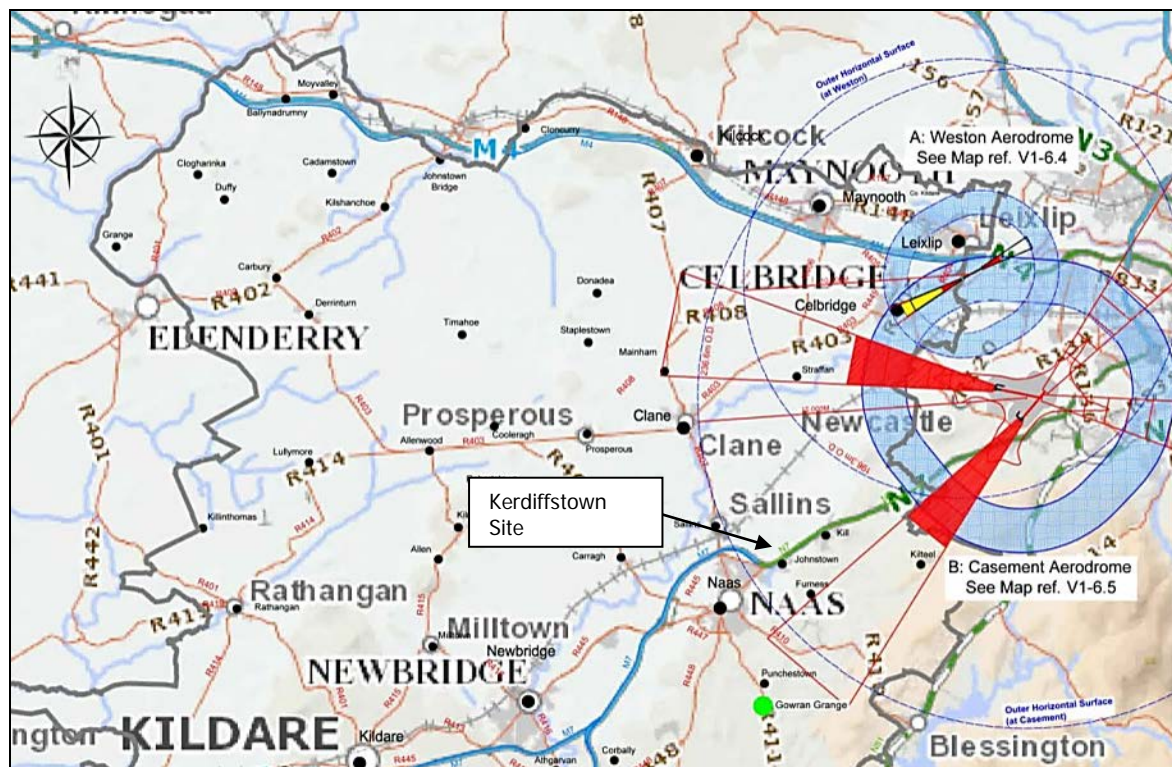


Figure 6.1 Aviation Zones in the Vicinity of the Site

*Project Response*

Initial assessments of predicted traffic volumes suggested that a standalone Traffic and Transport Assessment (TTA) may not be required. However, in order to ensure a robust assessment of impacts a TTA was undertaken for the proposed project. Both the Traffic and Transport Chapter of the EIAR and the TTA have concluded that the additional traffic flows predicted during both the construction and operational phases of the development will be minimal and will have a negligible impact on the operating capacity of the roads. Notwithstanding this mitigation measures have been proposed including, the provision of a Construction Traffic Management Plan (CTMP) and a Mobility Management Plan (MMP) which will ensure that any potential traffic impacts will be minimised. The overall environmental impact is considered not significant.

All public lighting will be provided in compliance with development plan policies and will be agreed at detail design stage.

The proposed Project is located approximately 15km from Casement Aerodrome and does not require referral to the Department of Defence. The proposal also relates primarily to groundworks and does not involve the construction of significant structures which would interfere with aviation activities at the aerodrome.

**6.1.4 CHAPTER 7 – INFRASTRUCTURE**

*Section 7.5, Water and Drainage*, aims to develop, protect, improve and extend water, waste water and flood alleviation and environmental services throughout the county in conjunction with other statutory bodies and to prioritise the provision of water services infrastructure to complement the overall strategy for economic and population growth and to achieve improved environmental protection. Relevant policies include:

- **Policy WS4** states that it is the policy of the Council *to ensure that adequate water services will be available to service development prior to the granting of planning permission and to require developers to consult with Irish Water regarding available capacity prior to applying for planning permission.*
- **Policy WS8** *seeks to promote water conservation and demand management and best demand management practices in all developments, including rain water harvesting and grey water recycling and supporting the implementation of BS8515: 2009 Rainwater Harvesting Systems – Code of Practice.*

#### *Project Response*

*Adequate water will continue to be supplied to the site by the existing Irish Water network. The relevant consultations have taken place with Irish Water. Additional re-use and water conservation initiatives will be explored at detailed design stage. A letter from Irish Water indicating their acceptance of leachate from the Kerdiffstown site is included with this application.*

*Section 7.6.6, Waste Management* includes a specific policy in relation to the subject site.

- **Policy WS9** *seeks to manage protect and enhance surface water and groundwater quality to meet the requirements of the EU Water Framework Directive.*
- **Policy WS11** *to protect groundwater in the county from risk of pollution and ensure the implementation of the Kildare Groundwater Protection Scheme and other relevant documents and legislation as may be introduced.*
- **Policy WS13** *to have regard to the requirements of the Habitats Directive, in all proposed projects or plans.*
- **Policy WQ3** *states that the council will work, in co-operation with relevant organisations and major stakeholders, to ensure a co-ordinated approach to the protection and improvement of the County's water resources.*
- **Policy SW1** *states that it is policy of the Council to manage protect and enhance surface water quality to meet the requirements of the EU Water Framework Directive.*
- **Policy SW8** *seeks to incorporate Sustainable Urban Drainage Systems (SuDS) as part of all plans to address the potential for sustainable urban drainage at district or site level.*
- **Policy SW18** *seeks to ensure development proposals in rural areas (excluding one-off rural housing) demonstrate compliance with the following:*
  - the ability of a site in an unserviced area to accommodate an on-site waste water disposal system in accordance with the County Kildare Groundwater Protection Scheme, and any other relevant documents and legislation as may be introduced during the Plan period.*
  - the ability of a site in an unserviced area to accommodate an appropriate on-site surface water management system in accordance with the policies of the Greater Dublin Strategic Drainage Study (2005), in particular those of Sustainable Urban Drainage Systems (SuDS).*
  - the need to comply with the requirements of 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' published by the Minister for the Environment, Heritage and Local Government in November 2009.*

- **Policy WD4** promotes *rain water harvesting in all developments and in particular in larger schemes.*

#### *Project Response*

Chapter 13 of the EIAR specifically addresses Water – Hydrology. Appropriate mitigation will be carried out during remediation and operational phases with no residual impacts post mitigation and the proposed Project is in compliance with the provisions of the Water Framework Directive in relation to surface water bodies. Water quality monitoring will be undertaken as indicated in the Industrial Emissions Activities Licence (IEAL).

Chapter 13 of the EIAR also refers to the Flood Risk Assessment (Appendix 13.1 of the EIAR) and concludes that across the study area, comparison of the existing and the proposed Project demonstrate that the proposed works does not increase the flood risk.

With respect to groundwater, the EIAR concludes that the proposed Project will not result in any deterioration of the groundwater water quality. Chapter 12 of the EIAR addresses the groundwater aspects in detail. Impacts on water quality and groundwater will be improved on the existing by the proposed Project. The installation of an engineered capping system over the prominent areas of waste across the site will prevent rainwater infiltration to the waste reducing the potential for leachate generation and therefore reducing the impact on the groundwater.

*Section 7.6, Environmental Services*, aims to conform to European, National and Regional policies in relation to the provision of waste management and to protect and enhance water, air and noise quality. Relevant policies in relation to this include:

**Policy WM16** commits the Council to *work in conjunction with Government Departments and Agencies and all other relevant stakeholders to remediate Kerdiffstown Landfill in a socially, economically and environmentally sustainable manner that will both manage and reduce environmental risk and accommodate an appropriate end – use that is compatible with the established character of the area.*

#### *Project Response*

The proposed Project is a direct implementation of this Policy.

*Section 7.6.8, Pollution Control – Water, Air and Noise* includes a number of policies relevant to the proposed Project. These include:

- **Policy PC3** aims to ensure that future developments are designed and constructed to minimise noise disturbance and take into account the multi-functional uses of streets including movement and recreation as detailed in the *Urban Design Manual (2009)* and the *Design Manual for Urban Roads and Streets (2013)*.
- **Policy PC 4** seeks to ensure external lighting schemes minimise light spillage or pollution in the immediate surrounding environment and do not adversely impact on residential or visual amenity and biodiversity in the surrounding areas.
- **Policy PC 10** seeks to ensure that all future development is in accordance with the *EU Ambient Air Quality and Cleaner Air for Europe (CAFÉ) Directive (2008/50/EC)*.

In addition to the policies, there are a number of *Environmental Services Objectives* outlined in *Section 7.6.9*. These include:

- **Objective EN 6** aims to *continue to monitor air quality at selected locations throughout the county in co-operation with the Health Service Executive and the Environmental Protection Agency.*
- **Objective EN 7** sets out a requirement for the *submission of Annual Environmental Reports (which require ongoing monitoring of specified environmental parameters) on specified developments through the planning process.*

#### *Project Response*

Chapter 7 of the EIAR '*Air Quality Odour and Climate*' details the comprehensive measures to be employed in the Project to control landfill gases and odours. A purpose built landfill infrastructure compound will convert the landfill gasses into harmless substances.

The proposed mitigation measures have been shown to be effective in the management of air quality and odour impacts associated with the proposed Project. The proposed Project during both the operational and remediation phases will be managed so that there are no significant residual air quality impacts. The comprehensive mitigation and management proposals will ensure that there are no significant residual impacts during the Aftercare Phase.

Chapter 8 of the EIAR '*Noise and Vibration*' assesses the potential noise impacts during the remediation and operational phases of the proposed Project. Over the course of the Remediation Phase there will be a 'imperceptible to moderate and temporary in duration' on the nearest noise sensitive receptors due to noise emissions from remediation works and site traffic. Mitigation measures will be put in place to minimise disturbances.

During the Operational Phase, the site would operate within the adopted day, evening and night-time noise limits for the site. The overall noise impact from the operation of the proposed Project in the long-term is anticipated to be imperceptible considering the existing environment.

The proposed Project is compliant with the relevant Development plan policies.

### **6.1.5 CHAPTER 8 – ENERGY AND COMMUNICATIONS**

The purpose of this chapter is to support and encourage efficiency in energy and communications whilst striking a balancing between policy on renewable energy, communications and climate change and allowing the harnessing of resources. General Energy Policies are outlined in *Section 8.5* and include:

- **Policy ER5** seeks *the co-ordinated delivery of infrastructure and services to support sustainable communities.*

This chapter also provides 'energy from waste' and energy efficiency policies that may be applicable to the proposed Project as follows:

- **EB 1:** To ensure that new development is designed to take account of the impacts of climate change, and that energy efficiency and renewable energy measures are incorporated in accordance with national building regulations, policy and guidance.
- **EB 3:** To provide energy conservation and efficiency measures and facilitate innovative building techniques that promote energy efficiency and the use of renewable energy sources, in accordance with national policy and guidelines.

#### *Project Response*

Renewable technologies for lighting and conservation of water will be explored at detailed design stage where feasible.

### **6.1.6 CHAPTER 10 – RURAL DEVELOPMENT**

This chapter provides policies to support the provision of a high quality rural environment; encourage diversification and improved competitiveness of the rural economy; sustain the livelihood of rural communities and promote the development of the wider rural economy, all within the context of the sustainable management of land and resources. Rural development policies are outlined in *Section 10.5* and the most relevant of these include:

- **Policy RE2** seeks to *liaise and co-operate with statutory, local development, sectoral community / voluntary agencies and groups to develop economic, social and cultural benefits for the rural community.*
- **Policy RE4** supports *the provision of a high quality rural environment, encourage diversification and improved competitiveness of the rural economy, sustain the livelihood of rural communities and promote the development of the wider rural economy, all within the context of the sustainable management of land and resources.*

*Section 10.5.7* outlines policies in relation to *Rural Enterprise* including:

- **Policy RLE5** aims to *encourage the conservation and promotion of bio-diversity in all rural development activities.*
- **Policy RLE8** seeks *the consideration of other appropriate land-uses in the rural countryside, apart from rural housing as provided for in Chapter 4. Where an area is not within an identifiable settlement, and is not otherwise zoned as part of this Plan, or of any of the town development plans, the use of such land shall be deemed to be primarily agricultural.*
- **Policy RLE9** aims to *support the improvement of existing community and recreational facilities in rural areas, subject to compliance with the relevant environmental and planning criteria.*

A number of Rural Enterprise Objectives are also outlined in *Section 10.6* and include:

- **Objective REO4** seeks to *ensure that all new developments and practices do not undermine rural ecosystems, landscapes and conservation areas and are conducted in a manner consistent with the protection of the local environment and in line with national legislation and relevant guidelines.*

*Project Response*

The proposed Project will provide a multi-use sports and recreational public park amenity for the local and wider regional community. There is currently a lack of similar community facilities in County Kildare and the proposed Project will provide a high-quality facility of social and environmental benefit to the community.

Chapter 11 of the EIAR deals specifically with biodiversity. As a result of the proposed mitigation and enhancement measures, no residual significant adverse impacts are predicted for the ecological receptors in the long-term following implementation of mitigation measures. Indeed, as a result of the proposed Project and habitats features to be created, significant beneficial impacts are predicted for the operational phase of the proposed project for the following ecological receptors: wetland habitats, amphibians and reptiles.

### 6.1.7 CHAPTER 11 – SOCIAL, COMMUNITY AND CULTURAL DEVELOPMENT

This chapter outlines the policies and objectives required to ensure that County Kildare is an attractive place to live and work by building strong, inclusive communities that have a sense of place and belonging. The provision of accessible, community based facilities from which services and supports can be provided is essential to creating these communities.

*Section 11.5* of the County Development Plan outlines how the Local Community Development Committees (LCDC) and the Local Economic and Community Plan (LECP) can strengthen the economic and community development of the county. The most relevant objective for the proposed Project is:

- **Objective LEO1** aims to *liaise with community and economic stakeholders to promote the sustainable development of economic and community services and infrastructure in the county, in accordance with the objectives and actions set out in the Kildare LECP 2016-2021.*

The needs of various groups within the population of the county are catered for in *Section 11.8* of the Plan.

- **Policy SN1** seeks to *consider the needs of children and young people, including those with disabilities and additional needs, in the provision of indoor and outdoor recreational facilities.*
- **Objective SNO1** aims to *develop open spaces throughout the county which will encourage a range of recreational and amenity activities that will cater for both active and passive recreation.*
- **Objective SNO3** seeks to *increase and improve the provision for children's play across the county. The provision of facilities such as play areas should have regard to the appropriateness of the location, the suitability of the building, the relationship to adjoining uses, the requirement for car parking and the amenity of adjacent uses.*
- **Objective SNO5** sets out to *seek to integrate the design of youth space facilities as part of all newly planned community facilities in the county.*
- **Policy PD1** that seeks to *ensure that all buildings, public and open spaces, recreational and amenity areas are accessible for people with disabilities, having regard to the Building Regulations, the objectives of 'Building for Everyone'*



(National Disability Authority) and 'Access for the Disabled' (No. 1 to 3) (National Rehabilitation Board),

- **Policy PD4** which aims to *provide for the needs of people with visual difficulties in the design of pedestrian facilities, by assessing the options available and choosing the most appropriate design to implement on a case by case basis.*
- **Objective PDO** sets out a basis to *ensure that all footpaths and public areas are accessible and safe for people with disabilities and/or reduced mobility, etc. by continuing a programme of footpath development and improvements.*

#### *Project Response*

Extensive public consultation was carried out throughout the Kerdiffstown Landfill Remediation Process undertaken under Section 56 of the Waste Management Act. Details of all consultation activities are included on the dedicated Project website [www.kerdiffstowncleanup.ie](http://www.kerdiffstowncleanup.ie) and in Chapter 6 of the EIAR. The needs of various groups throughout the community have been considered. Facilities will account for accessibility and safety of people with disabilities at detailed design. All facilities will be designed and constructed in line with the appropriate Building Regulations and development plan policies.

The Applicant is committed to continuing engagement with key stakeholders and the public after the planning application for the proposed Project has been submitted, and will continue to address any issues or concerns raised by the public through to the proposed Remediation Phase for the project.

During the Remediation Phase the Kildare County Council site manager/deputy will be the primary point of contact for the public on any environmental issues. They will be the first point of contact for public enquiries and be responsible for monitoring complaints, providing project up-dates and addressing any issues or queries as they arise.

### **6.1.8 CHAPTER 12 – ARCHITECTURAL AND ARCHAEOLOGICAL HERITAGE**

The conservation, management and protection of Architectural and Archaeological Heritage of County Kildare is set out in Chapter 12 of the KCDP. This chapter provides measures which encourages development to take place in a sensitive and sustainable manner in order to protect such heritage.

Section 12.4.1 provides policies to be implemented where Protected Structures are involved. These policies relate not alone to the structures themselves, but to the surrounding environs of the protected structure also. The relevant policies include:

- **Policy PS1** seeks for *the conservation and protection of buildings, structures and sites contained on the Record of Protected Structures of special architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.*
- **Policy PS2** aims to *protect the curtilage of protected structures or proposed protected structures and to refuse planning permission for inappropriate development within the curtilage or attendant grounds of a protected structure which would adversely impact on the special character of the protected structure including cause loss of or damage to the special character of the protected structure and loss of or damage to, any structures of architectural heritage value within the curtilage of the protected structure. Any proposed development within*



*the curtilage and/or attendant grounds must demonstrate that it is part of an overall strategy for the future conservation of the entire built heritage complex and contributes positively to that aim.*

- **Policy PS3** sets out *to require that new works will not obscure views of principal elevations of protected structures. Specific policies with regard to Country House and Demesnes are also provided within this chapter.*

County Kildare boasts a large number of country houses and demesnes where the grounds and settings constitute an intrinsic element of their character. There are a number of policies in *Section 12.5* of the Plan including:

- **Policy CH3** seeks *to encourage conservation, renewal and improvement which enhances the character and the setting of parks, gardens, and demesnes of historic interest within the county.*
- **Policy CH7** seeks *to preserve, protect and where necessary encourage the use of, heritage/ traditional varieties of plants and trees that form part of the local/ regional biodiversity resource and that contribute to local identity.*
- **Policy CH8** sets out *to require where appropriate that a Conservation Plan is, prepared in accordance with DAHG Guidelines and Conservation best practice to inform proposed visual or physical impacts on a demesne, designed landscape or a park.*
- **Policy CH9** requires that *planning applications take into consideration the impacts of the development on their landscapes and demonstrate that the development proposal has been designed to take account of the heritage resource of the landscape.*

*Section 12.8* outlines the policies and objectives for the protection of the archaeological heritage in the county. Those of relevance to the proposed Project include:

- **Policy AH1** seeks *to manage development in a manner that protects and conserves the archaeological heritage of the county, avoids adverse impacts on sites, monuments, features or objects of significant historical or archaeological interest and secures the preservation in-situ or by record of all sites and features of historical and archaeological interest. The Council will favour preservation in – situ in accordance with the recommendation of the Framework and Principles for the Protection of Archaeological Heritage (1999) or any superseding national policy.*
- **Policy AH2** requires applications *to have regard to the Record of Monuments and Places (RMP), the Urban Archaeological Survey and archaeological sites identified subsequent to the publication of the RMP when assessing planning applications for development. No development shall be permitted in the vicinity of a recorded feature, where it detracts from the setting of the feature or which is injurious to its cultural or educational value.*
- **Policy AH3** seeks *to secure the preservation (in-situ or by record) of all sites, monuments and features of significant historical or archaeological interest, included in the Record of Monuments and Places and their settings, in accordance with the recommendations of the Framework and Principles for the Protection of Archaeological Heritage, DAHG (1999), or any superseding national policy document.*
- **Policy AH4** aims *to ensure that development in the vicinity of a site of archaeological interest is not detrimental to the character of the archaeological site or its setting by reason of its location, scale, bulk or detailing and to ensure that*

*such proposed developments are subject to an archaeological assessment. Such an assessment will seek to ensure that the development can be sited and designed in such a way as to avoid impacting on archaeological heritage that is of significant interest including previously unknown sites, features and objects.*

- **Policy AH8** encourages, where practicable, the *provision of public access to sites identified in the Record of Monuments and Places under the direct ownership, guardianship or control of the Council and/or the State.*

Features of historical interest within the public realm can contribute to the character, interest and visual amenity of rural, suburban, urban and industrial places throughout the county, as outlined in *Section 12.13.1.*

- **Objective HF1** seeks to *ensure that development within the county including Council development seeks to retain, refurbish and incorporate features of historical interest.*

#### *Project Response*

Chapter 10 of the EIAR assesses the potential impacts on the archaeological, architectural and cultural heritage associated with the proposed Project. A number of mitigation measures are proposed during the remediation phase of the Project, in particular in relation to a recorded mound located in the western part of the site; and the recorded church and graveyard and the protected building and gardens of Kerdiffstown house to the East of the site. Overall the remediation and operational phases of the Project are anticipated to have a significant positive impact on the archaeological, and architectural heritage of the surrounding area, due to stabilization of slopes surrounding recorded structures and visual improvements in the landscape. No potential impacts on the cultural heritage resource are anticipated and all works will be carried out in line with development plan policies and objectives.

### **6.1.9 CHAPTER 13 – NATURAL HERITAGE AND GREEN INFRASTRUCTURE**

This chapter of the KCDP aims to contribute towards the conservation, protection and management of natural heritage. Measures have been incorporated to deal with EU and National designated habitats and species along with developing the green infrastructure network of the county.

*Section 13.4* firstly sets out general Natural Heritage policies and objectives which are relevant to the proposed Project and are as shown as follows:

- **Policy NH1** seeks to *facilitate, maintain and enhance as far as is practicable the natural heritage and amenity of the county by seeking to encourage the preservation and retention of woodlands, hedgerows, stonewalls, rivers, streams and wetlands. Where the removal of such features is unavoidable appropriate measures to replace like with like should be considered, subject to safety considerations.*
- **Policy NH2** seeks to *promote the carrying out of basic habitat assessments to inform the design of new developments in order to ensure that proposals for development integrate the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not), by including mitigation and/or compensation measures, as appropriate.*

- **Policy NH5** seeks to prevent development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the County and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive.
- **Policy NH6** sets out to ensure an Appropriate Assessment, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest.
- **Policy NH8** seeks to ensure that any proposal for development within or adjacent to a Natural Heritage Area (NHA), Ramsar Sites and Nature Reserves is designed and sited to minimise its impact on the biodiversity, ecological, geological and landscape value of the site particularly plant and animal species listed under the Wildlife Acts and the Habitats and Birds Directive including their habitats.
- **Policy NH9** aims to ensure the impact of development within or adjacent to national designated sites Natural Heritage Areas, Ramsar Sites and Nature Reserves is assessed by requiring the submission of an Ecological Impact Assessment (EclA) prepared by a suitably qualified professional which should accompany planning applications and council developments.
- **Policy NH10** sets out to restrict development within a proposed Natural Heritage Area to development that is directly related to the area's amenity potential subject to the protection and enhancement of natural heritage and visual amenities including biodiversity and landscapes.
- **Policy NH11** seeks to ensure that development does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 the Habitats Directive 1992 and the Flora Protection Order species.
- **Policy NH12** seeks to ensure that, where evidence of species that are protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992 exist, appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment. In the event of a proposed development impacting on a site known to be a breeding or resting site of species listed in the Habitats Regulations a derogation licence, issued by DAHG may be required. Policies are also in place for Invasive Species.
- **Policy NH14** sets out to promote best practice with respect to minimising the spread of invasive species in the carrying out of development and to support measures for the prevention and / or eradication of invasive species within the county.
- **Policy NH15** states that it is policy to require, as part of the planning application process, the eradication/control of invasive introduced species including Japanese Knotweed, when identified on a site or in the vicinity of a site in accordance with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011 European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

*Project Response*

An Appropriate Assessment Screening was carried out for the proposed Project. This screening concluded that an Appropriate Assessment was not required and that on the basis of objective scientific information and in light of the conservation objectives of the relevant sites, the proposed Project, either individually or in combination with other plans or projects would not have significant effects on any European Site.

Chapter 11 of the EIAR 'Biodiversity' provides details on all aspects of biodiversity and proposes mitigation measures where appropriate. Indeed, as a result of the proposed Project and habitat features to be created, **significant beneficial impacts** are predicted for the operational phase of the proposed project for the following ecological receptors: wetland habitats, amphibians and reptiles.

The invasive species Japanese knotweed was previously recorded within the site boundary. This was successfully treated on behalf of Kildare County Council during 2014 with no regrowth recorded in 2015 or 2016. During the Remediation Phase the appointed contractor will develop an Invasive Species Management Plan in order to control and prevent the spread of invasive species within the site boundary.

*Section 13.10* of the KCDP also provides general and specific policy for the Green Infrastructure network. Green infrastructure is broadly defined as "a strategically planned and managed network featuring areas with high quality biodiversity (uplands, wetlands, peatlands, rivers and coast), farmed and wooded lands and other green spaces that conserve ecosystem values which provide essential services to society"

- **Policy GI1** sets out *to ensure the protection, enhancement and maintenance of Green Infrastructure and recognise the health benefits as well as the economic, social, environmental and physical value of green spaces through the integration of Green Infrastructure (GI) planning and development in the planning process.*
- **Policy GI5** states that it is the policy of the Council *to encourage, pursuant to Article 10 of the Habitats Directive, the management of features of the landscape, such as traditional field boundaries and laneways, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species.*
- **Policy GI7** promotes *a network of paths and cycle tracks to enhance accessibility to the Green Infrastructure network, while ensuring that the design and operation of the routes respects and where possible enhances the ecological potential of each site.*

*Project Response*

The proposed Landscape Masterplan for the Project details a network of green spaces and extensive planting proposed to conserve and enhance the ecosystems on site. The proposed Project also contains a network of paths and cycle tracks, enhancing the accessibility to the green infrastructure network. Chapter 11 of the EIAR also provides further detail on the ecosystems and biodiversity of the Project and Chapter 14 assesses the potential effects of the proposed Project on the local traffic and transport network during the Remediation and Operational phases.

*Section 13.10.2.1* outlines policies and objectives for trees, woodlands and hedgerows included within the green infrastructure network. Relevant policies include:

- **Policy GI8** seeks to contribute towards the protection of and manage existing networks of woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and to strengthen local networks.
- **Policy GI9** aims to ensure proper provision is made for the consideration, protection and management of existing networks of woodlands, trees and hedgerows when undertaking, approving or authorising development.
- **Policy GI10** sets out to ensure a Tree Management Plan is provided to ensure that trees are adequately protected during development and incorporated into the design of new developments.
- **Policy GI11** ensures that hedgerow removal, to facilitate development, is kept to an absolute minimum and, where unavoidable, a requirement for mitigation planting will be required comprising a hedge of similar length and species composition to the original, established as close as is practicable to the original and where possible linking in to existing adjacent hedges. Native plants of a local provenance should be used for any such planting.
- **Policy GI13** seeks the recognition of the biodiversity and archaeological importance of townland boundaries, including hedgerows, and promote their protection and retention.
- **Policy GI14** states that it is policy to contribute towards the protection of, where possible, the trees which are considered an important component of demesne landscapes.
- **Policy GI 15** encourages the protection of historic hedgerows or significant hedgerows which serve to link habitat areas to each other and the surrounding countryside.
- **Policy GI16** encourages the planting of woodlands, trees and hedgerows as part of new developments using native plants of local provenance.
- **Objective GIO4** states that it encourages the development of proposals for new woodlands utilising funding available through schemes such as the Neighbour Wood and Native Woodland Schemes.
- **Objective GIO5** aims to seek to retain and supplement existing tree, woodland and hedgerow planting on Council owned lands.

#### *Project Response*

Chapter 11 of the EIAR outlines the measures in place for enhancement and protection of biodiversity on the site. The proposed Project seeks to improve on the current levels of biodiversity and contribute to the enhancement of the green infrastructure network. Treelines and hedgerows have been identified on the site and protection measures provided where relevant. Where tree removal may be required in areas not previously identified, liaison with an ecologist will be required.

A detailed Landscape Masterplan accompanies the EIAR for the proposed Project in line with the KCDP policies for trees, woodlands and hedgerows.

*Section 13.10.3* Inland Waterways Networks, seeks the maintenance of rivers and streams in an open, semi-natural condition in order to provide effective measures to maintain biodiversity, and to help manage fluvial and pluvial flooding whilst supporting a quality multi-functional green network generating multiple benefits for the environment, tourism and society.

- **Policy GI16** seeks *the contribution towards the protection of and manage the natural, historical and amenity value of the County's waterways and to strengthen a network of waterways at a regional level.*
- **Policy GI17** states *the requirement for the submission of an Ecological Impact Assessment where deemed necessary by the planning authority (and where necessary an Appropriate Assessment in relation to Natura 2000 sites) including bat and otter surveys for developments along river, stream and canal corridors.*
- **Policy GI18** states *that it is the policy of the Council to maintain a biodiversity zone of not less than 10 metres from the top of the bank of all watercourses in the County, with the full extent of the protection zone to be determined on a case by case basis by the council, based on site specific characteristics and sensitivities. Strategic Green Routes / Blueways / Trails will be open for consideration within the biodiversity protection zone, subject to appropriate safeguards and assessments, as these routes increase the accessibility of the Green Infrastructure Network.*
- **Policy GI19** seeks *to ensure that expert advice is sought in developing lighting proposals along river, stream and canal corridors in order to mitigate impacts of lighting on bats and other species.*
- **Policy GI21** states *that it is a policy to contribute towards the protection of rivers, streams and other water courses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment.*
- **Policy GI22** sets out *the requirement to consult, as appropriate, with Inland Fisheries Ireland in relation to any development that could potentially impact on the aquatic ecosystems and associated riparian habitats.*

#### *Project Response*

There will be no direct hydrological connection from the site to the Morell River during remediation. In addition, the connection from the site to the Grand Canal feeder stream will be decommissioned at the onset of remediation. Water monitoring, as indicated in the Industrial Emissions Activities Licence will be undertaken throughout the proposed works and as part of the ongoing management and operation of the KLRP.

Consultations have taken place with Inland Fisheries Ireland and they are satisfied that there will be no negative impact on the water quality of the river, by restricting the leachate entering the watercourse.

*Section 14.10.4.* highlights Urban Green Infrastructure Policies, providing valuable connections from urban centres to the wider countryside and thereby strengthening the green infrastructure network. Relevant policies include:

- **Policy GI24** ensures that *the Green Infrastructure Strategy and Network is used to inform the development management process to ensure that new residential areas, business/industrial development and other relevant projects contribute towards the protection, management and enhancement of the existing green infrastructure of the local area in terms of the design, layout and landscaping.*
- **Policy GI25** requires *all new developments to identify, protect and enhance ecological features by making provision for local biodiversity (e.g. through provision of swift boxes or towers, bat roost sites, green roofs, etc.) and providing links to the wider Green Infrastructure network as an essential part of the design process.*



- **Policy GI26** seeks to *restrict development that would fragment or prejudice the Green Infrastructure network.*
- **Policy GI27** sets out the policy to *strengthen ecological links between urban areas, Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional Green Infrastructure network.*
- **Policy GI24** requires *multifunctional open space provision within all new developments, this includes provision for ecology and sustainable water management.*

Section 13.10.5 of the development plan includes policies on green infrastructure *within Public Open Spaces and Parks* which is considered to be of particular relevance to this proposal. Relevant policies include:

- **Policy GI25** states that it is a policy of the council to *provide a hierarchy of high quality and multi-functional public parks and open spaces.*
- **Policy GI26** supports and facilitates *the provision of a network of high quality, well located and multifunctional public parks and open spaces throughout the County and to protect and enhance the environmental capacity and ecological function of these spaces.*
- **Policy GI27** seeks to *connect parks and areas of open space with ecological and recreational corridors to aid the movement of biodiversity and people and to strengthen the overall Green Infrastructure network.*
- **Policy GI28** sets out to *enhance and diversify the outdoor recreational potential of public open spaces and parks, subject to the protection of the natural environment.*
- **Policy GI29** states to *minimise the environmental impact of external lighting at sensitive locations within the Green Infrastructure network to achieve a sustainable balance between the recreational needs of an area, the safety of walking and cycling routes and the protection of light sensitive species such as bats.*
- **Policy GI30** seeks to *promote the planting of woodlands, forestry, community gardens, allotments and parkland meadows within the County's open spaces and parks to promote the development of multifunctional amenity areas with enhanced biodiversity value.*

#### *Project Response*

The proposed Project will provide a high-quality, multi-functional public amenity park for the residents of the local area and the primary urban area of Naas, and the wider region.

The Landscaping Masterplan, identifies a hierarchy of spaces within the proposed Project itself, provides for linkages between the proposed project and existing settlements and the wider green infrastructure network, and provides for the management and enhancement of local biodiversity in line with development plan policies.

Section 13.10.6 sets out policies and objectives for the incorporation of Sustainable Urban Drainage Systems (SuDS) into developments.

- **Policy GI31** promotes and supports *the development of Sustainable Urban Drainage Systems (SuDS).*
- **Policy GI32** aims to *promote and support the development of Sustainable Urban Drainage Systems (SuDS) such as integrated constructed wetlands, permeable*

*surfaces, filter strips, ponds, swales and basins at a site, district and county level and to maximise the amenity and bio-diversity value of these systems.*

- **Objective GIO5** is an objective of the council *to showcase good examples of Sustainable Urban Drainage Systems (SuDS) which maximise the amenity and bio-diversity.*

#### *Project Response*

Natural features associated with the site of the proposed Project will be retained wherever possible. Chapter 11 'Biodiversity' is included within the EIAR which assesses the habitats and other natural features of the subject site and identifies potential impacts the development proposal may have on them. Mitigation measures as appropriate, are highlighted within the EIAR in order to minimise any adverse impacts on the biodiversity of the site. SuDS will be implemented as part of the detailed design of parking areas.

### **6.1.10 CHAPTER 14 – LANDSCAPE, RECREATION AND AMENITY**

The aim of this chapter of the KCDP is to protect, enhance and manage the Landscape of the county and to ensure that development does not impact negatively on the allocated landscape character areas, protected views or scenic routes through proper planning and sustainable development.

*Section 14.4* of the KCDP details the Landscape Character Assessment undertaken for County Kildare, which identifies a number of landscape character areas throughout the county. These Landscape areas vary in sensitivity and ability accommodate development. The proposed Project is located within the 'Northern Lowlands Landscape Character Area' which has a sensitivity rating of Class 1 (low sensitivity). Class 1 areas are defined as '*areas with the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area*'. The proposed Project is therefore considered to be capable of being accommodated within this landscape character type.

#### *Project Response*

In terms of land use and development types compatible with the landscape character areas identified, amenity and recreational uses are deemed to be highly compatible with the Northern Lowlands character area where the proposal is located. The Johnstown Village Plan has identified that "There is a shortfall of formal recreational areas". This proposed project will help to address this shortfall in keeping with the village plan principle; "Protect and enhance the physical and natural environment in terms of its recreational and ecological potential". Chapter 9 of the EIAR concludes that the proposed Project will provide a positive improvement on the current baseline scenario and will result in a visual continuation of the surrounding landscapes.

A number of scenic viewpoints are located within 5km of the Kerdiffstown site but are not affected by the proposed project. These include:

- GC 32 Ploopluck Bridge Naas
- GC 31 Abbey Bridge Naas
- GC 30 Tandy Bridge Naas
- GC 4 Devonshire Bridge Sherlockstown Common
- RL 6 Millicent Bridge Castlesize
- GC 5 Digby Bridge Aghpaudeen

Section 14.8 outlines Landscape policies, some of which are applicable to the proposed Project.

- **Policy LA1** ensures *that consideration of landscape sensitivity is an important factor in determining development uses. In areas of high landscape sensitivity, the design, type and the choice of location of proposed development in the landscape will also be critical considerations.*
- **Policy LA2** states to *protect and enhance the county's landscape, by ensuring that development retains, protects and, where necessary, enhances the appearance and character of the existing local landscape.*
- **Policy LA3** sets out the requirement for a *Landscape/Visual Impact Assessment to accompany significant proposals that are likely to significantly affect:*
  - Landscape Sensitivity Factors
  - A Class 4 or 5 Sensitivity Landscape (i.e. within 500m of the boundary)
  - A route or view identified in maps 14.2 and 14.3 (i.e. within 500m of the boundary)
- **Policy LA4** seeks to *ensure that local landscape features, including historic features and buildings, hedgerows, shelter belts and stone walls are retained, protected and enhanced where appropriate, so as to preserve the local landscape and character of an area, whilst providing for future development.*
- **Policy LA7** ensures *that landscape planning in response to climate change provides adequate space for habitat expansion in the event of flooding.*
- **Policy LA8** states that it is a policy of the council to be *informed by consideration of the County Landscape Character Appraisal.* Section 14.8.2 provided policies within regard to Lowland Plains and Boglands Character Areas, in which the proposed Project is situated.

**Policy LL1** recognises *that the lowlands are made up of a variety of working landscapes, which are critical resources for sustaining the economic and social well-being of the county.*

**Policy LL3** recognises that this *lowland landscape character area includes areas of significant landscape and ecological value, which are worthy of protection.*

As stated previously, there a number of protected views in the vicinity of the proposed Project site. Section 14.9 of the KCDP outlines polices regarding these views, including:

**Policy SR1** aims to *protect views from designated scenic routes by avoiding any development that could disrupt the vistas or disproportionately impact on the landscape character of the area thereby affecting the scenic and amenity value of the views.*

**Policy WV 1** sets out to *curtail any further development along the canal and river banks that could cumulatively affect the quality of a designated view.*

**Policy WV 3** states to *prevent inappropriate development along canal and river banks and to preserve these areas in the interests of biodiversity, built and natural heritage and amenity by creating or maintaining buffer zones, where development should be avoided.*

Landscape Objectives are presented Section 14.10 of the county development plan.

**Objective LO1** states to *have regard to the Landscape Sensitivity Factors in the vicinity of sites in the consideration of any significant development proposals.*

**Objective LO2** sets out to *ensure landscape assessment will be an important factor in all land-use proposals.*

**Objective LO4** states to *protect the visual and scenic amenities of County Kildare's built and natural environment.*

**Objective LO5** aims to *preserve the character of all important views and prospects, particularly upland, river, canal views, views across the Curragh, views of historical or cultural significance (including buildings and townscapes) and views of natural beauty.*

**Objective LO6** aims to *preserve and protect the character of those views and prospects obtainable from scenic routes identified in this Plan, listed in Table 14.5 and identified on Map 14.3 (within the KCDP).*

#### *Project Response*

The proposed remediation of the Kerdiffstown Landfill site, will benefit the views and prospects both to and from the site. The proposal seeks to remediate the landform and ground cover to significantly improve the environmental and visual integrity of the site. This will assist in reducing the negative visual impact that the site currently has on the surrounding area. The Landscape and Visual Impact assessment included in Chapter 9 of the EIAR, has also taken the above policies into account. Having regard to the content of the EIAR and additional assessments and proposals (i.e. tree survey, landscape plan and report), it is considered that the proposed Project complies with all the relevant Landscape Objectives presented in the development plan. The residual impacts associated with the proposed Project are anticipated to have a positive improvement on the current baseline situation and to provide a visual extension of the surrounding landscapes.

Policies for recreation and amenity are presented in *Section 14.12* of the KCDP. Those of relevance to the proposal include:

#### *Countryside recreation*

- **Policy CR2** states to *support the development of woodland areas in conjunction with proposed development and on Council owned lands.*
- **Policy CR6** seeks to *develop in conjunction with local communities short walking routes, such as looped walks, heritage trails and Slí Na Sláinte routes.*
- **Policy CR7** seeks to *facilitate, where appropriate, the provision of cycle-ways or walkways along the extent of the canals and watercourses in the county in cooperation with landowners, Waterways Ireland, Government Departments and other Local Authorities.*
- **Policy CR9** sets out to *promote the expansion of cycle facilities throughout the county and to liaise with Fáilte Ireland, the Sports Council, the National Transportation Authority and other bodies in the development of cycling touring routes throughout the county and adjoining counties, in particular in areas of high amenity.*
- **Policy CR10** is a policy of the council to *investigate the possibility of providing appropriately designed quality signage for walking and cycling routes throughout the county.*
- **Policy CR11** supports and promotes *public access to upland areas, rivers, lakes and other natural amenities which do not endanger the conservation of such natural amenities.*
- **Policy CR14** seeks to *provide car parks for walkers at appropriate access points to amenities, where feasible, and subject to compliance with the requirements arising from the Habitats Directive.*
- **Policy CR15** aims to *ensure that any increase in visitor numbers are managed to avoid significant negative effects including loss of habitat and disturbance; and*

*any projects are a suitable distance from the edge of sensitive habitats such as rivers and streams.*

#### *Public Rights of Way*

- **Policy RW2** seeks to ensure that new development will not have a negative impact on established walking routes/ public rights of way, in particular in areas of high amenity and along the inland waterways of the county.
- **Policy RW3** sets out to identify existing rights of way and walking routes prior to any new planting, new infrastructural development and any new energy / telecommunications or golf course developments.
- **Policy RW4** seeks to improve the condition and appearance of existing rights of way as part of a proposed development where the applicant has confirmed legal status of existing rights of way.

#### *Open Space*

- **Policy OS1** states to implement the recommendations of the Kildare Open Space Strategy 2012 and make provision for a hierarchy of parks, open spaces and outdoor recreation areas within towns and villages so that the population can participate in a wide range of active and passive recreational pursuits within easy reach of their homes and places of work.
- **Policy OS4** seeks to develop and improve physical linkages and connections between the network of open spaces.
- **Policy OS5** sets out to retain where appropriate, areas adjacent to waterways as a linear park which may link into the wider open space network.

#### *Recreation and Amenity*

- **Policy RA5** seeks for improvement in the range, quality and capacity of sporting and recreational facilities through initiatives in partnership with community groups and sporting organisations and to cater for all age-groups and abilities.
- **Policy RA6** encourages the clustering of sport and community facilities and to encourage them to be multi-functional and not used exclusively by any one group.
- **Policy RA8** states to promote town and village centre sites for sports and recreational facilities and to facilitate out of town/village sites, where appropriate, (following a sequential test) in servicing large hinterland communities, where the site includes comprehensive off road parking, conforms to all safety guidelines and is in accordance with the proper planning and sustainable development of the area.
- **Objective RAO1** seeks to facilitate the provision of a variety of amenities within the county, including natural amenities, walking routes, cycling routes, and sports facilities.
- **Objective RAO8** aims to protect and develop substantial connected networks of green spaces in urban areas and urban fringe areas adjacent to the countryside to serve the growing communities in urban centres.
- **Policy RAO12** provides for the preservation of public rights of way which give access to mountains, lakeshores, riverbanks or other places of natural beauty or recreational utility, where public rights of way shall be identified both by marking them on at least one of the maps forming part of this Plan and by indicating their location on a list appended to this Plan.

#### *Green Infrastructure*

- **Policy GI1** seeks to facilitate and promote the development of green infrastructure which allows for the development of active and passive recreation and the protection and enhancement of heritage and landscape features.
- **Policy GI2** makes provision for habitat creation/maintenance and facilitate biodiversity by encouraging the development of linear parks, nature trails, wildlife corridors and urban woodlands.

*Project Response*

The Landscape Masterplan provides detail on all aspects of the proposed end-use including cycleways, walkways, grasslands, wetlands, hedgerows, and passive and active amenity areas. The proposal seeks to provide a variety of amenities while also maximizing the protection and enhancement of habitats and biodiversity. The proposed Project facilitates the enhancement of the County's green infrastructure and promotes the further development of green links between the site and nearby settlements. All development will take place in accordance with development plan policies and the proper planning and sustainable development of the area. A new entrance to the site with improved road access will provide enhanced accessibility for the public.

The proposed project will provide an active recreation and amenity area for a range of sporting and recreational facilities to serve the wider community.

There are no existing public rights of way on the site.

**6.1.11 CHAPTER 17 – DEVELOPMENT MANAGEMENT STANDARDS**

Chapter 17 of the Kildare County Development Plan sets out detailed development management standards for various types of development. For ease of reference, each of the development management criteria that can be considered relevant to the proposed Project, as well as the applicant's response to each of these criteria, is set out in Table 6.1 below.

**Table 6.1 Compliance with Relevant Development Management Standards**

Criteria	Development Management Standards	Proposed Development
Overshadowing	'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice "(BRE 1991)	Compliant
Soft Landscaping	Local native plant types	As detailed in Landscaping Masterplan Statement and Chapter 11 of the EIAR.
	Detailed tree survey	As detailed in Landscaping Masterplan Statement and Chapter 11 of the EIAR.
	Replanting of trees / hedges	As detailed in Landscaping Masterplan Statement and Chapter 11 of the EIAR.
	Site management plan for	As detailed in Landscape

Criteria	Development Management Standards	Proposed Development
	protection of trees	Masterplan Statement and Chapter 11 of the EIAR.
Access for All	Layout and design to consider needs of all people (regardless of age), people with disabilities and people with children, Compliance with Part M of	Compliant
Traffic Sightlines	Conform to Design Manual for Urban Roads and Streets (DTTS and DECLG, 2013).	Compliant
Building Line	18.5m set back for a local road	Compliant
Access to Public Road	Restriction to new entrances	Existing site entrance to be used
Street Light and Public Utilities	<p>Compliance with the standards set out the most recent revision of Kildare County Council document 'Street Lighting Technical Specification'</p> <p>All services including electricity, public lighting, telephone, broadband and television cables are to be provided underground in appropriate ducting in all new developments</p>	Compliant
Signage	Compliance with Transport Ireland Initiative Policy on the Provision of Tourist & Leisure Signage on National Roads (2011) and Spatial Planning and National Roads Guidelines (2012)	Compliant
Traffic Management	TTA required	Road Safety Audit, Traffic and Transport Assessment submitted.
Car Parking	Bay size 2.5 x 5	Detailed design will be in accordance development management standards.



Criteria	Development Management Standards	Proposed Development
Car Charging Points	Up to 10% of total car parking provision	Detailed design will be in accordance development management standards.
Car Parking Provision	15 spaces per pitch	Detailed design will be in accordance development management standards.
Bicycle Parking Provision	20 spaces per pitch	Detailed design will be in accordance development management standards.
Surface Water / Flooding	Proposals for restricting rate of surface water run-off	As per EIAR Chapter 13.
	Incorporate Sustainable urban Drainage Systems (SuDS)	Detailed design will be in accordance development management standards.
	Flood Risk Assessment	Complete. Report included in Appendix A13.1 of EIAR
Development within view of the Curtilage, Attendant Grounds and / or Demesne of Protected Structures	Development not to adversely affect or interfere with setting of protected structure	Compliant. Detail included in Chapter 10 of EIAR.
	Outward and inward views from protected structure to be protected	Compliant. Detail included in Chapter 10 of EIAR.
	Outward and inward views from key points within the curtilage, demesne lands and attendant grounds are to be protected	Compliant. Detail included in Chapter 10 of EIAR.
Natural Heritage	Habitats Directive requirement for Appropriate Assessment Requirement of an Ecological Impact Assessment	AA Screening carried out. Detail included in Chapter 11 of EIAR and Appropriate Assessment Screening Statement (Jacobs, 2017) provided in Appendix A11.10

## **6.2 OVERALL COMPLIANCE WITH DEVELOPMENT POLICIES**

Following a comprehensive review of the policies and objectives of the KCDP 2017-2023, it is demonstrated that the proposed Project is in full compliance with the requirements set out in both the Kildare County Development Plan 2017 - 2023, and the Eastern-Midlands Regional Waste Management Plan 2015 – 2021.

As detailed in this review, as well as the following sections of this report, a high level of compliance can be confirmed by the comprehensive reports produced to support this application. The findings of these reports are described and discussed in the following sections.

## **7. ENVIRONMENTAL IMPACTS**

### **7.1 ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

This application is accompanied by an Environmental Impact Assessment Report (EIAR) in accordance with Schedule 6 of the Planning and Development Regulations 2001 to 2017 (as amended).

The Environmental Impact Assessment Report enclosed with this planning application describes the environmental impacts predicted for this proposed Project.

The EIAR, which has been referred to in the project responses throughout Section 6 of this Report above, clearly demonstrates that this proposal is in full compliance with the various sectoral policies and objectives of the Kildare County Development Plan (2017 – 2023), and also the Eastern-Midlands Regional Waste Management Plan (2015-2021). The accompanying EIAR is part of the documentation required to demonstrate how the project complies with those policies and objectives.

As outlined in Section 1.6 of this report, an Appropriate Assessment Screening (92/43/EEC) was carried out to determine whether the proposed Project is likely to have a significant effect on the conservation of European Sites (the Natura 2000 Network). The Appropriate Assessment Screening Statement (AASS) concluded that an Appropriate Assessment of the proposed Project was not required. It was excluded on the basis of objective scientific information, and in light of no implications for the conservation objectives of relevant sites from the proposed Project that the proposed Project, either individually or in-combination with other plans or projects, will have likely significant effects on any European site.

Chapter 11 'Biodiversity' of the accompanying EIAR and Appendix A11.10 of the EIAR contain further details and a copy of the Appropriate Assessment Screening Statement.

## 8. OTHER SIGNIFICANT ISSUES

A number of other Reports accompany this Application including:

### 8.1 FLOOD RISK ASSESSMENT

A Flood Risk Assessment of the proposed Project was carried out. The full report is included in Appendix A13.1 of the accompanying EIAR. The assessment has initially concluded that all across the study area, comparison of the existing and the proposed Project demonstrate that the proposed works do not increase the flood risk.

### 8.2 TRAFFIC AND TRANSPORT ASSESSMENT

A Traffic and Transport Assessment (TTA) accompanies this Planning Application and is provided in Appendix A14.1 of the EIAR. This is intended to support Chapter 14 of the EIAR, (Traffic and Transport). The TTA assesses the impacts of the traffic associated with the construction and operation of the proposed Project.

The TTA includes an assessment of current and future network conditions. The objective is to establish the scope of mitigation measures that will be required to avoid or minimise the impacts of the project on road users, both in the vicinity of the site and within the wider road network.

The following elements are detailed as part of the study: -

- 2017 Base Network
- 2018/2022/2027/2037 Projected Network
- 2018 Projected + Remediation Phase Traffic
- 2018 Projected + Remediation Phase Traffic (Sensitivity Test)
- 2022 Projected + Operational Phase Traffic
- 2027 Projected + Operational Phase Traffic
- 2037 Projected + Operational Phase Traffic Network

The additional traffic generated as a result of the anticipated Remediation Phase programme will result in increases of traffic flows on the primary and secondary roads leading to the proposed Project. A robust assessment has been undertaken, both in relation to the estimates of Remediation Phase traffic and the distribution of Remediation Phase traffic within the assessed road network. Despite the robustness of the assessment, when considering actual volumes of traffic, the predicted increase in flows are considered minimal and will have a negligible impact on the practical operating capacity of these roads. Notwithstanding this, appropriate mitigation measures have been identified, including the provision of a Construction Traffic Management Plan (CTMP) and Mobility Management Plan (MMP), which will ensure that any potential traffic impacts are minimised. As such, the overall environmental impact is therefore considered not significant in terms of the EIA Regulations, assuming the appropriate mitigation measures are effectively implemented.

The increases in the levels of traffic anticipated during the Operational Phase of the Proposed Project are also considered not significant in terms of the EIA Regulations.

The Traffic and Transport Assessment also recommends that prior to the commencement of Remediation Phase, the appointed contractor will prepare a Construction Traffic Management Plan (CTMP) and a Mobility Management Plan (MMP). The purpose of the

Construction Traffic Management Plan is to set out management and mitigation measures to prevent or minimise the transport impacts during the Remediation Phase of the Project. The Mobility Management Plan should be prepared prior to initiation of the Remediation Phase, the purpose of which is to provide a mechanism to support and promote sustainable travel for staff, contractors and visitors travelling to the proposed Project. The MMP should seek to eliminate the barriers preventing users of the site from accessing via sustainable travel modes, improving travel choices and managing single occupancy or car use.

### **8.3 LANDSCAPE MASTERPLAN AND STATEMENT**

The proposed end use proposals comprise a park which would also incorporate facilities suitable for recreation such as sports pitches, a play area, informal trails and defined viewpoints. It would also provide landscape improvements and an opportunity for ecological enhancements.

The full Landscape Masterplan Statement is included in Appendix A4.8 of the accompanying EIAR.

## **9. PLANNING ASSESSMENT AND OVERALL CONCLUSION**

Having regard to the requirement for an IEAL Licence from the EPA to facilitate development; the nature of the site; and the potential environmental effects that may occur, it has been determined that a 'sub-threshold' EIAR under Article 92 of the Planning and Development Regulations 2001 (as amended) is required having regard to the criteria set out in Schedule 7 of the Regulations.

Based on the available information and historical studies carried out at the site, it is considered that, without mitigation, the Kerdiffstown Landfill, in its current form, poses a potentially unacceptable long term risk to the environment. The works required to remediate the site and develop the proposed multi-use public park end-use, including the excavation and movement of waste material within the site boundary, could lead to effects and an EIA should be carried out to fully assess potential impacts and to make recommendations for mitigation measures to reduce or eliminate impacts.

As already outlined previously within this report, Kildare County Council, as the Applicant, is seeking consent from An Bord Pleanála under Section 175 of the Planning and Development Act, 2000 (as amended). In parallel with the application under Section 175, Kildare County Council are seeking the confirmation of a Compulsory Purchase Order (CPO) under Section 213 of the Act.

Section 175(1) of the Act relates to the proposed Project by a Local Authority where an Environmental Impact Statement (now referred to as an Environmental Impact Assessment Report (EIAR)), is required.

Kildare County Council will assume ownership of the relevant land registry folios necessary for the proposed Project's requirements through the CPO process. The CPO application, lodged under Section 213 of the Act will be submitted to An Bord Pleanála in parallel with this Section 175 application. In addition to the CPO obligations required for the proposed Project, there is also a requirement for a temporary wayleave (accommodating appropriate infrastructure works) from the south-east corner of the site to Johnstown village in order for the Johnstown Pumping Station to service the site. This wayleave will be established by way of a temporary CPO while access rights will be required by Kildare County Council in order to undertake maintenance works in the long term.

The application submitted for approval includes; the remediation of a former landfill and waste processing facility comprising reprofiling of the site, installation of an engineered capping system over predominant areas of waste and ancillary works to reduce the risks to the environment and human health and the provision of the proposed end-use for the site - a public park with multi-use sports pitches. The remediation works are anticipated to take approximately 5 – 7 years and will employ a maximum of 50 full time equivalent workers on site at any one time.

In addition to the Planning Report and EIAR, a number of other reports accompany this application. These include a Traffic and Transport Assessment, a Landscape Masterplan Statement and a Flood Risk Assessment.

As highlighted in Section 6 and Section 7 above, this proposal is fully in compliance with the land use zoning and policies of the Regional Planning Guidelines, the Eastern-Midlands Regional Waste Management Plan 2015-2021, the Kildare County Development Plan 2017-2023 and other statutory guidance documents.

Therefore, we would respectfully request that An Bord Pleanála considers a favourable grant of approval for the subject application as it is in full compliance with the proper planning and sustainable development of the area. The proposed Project is also required in order to eliminate the significant risks to the environment and human health associated with the existing Kerdiffstown Landfill Site.



# **APPENDIX 1      MEMORANDUM OF UNDERSTANDING BETWEEN MINISTER D<sub>o</sub>ECLG & KILDARE COUNTY COUNCIL**



**MEMORANDUM OF UNDERSTANDING**

**Between**

**The Minister for the Environment, Community and Local Government**

**And**

**Kildare County Council**

**Remediation of Kerdiffstown Landfill, Co. Kildare**

The purpose of this Memorandum of Understanding is to put in place arrangements between Kildare County Council (the Council) and the Minister for the Environment, Community and Local Government (the Minister) to manage the remediation of Kerdiffstown Landfill, Co. Kildare.

For the Minister for the Environment, Community  
And Local Government

For Kildare County Council



Mr David Walsh  
Assistant Secretary General



Mr. Peter Carey  
Chief Executive

Date: 2 June 2015

Date:

## **MEMORANDUM OF UNDERSTANDING**

**Between**

**Minister for the Environment, Community and Local Government**

**And**

**Kildare County Council**

**Remediation of Kerdiffstown Landfill, Co. Kildare**

### **Background:**

1. The Minister for the Environment, Community and Local Government ('the Minister') has requested the Council to manage the remediation of Kerdiffstown Landfill, Co. Kildare ('the site') on behalf of the State. The Council agrees and will exercise its powers under Section 56 of the Waste Management Acts 1996 to 2012 (the WMA) to manage the Project.
2. The purpose of this Memorandum is to set out the organisation, management and accountability structure to plan, manage, and implement the remediation plan at the site. References in this document to the 'Project' will include all tasks associated with the planning, management and implementation of the remediation plan at the site.
3. This Memorandum sets out the roles, responsibilities and accountability of the parties involved in the Project. The Memorandum is not in substitution for, nor in addition to the provisions of the Public Service Management Acts and the

accountability frameworks applicable to civil and public servants, departments, entities and personnel mentioned more generally. Its function is to make explicit the particular roles, responsibility and accountability that those concerned must exercise to facilitate delivery of the Project.

4. The Minister and the Council agree to fully co-operate as set out in this Memorandum of Understanding.
5. In carrying forward this Project, the Minister agrees that the Department of the Environment, Community and Local Government will act as Sanctioning Authority for the purposes of the Public Spending Code. Kildare County Council will act as Project Sponsor.

**The Site:**

6. At the time of this Memorandum, it is understood that the site is reputedly owned by the receivers and liquidators of the company known as 'Jenzoph'.
7. For the purposes of this Memorandum, the site is understood to be as delineated in red on the map attaching to this document (Annex 1).
8. A Judgment Mortgage in favour of the EPA has been registered against the property.

**Transfer of Responsibilities:**

9. Since 25 February 2011, the Environmental Protection Agency (EPA), in exercise of its powers under section 56A of the WMA, has been the 'holder' of the waste and has undertaken remediation works funded by the Minister. With effect from 5 June 2015 ('the transfer date'), the Minister will conclude funding of the EPA's activities at the site: the EPA's responsibilities in this regard will end and responsibility for the Project will transfer to the Council.
10. From the transfer date, it is agreed that the Council will assume the role of 'holder' of the waste and will assume responsibility for planning, ongoing management, and implementation of the Project at the site.
11. On the transfer date, a novation of all contracts entered into by the EPA for the purposes of management and remediation works at the site will take effect and the

Council will assume the role of contracting party. These contracts are listed at Annex 2 of this Memorandum.

12. In his role as Minister under the WMA, and subject to the annual estimates process, the Minister has agreed to fund the costs of remediation and ongoing management costs of the site by the Council.

**Project Scope:**

13. The scope of the Project covers the area described in the map at Annex 1 to this document and any contiguous properties not currently within the scope of the Project but considered by the Council as necessary for inclusion within the scope of the Project. It is acknowledged that the Council is likely to seek ownership of the site and may consider the use of Compulsory Purchase Order (CPO) powers in relation to the site and certain contiguous properties necessary for compliance with the requirements of waste legislation.
14. The Council agrees to implement the preferred engineering solution, Option B (the Preferred Option), proposed in the Remedial Options Report <sup>1</sup>, subject to detailed design, Environmental Impact Assessment (EIA), Appropriate Assessment (AA) if required and all statutory consents, including planning permission and waste licensing. The Preferred Option has been endorsed by the Minister and the EPA and, in general terms, involves the capping of all uncapped wastes and providing engineered drainage to deal with surface water and the leachate arising. The Council agrees to undertake a public consultation regarding appropriate post-remediation use of the site.
15. The remediation of the site includes all development work outlined in the Preferred Option and work ancillary thereto which is necessary for compliance with conditions attaching to any statutory consents.
16. The stages of the Project are:
  - a) Preparation of detailed design plans;

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<sup>1</sup> Kerdiffstown Landfill Remediation Project, Remediation Options Report, SKM Enviros, July 2013

- b) Application for statutory consents such as Planning Permission (including EIA/AA), a Waste Licence, and CPO, as appropriate; and
- c) Remediation works at the Site as well as any associated works, in accordance with this Memorandum and relevant statutory consents.

**Funding:**

- 17. Subject to the Annual Estimates Process, the Minister will provide the necessary funding to the Council via its Vote. The Secretary General of the Department is the Accounting Officer for the Project.
- 18. The direct funding role of the Minister at the site will end when the site has been remediated and the EPA has confirmed this to the Minister.
- 19. The Council accepts responsibility for performance and associated costs of environmental monitoring and maintenance ('after-care') at the site following confirmation by the EPA that the after-care period has commenced.
- 20. The Council may engage external expertise to provide advice and prepare the necessary applications for statutory consents. The Council is fully responsible for the physical and financial appraisal, design, procurement, implementation, monitoring of the Project. The Council will appoint a Project Manager for this purpose.
- 21. All public expenditure on the Project will be subject to the provisions of the Public Spending Code.
- 22. The appropriate administration, financial management and accountability structures required under public financial procedures for the management and monitoring of public money will apply to the Project.
- 23. Payments from the Vote in the form of grants must be vouched and accounted for to the Comptroller & Auditor General. The Department's Vote, financial management and accountability rules apply to all expenditure in regard to the Project.

**Staffing:**

- 24. Within the parameters of the Employment Control Framework, the Minister has approved the recruitment by the Council of additional staff resources required to undertake this Project.



**Indemnities:**

25. The Minister indemnifies the Council with respect to any unforeseen environmental or related risks that arise in the period from the transfer date to certification by the EPA that the after-care period has commenced.

**Groups to be established:**

26. The Council and the Department of the Environment, Community and Local Government ('the Department') will establish a Steering Group Working Group to advise and assist in relation to the Project.
27. The Council will establish a Consultation Group as a consultative forum for interested parties, to reflect the concerns of the community and to represent the local public interest. The Group will be chaired by the Council with membership from local community groups, residents' associations and local public representatives. Meetings of the Consultation Group will be held at intervals as decided by the Council.

**Annual Reporting:**

28. The Council will submit an Annual Progress Report in respect of each calendar year to the Minister on the Project. It will set out progress on the physical development of the Project and financial expenditure undertaken with forward Projections for completion of the works. The Report is to be submitted by 31 March in each year.

**Financial Planning:**

29. The Project will be undertaken within the budget determined by the Minister.
30. The Council will prepare a multiannual financial plan and programme of works for the Project and submit to the Minister for approval within 12 months of the transfer

date. This plan must be reviewed and finalised when the conditions attaching to the necessary statutory consents are known.

31. In the event of significant unforeseen operational matters arising, the Council may take the actions necessary to protect the environment, subject to compliance with the overall agreed budget and the relevant statutory consents. The Council must notify the Department of any such matters without delay, but no later than 7 working days of the matter arising.

**Best Practice Compliance on Project Implementation:**

32. Implementation of the Project by the Department and the Council is to be carried out in accordance with the provisions of the Cabinet Procedure Instructions, The Public Financial Procedures, the Public Spending Code and the Public Procurement guidelines and Capital Works Management Framework. The provisions of Circular No. 13/2014 in relation to the Management of and Accountability for Grants from Exchequer funds circulated to Accounting Officers apply.

**Reimbursement of Expenditure:**

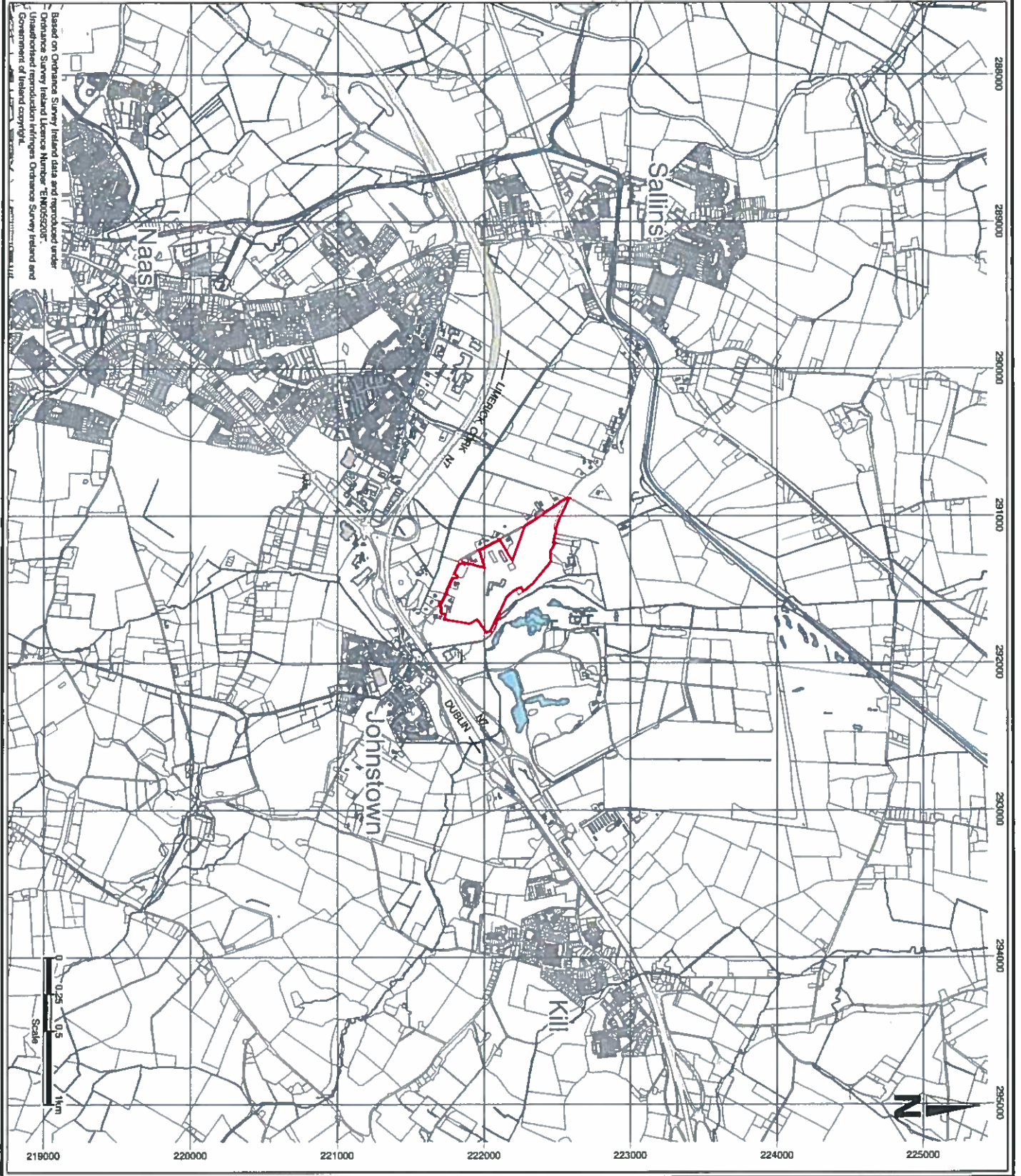
33. The Council will provide all claims for reimbursement in a prompt and timely manner. A claim must be accompanied by all relevant support documentation.
34. The Department has responsibility for the validation of payments in respect of the Project.
35. The Department will manage the processing of claims from the Council together with associated checks and verifications and will ensure prompt payment of all valid claims.

**Duration and Review:**

36. This Memorandum of Understanding will remain in force from the date of signature until certification by the EPA that the after-care period has commenced.
37. The Memorandum of Understanding may be subject to review, modification or amendment at any time by either party, and may be extended by mutual agreement

of the parties in the form of an Update. The Update will become effective upon signature.

**Annex 1: Map of the Site**



Based on Ordnance Survey Ireland data and reproduced under Ordnance Survey Ireland Licence Number "E100525205". Unauthorised reproduction infringes Ordnance Survey Ireland and Government of Ireland copyright.

KEY:  
 Former W0047-02 Waste Licence Boundary

REV DESCRIPTION	DATE



**KERDIFFSTOWN LANDFILL  
 SITE REMEDIATION PROJECT**

**DRAWING 1**

**SITE LOCATION**

SCALE	1:25,000 @ A3	PROJECT No.	JL30689
CONTENT	UD	DRAWN	HLD
CHECKED	DRAFT	DATE	23/05/2013



## **Annex 2: List of Contracts Transferred to Kildare County Council**

- 1. "Framework Agreement with Single Operator for the provision Security Services at the Kerdiffstown site" (6 years from 4/10/2012)**
  - i. Contract 1: 4/10/12
  - ii. Contract 2: 27/5/2014
  
- 2. "Single Operator Framework of Six Years' duration environmental consultancy services in relation to the Kerdiffstown Landfill." (6 years' duration from 27/2/13)**
  - i. Initial "15 Tasks" Stage Services (27/2/13)
  - ii. Engineering Needs Assessment 1 (4/8/2013)
  - iii. 2013 Groundwater & Surface water Monitoring Contract (5/9/2013)
  - iv. 2014/2015 Environmental Monitoring Contract (24/7/14)
  - v. Contingency Measure and Engineering Risk Register (13/3/14)
  
- 3. "Framework agreement with single operator for environmental site manager in relation to the Kerdiffstown landfill site located on Co. Kildare." (6 years' duration from 27/2/13)**
  - i. Contract 1: 27/2/13
  - ii. Contract 2: 7/5/14
  
- 4. "Framework Agreement with Multiple Operators for Leachate Haulage Services." (4 years' duration from 24/4/13)**
  - i. 24/4/13
  - ii. 31/7/13
  - iii. 1/12/13
  - iv. 1/12/14
  - v. 2/3/15
  
- 5. "Single-Party framework agreement for weed clearance and associated services at Kerdiffstown Landfill" (4 years' duration from 26/10/2012)**
  - i. 26/10/2012
  - ii. 16/10/13





## **APPENDIX 2      DRAWING SCHEDULE**



<b>Title</b>	<b>Drawing number</b>
Drawing 1 Site Development Boundary and Site Notice Location	32EW5604-00-061
Drawing 2 Existing site condition - Walls Proposed for Demolition	32EW5604-00-062
Drawing 3 Existing Plan and Layout for REC011 House Proposed for Demolition	32EW5604-00-063
Drawing 4 Existing Plan and Layout for REC010 House Proposed for Demolition	32EW5604-00-064
Drawing 5 Existing Plan and layout for REC016 House Proposed for Demolition	32EW5604-00-065
Figure 3.1 Site Location	32EW5604-801 P0
Figure 4.1 Existing Site Condition	32EW5604-00-001
Figure 4.2 Re-Profiled Site Contours for the Proposed Project	32EW5604-00-020
Figure 4.4 Remediation Contours for the Proposed Project	32EW5604-00-022
Figure 4.6 Cross Sections for the Proposed Project (Sheet 1 of 2)	32EW5604-00-024
Figure 4.7 Cross Sections for the Proposed Project (Sheet 2 of 2)	32EW5604-00-025
Figure 4.8 Outline Remediation Phasing (Sheet 1 of 2)	32EW5604-00-027
Figure 4.9 Outline Remediation Phasing (Sheet 2 of 2)	32EW5604-00-028
Figure 4.10 New Site Access Proposed Road Layout	32EW5604-00-029
Figure 4.11 New Site Access Proposed Pedestrian Access and Cycleway for the Proposed Project	32EW5604-00-030
Figure 4.12 Site Access for the Proposed Project	32EW5604-00-031
Figure 4.13 Landfill Infrastructure Compound Layout for the Proposed Project Layout and Elevation	32EW5604-00-032
Figure 4.14 Leachate Management Building Layout and Elevations	32EW5604-00-033
Figure 4.15 Site Office Building Layout and Elevation	32EW5604-00-034
Figure 4.16 Outline Leachate Management Plan for the Proposed Project	32EW5604-00-035
Figure 4.17 Leachate Management for the Proposed Project- Pipeline Route and Long Section	32EW5604-00-036
Figure 4.18 Outline Landfill Gas Management Plan for the Proposed Project	32EW5604-00-043
Figure 4.19 Surface Water Management for the Proposed Project Outline Drainage Layout	32EW5604-00-044
Figure 4.20 Landscape Masterplan for the Proposed Project	32EW5604-00-047
Figure 4.21 Changing Rooms Building Layout for the Proposed Project	32EW5604-00-048
Figure 4.22 Sewage Drainage Plan for the Proposed Project Plan and Typical Details	32EW5604-00-049



## **APPENDIX 3      SITE NOTICE**



# Site Notice

## KILDARE COUNTY COUNCIL ENVIRONMENTAL IMPACT ASSESSMENT REPORT KERDIFFSTOWN LANDFILL REMEDIATION PROJECT



KILDARE COUNTY COUNCIL  
Comhairle Contae Chill Dara  
www.kildare.ie

### KILDARE COUNTY COUNCIL PLANNING AND DEVELOPMENT ACT 2000 as amended PLANNING AND DEVELOPMENT REGULATIONS 2001 as amended NOTICE PURSUANT TO:

Section 175(3) of the Planning and Development Act 2000, as amended and the Planning and Development Regulations 2001, as amended

Kildare County Council proposes to seek approval from An Bord Pleanála for the following proposed development:

#### KERDIFFSTOWN LANDFILL REMEDIATION PROJECT

The application relates to a proposal comprising the 'Kerdiffstown Landfill Remediation Project' which seeks to remediate the site and provide a multi-use public park end use. The proposed development will consist of:

(a) Phased remediation works proposed to take approximately five to seven years with approximately four years of intensive construction works to remediate the site.

The Remediation Phase will include:

- Construction of a new site access;
- Realignment of the L2005 Kerdiffstown Road to facilitate continued safe usage during the Remediation Phase (& Aftercare Phase). Improvement works to include provision of a new footpath and cycleway adjacent to the realigned road extents;
- Demolition and removal of on-site structures;
- Installation of new foul and leachate pipeline connections to Johnstown Pumping Station;
- Provision of improved leachate management system to remove and transfer leachate to a wastewater treatment plant via the public sewer network;
- Construction of a new Landfill Infrastructure Compound to contain landfill management plant and equipment in a single, secure location, as well as a site office and storage area for the management and maintenance requirements of the site;
- Re-profiling the site to address current over-steep slopes to permit installation of an engineered capping and/or soil cover system, to allow for surface water drainage, and provide mitigation of long-term settlement of the waste mass;
- Provision of engineered capping of predominant areas of waste to prevent infiltration of rainwater, reducing leachate production, and to enable management of landfill gas and odour;
- Provision of soil cover systems to provide suitable growing media for the landscaping of the site, providing stability to slopes and an opportunity for future enhancement in end-use proposals;
- Installation of new or supplementary gas wells and gas venting measures;
- Installation of a new landfill gas flare stack and back-up flare within the Landfill Infrastructure Compound; and
- Provision of surface water management infrastructure to manage run off post capping completion, to control discharges from the site.

(b) Provision of a public amenity park and multi-use sports facility end use comprising:

- Vehicular and pedestrian/cycle main entrance and access roads within the park;
- North-west pedestrian entrance, with security gate;
- Public walkways and informal tracks within the site;
- Main car park for approximately 100 spaces, with opportunity for additional mobility impaired and coach/mini-bus parking;
- Overspill car park for approximately 100 spaces, with close access to informal footpaths/cycle paths;
- Changing rooms (4 No.) and public toilet facilities;
- Store room for materials required in use of sports pitches;
- Playground area adjacent to the main changing room building;
- Bicycle parking provision;
- Three synthetic (or similar approved surface) pitches, (two sized 90m by 145m suitable for multiple codes including GAA, rugby and soccer, which can be sub-divided, each lit by 6 No. x 18m high, hinged masts; the third pitch offering flexibility as a training pitch or as 3 No. five-a-side pitches, lit by 6 No. x 8m high, hinged masts);
- Ball-retention fencing (12m high x 30m wide) at Kerdiffstown Road end of each pitch;
- Implementation of surface water management measures and landscaping works; and
- All ancillary site works.

Planning Approval for a period of 10 years is being sought for the proposed development.

This application is accompanied by an Environmental Impact Assessment Report. This application relates to a project for which an Industrial Emissions Activities Licence (IEAL) is required and full details of the proposed project and its anticipated environmental impacts will be notified to the Environmental Protection Agency.

Submissions / observations in relation to the proposed development may be made to An Bord Pleanála, relating to:

- (i) The implications of the proposed development for proper planning and sustainable development, and
- (ii) The likely effects on the environment of the proposed development, if carried out.

The Board shall have regard to any submissions / observations made on foot of this invitation.

The planning application and accompanying Environmental Impact Assessment Report may be inspected free of charge or purchased on payment of the below specified fees at the offices of Kildare County Council, Áras Chill Dara, Devoy Park, Naas, Co Kildare and Kildare County Council, Kerdiffstown Landfill Remediation Project Office, Kerdiffstown, Naas, Co Kildare, between the hours of 9.30am to 12.30pm and 2.30pm to 4.30pm on working days and the offices of An Bord Pleanála, 64 Marlborough Street, Dublin 1, D01 V902, during public opening hours for a period of 7 weeks commencing on date 31<sup>st</sup> August 2017.

EIAR Volume 1 of 4 Non-Technical Summary	€ 5
EIAR Volume 2 of 4 Main Report	€25
EIAR Volume 3 and 3A Figures and Photomontages	€50
EIAR Volume 4 of 4 Appendices	€25
Digital copy of Full EIAR on CD	€10

The application may also be viewed/ downloaded from The Kildare County Council website:

<http://kildare.ie/CountyCouncil/kerdiffstownlandfillremediationproject/KLRPEEnvironmentalImpactAssessmentReport/>

Any submissions / observations in relation to the proposed development may be made to An Bord Pleanála, 64 Marlborough Street, Dublin, D01 V902. Any submission must be accompanied by a fee of €50, except for certain prescribed bodies. Submissions / observations must be received by the Board not later than 5.30pm on 19<sup>th</sup> October 2017.

A person may question the validity of any such decision by the Board by way of an application for judicial review, under Order 84 of the Rules of the Superior Courts (S.I. No. 15 of 1986, as amended), in accordance with section 50 of the Planning and Development Act, 2000, as amended.

Practical information on the review mechanism can be accessed under the heading Publications - Judicial Review Notice on the Board's website [www.pleanala.ie](http://www.pleanala.ie) or on the Citizens Information Service website [www.citizensinformation.ie](http://www.citizensinformation.ie)

Any enquiries relating to the application process should be directed to the Strategic Infrastructure Section of An Bord Pleanála (Tel. 01-8588100)

Maura McIvor  
County Secretary

Date: 25th August 2017





## **APPENDIX 4      NEWSPAPER NOTICE**



## KILDARE COUNTY COUNCIL COMPULSORY PURCHASE KERDIFFSTOWN LANDFILL REMEDIATION PROJECT ORDER 2017



**KILDARE COUNTY COUNCIL**  
Comhairle Contae Chill Dara  
www.kildare.ie

**KILDARE COUNTY COUNCIL**  
**PLANNING AND DEVELOPMENT ACT 2000 as amended**  
**PLANNING AND DEVELOPMENT REGULATIONS 2001 as amended**

**NOTICE PURSUANT TO:**  
**Section 175(3) of the Planning and Development Act 2000, as amended and the Planning and Development Regulations 2001, as amended**  
**Kildare County Council proposes to seek approval from An Bord Pleanála for the following proposed development:**

### KERDIFFSTOWN LANDFILL REMEDIATION PROJECT

The application relates to a proposal comprising the 'Kerdiffstown Landfill Remediation Project' which seeks to remediate the site and provide a multi-use public park end use. The proposed development will consist of:

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- Construction of a new site access;
  - Realignment of the L2005 Kerdiffstown Road to facilitate continued safe usage during the Remediation Phase (& Aftercare Phase). Improvement works to include provision of a new footpath and cycleway adjacent to the realigned road extents;
  - Demolition and removal of on-site structures;
  - Installation of new foul and leachate pipeline connections to Johnstown Pumping Station;
  - Provision of improved leachate management system to remove and transfer leachate to a wastewater treatment plant via the public sewer network;
  - Construction of a new Landfill Infrastructure Compound to contain landfill management plant and equipment in a single, secure location, as well as a site office and storage area for the management and maintenance requirements of the site;
  - Re-profiling the site to address current over-steep slopes to permit installation of an engineered capping and/or soil cover system, to allow for surface water drainage, and provide mitigation of long-term settlement of the waste mass;
  - Provision of engineered capping of predominant areas of waste to prevent infiltration of rainwater, reducing leachate production, and to enable management of landfill gas and odour;
  - Provision of soil cover systems to provide suitable growing media for the landscaping of the site, providing stability to slopes and an opportunity for future enhancement in end-use proposals;
  - Installation of new or supplementary gas wells and gas venting measures;
  - Installation of a new landfill gas flare stack and back-up flare within the Landfill Infrastructure Compound; and
  - Provision of surface water management infrastructure to manage run off post capping completion, to control discharges from the site.
- (b) Provision of a public amenity park and multi-use sports facility end use comprising:
- Vehicular and pedestrian/cycle main entrance and access roads within the park;
  - North-west pedestrian entrance, with security gate;
  - Public walkways and informal tracks within the site;
  - Main car park for approximately 100 spaces, with opportunity for additional mobility impaired and coach/mini-bus parking;
  - Overspill car park for approximately 100 spaces, with close access to informal footpaths/cycle paths;
  - Changing rooms (4 No.) and public toilet facilities;
  - Store room for materials required in use of sports pitches;
  - Playground area adjacent to the main changing room building;
  - Bicycle parking provision;
  - Three synthetic (or similar approved surface) pitches, (two sized 90m by 145m suitable for multiple codes including GAA, rugby and soccer, which can be sub-divided, each lit by 6 No. x 18m high, hinged masts; the third pitch offering flexibility as a training pitch or as 3 No. five-a-side pitches, lit by 6 No. x 8m high, hinged masts);
  - Ball-retention fencing (12m high x 30m wide) at Kerdiffstown Road end of each pitch;
  - Implementation of surface water management measures and landscaping works; and
  - All ancillary site works.

Planning Approval for a period of 10 years is being sought for the proposed development.

This application is accompanied by an Environmental Impact Assessment Report. This application relates to a project for which an Industrial Emissions Activities Licence (IEAL) is required and full details of the proposed project and its anticipated environmental impacts will be notified to the Environmental Protection Agency.

Submissions / observations in relation to the proposed development may be made to An Bord Pleanála, relating to:

- (i) The implications of the proposed development for proper planning and sustainable development, and
- (ii) The likely effects on the environment of the proposed development, if carried out.

The Board shall have regard to any submissions / observations made on foot of this invitation.

The planning application and accompanying Environmental Impact Assessment Report may be inspected free of charge or purchased on payment of the below specified fees at the offices of Kildare County Council, Áras Chill Dara, Devoy Park, Naas, Co Kildare and Kildare County Council, Kerdiffstown Landfill Remediation Project Office, Kerdiffstown, Naas, Co Kildare, between the hours of 9.30am to 12.30pm and 2.30pm to 4.30pm on working days and the offices of An Bord Pleanála, 64 Marlborough Street, Dublin 1, D01 V902, during public opening hours for a period of 7 weeks commencing on date 31<sup>st</sup> August 2017.

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The application may also be viewed/ downloaded from The Kildare County Council website:  
<http://kildare.ie/CountyCouncil/kerdiffstownlandfillremediationproject/KLRPEntireEnvironmentalImpactAssessmentReport/>

Any submissions / observations in relation to the proposed development may be made to An Bord Pleanála, 64 Marlborough Street, Dublin, D01 V902. Any submission must be accompanied by a fee of €50, except for certain prescribed bodies. Submissions / observations must be received by the Board not later than 5.30pm on 19<sup>th</sup> October 2017.

A person may question the validity of any such decision by the Board by way of an application for judicial review, under Order 84 of the Rules of the Superior Courts (S.I. No. 15 of 1986, as amended), in accordance with section 50 of the Planning and Development Act, 2000, as amended.

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Any enquiries relating to the application process should be directed to the Strategic Infrastructure Section of An Bord Pleanála (Tel. 01-8588100)

Maura McIvor  
County Secretary

Date: 25th August 2017



**APPENDIX 5 KILDARE COUNTY COUNCIL  
CHIEF EXECUTIVE'S ORDER – SECTION 56 OF  
THE WASTE MANAGEMENT ACT 1996 (AS  
AMENDED)**



# COMHAIRLE CONTAE CHILL DARA

## KILDARE COUNTY COUNCIL Chief Executive's Order



**ORDER NO:** CE10770      **Section:** Environment

**SUBJECT:** Kerdiffstown Landfill Remediation Project

Setting of baseline topographic level for the Kerdiffstown Project.

To take measures under Section 56 of the Waste Management Act 1996 (as amended) to prevent or limit environmental pollution emanating from the Kerdiffstown Landfill, arising from the works that would be required to comply with planning conditions attached to the site.

**SUBMITTED:** The following documentation

- "Review of Proposed Adjustment of Existing Waste Profile in Zone 1", Jacobs Engineering 22/6/16
- "Planning Assessment & Identified Recommendations For Planning Consents", Jacobs Engineering/AOS 27/6/16
- Legal Opinion issued to AOS by Rory Mulcahy SC, 14/6/16
- Drawing No. 32EW5604-02-018 Current Topographic Levels at Kerdiffstown Site as at 15/2/2016
- Memorandum of Understanding dated 2/6/2015
- Report from Kevin Motherway, Senior Executive Scientist - endorsed by Michael Holligan, Senior Engineer
- Report from Liam Dunne, Senior Executive Officer - endorsed by Joe Boland, Director of Services

Attached reports and opinions from Jacobs/AOS Planning which outline the planning context and highlight the significant environmental impact that would occur if steps to minimise movement / relocation of waste are not taken during the remediation project. The proposed remediation solution for the site (Option B as per 2013 Remedial Options Report), is designed to minimise environmental impact by minimising

movement / relocation of waste and requires that the elevation of the site be maintained and/or modified, but not reduced.

The attached report and opinions from Jacobs/AOS contain a recommendation to take measures to adopt the current elevation of waste at the site (113.5 mOD Malin) as the baseline for the project, rather than seeking to reduce the current height of the waste to the level (110.7 mOD Malin) set out as a requirement in planning permission attached to the site (Ref KCC: 03/2355; ABP: PL.09.206726). To comply with this planning permission would involve the movement of 18,790 m<sup>3</sup> of highly odorous material that would cause significant environmental impact (both in terms of odour and Greenhouse Gas emissions) as well as potential breaches of future licences conditions precluding such odour incidents.

It is noted that the Memorandum of Understanding titled "Remediation of Kerdiffstown Landfill, Co. Kildare" and dated 2/6/15, between Kildare County Council and the Dept. of Communications Climate Action and Environment requires Kildare County Council to implement remediation Option B and to apply for consents to both An Bord Pleanála and the EPA on this basis.

Given the requirements of the Memorandum of Understanding to remediate the site in accordance with remedial Option B and environmental imperative placed on Kildare County Council to minimise emissions from the site, it is recommended that Kildare Co. Co. exercise its powers under Section 56 of the Waste Management Act 1996 (as amended) to take measures to control odours and to adopt the current elevation at the site as the project baseline for the purposes of the remediation project.

**ORDER:**

**I hereby order the following** 2016 that Kildare County Council invoke Section 56 of the Waste Management Act 1996 (as amended) to take the following measures to prevent or limit environmental pollution arising from excavation of odorous material in order to comply with current planning permission (Ref KCC: 03/2355; ABP: PL.09.206726).

- All practicable measures are to be taken in the design and implementation of the Kerdiffstown Landfill Remediation Project to minimise the movement / relocation of odorous materials to prevent and limit environmental pollution in accordance with the aims of remedial Option B for the site.
- Make arrangements to record my decision that the topographic baseline for the purposes of the Kerdiffstown Landfill Remediation Project and all applications for planning and EPA licensing are to be considered as per the attached

Drawing No: 32EW5604-02-018 (with the exception of any minor accommodation works or filing of the lined non-hazardous waste cell); and that the maximum elevation at the Kerdiffstown Landfill of 113.5 mOD Malin shown on Drawing No. 32EW5604-02-018 is not required to be reduced as part of the remediation, given the significant environmental pollution that would result from any such action to reduce the height significantly below this level.

MADE THIS 17<sup>th</sup> DAY

SIGNED: 

OF FEBRUARY YEAR  
2017

CHIEF EXECUTIVE

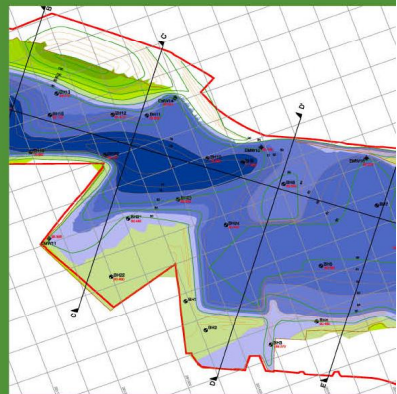






**APPENDIX 6 KERDIFFSTOWN LANDFILL  
REMEDIATION PROJECT - REMEDIAL OPTIONS  
REPORT SKM (2013) (ON BEHALF OF THE  
ENVIRONMENTAL PROTECTION AGENCY)  
[REDACTED VERSION]**





**Kerdiffstown Landfill Remediation Project  
Remedial Options Report  
July 2013**



## Note

Details of remediation costs have been blacked out for the purposes of ensuring future competitive public tendering of resources for the actual remediation works.

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## **DRAWINGS**

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**Drawing 3: Potential End Use**

## **APPENDICES**

**Appendix A Evaluation of Remedial Scenarios**

**Appendix B Cost Estimates**

## Quality Control

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## About the Authors

SKM Enviros (SKME) and its predecessors have been involved in the assessment, management and remediation of sites such as Kerdiffstown Landfill across Ireland and the UK for over 40 years with a direct heritage back to the formation of Aspinwall and Company in 1972. Management and remediation of sites such as Kerdiffstown are traditional core areas of work for SKM, with recognised experts who ensure that appropriate technical methods and approaches are adopted. With around 250 staff in Europe, The Water and Environment division of SKM has the required expertise and specific technical knowledge to deal with the most complex and challenging projects.

Key note relevant projects which SKM have been involved in include:

**Ravenscraig, Lanarkshire, Scotland.** SKME designed and supervised the c €25M remediation of a former steelworks at Ravenscraig in Scotland. SKME was contracted over an 8 year period to undertake a detailed review of all the environmental issues at the site and then prioritise those issues for investigation and then subsequent remediation of 1.4 million cubic metres of material. The site is the largest steelworks to have been investigated and remediated in the UK and the largest brownfield site within Europe at over 1000 acres.

**Killurin Landfill, Co Wexford.** SKME designed and supervised construction of a 'piggy-back' vertical extension, thought to be the first in Ireland, together with remedial slope stabilisation works for a municipal waste landfill that was nearing its design capacity and for which the county had no replacement site. The works allowed the site to operate for a further four years until the county's replacement waste management facility was built and commissioned. The intermediate lining system, capping system, slope strengthening and restoration works were all similar in nature to those that will be required at Kerdiffstown.

**Basketstown Landfill, Co Meath.** SKME re-designed the completion contours for a landfill nearing completion, securing valuable additional volume capacity within the terms of an existing planning permission and helping to save precious budget for the county. SKM also designed and supervised construction of leachate removal apparatus and other remedial environmental protection measures to mitigate the extended operations.

**Environmental Liabilities Risk Assessment (ELRA), Closure, Restoration and Aftercare Management Plans (CRAMP) and Financial Provisioning (FP) for EPA.** SKME carried out environmental compliance and financial risk assessments at a selection of licensed waste management sites to allow the Agency to scrutinise the national contingency budget for potential emergencies.

**Haulbowline, Co Cork.** SKME is adviser to Cork County Council to provide strategic advice on the reclamation of a former waste disposal site situated in Cork Harbour, which includes the development and implementation of a waste licensing, remediation and reclamation strategy.

**Foxhall Landfill, Suffolk, England.** SKME designed a 'piggy-back' vertical extension, thought to be the first in England, at a previously unlicensed waste site to separate new waste filling operations complying with the Landfill Directive from historic waste in order to minimise leachate pollution of groundwater. In addition, SKM re-designed the landform to create an efficient run-off pattern for intercepted surface water, which was managed in a series of cascading lagoons that also provided an emergency reservoir of water for fire-fighting.

**Birkshaw Burial Site, Ayrshire, Scotland.** SKME designed and supervised construction of a mass burial site for animal carcasses following a major Foot & Mouth outbreak. The nature of the waste and the short duration of filling produced an unusually high strength leachate for which SKM designed modifications to the off-site wastewater treatment works.





## 1. Introduction

The former landfill and waste processing facility at Kerdiffstown has now closed and is in the early stages of remediation. The Environmental Protection Agency (EPA) are using powers under Section 56 of the Waste Management Act 1996 (as amended) to restore the site and put in place appropriate aftercare measures to prevent and limit pollution from the waste materials which are present.

In February 2013 SKM Enviro (SKME) were appointed by the EPA as framework contractor to provide environmental consultancy support services in relation to the remediation of Kerdiffstown Landfill. Phase 1 of the contract involves the completion of a number of discrete technical tasks in order to progress towards identification of potential long term remedial options for the site.

### 1.1. Purpose of Remedial Options Report

This report presents a high level independent review of the current environmental baseline at the site through presentation of a conceptual site model identifying environmental pathways and the attendant risks the site poses in its current state based on a comprehensive review of new and existing information and data and drawing upon the findings of a series of technical tasks<sup>1</sup>. The report also identifies (at a high level) potential outline remediation and end use options for the site to deal with and mitigate identified environmental pathways and the underpinning principles of a remediation strategy to deal with identified risk. An estimate of costs for remedial works and likely timelines for delivery of a preferred remedial option are also presented.

## 2. Site Setting and Context

### 2.1. Site Location

The site is located c. 3.5km northeast of Naas and approximately 0.5km northwest of the N7 and Johnstown village as shown in the plan overleaf. To the northeast is parkland associated with Kerdiffstown House, to the north is a golf course and to the south west and south east are a mixture of land uses including residential, agriculture and worked out quarries.

The L2005 County Road from Sallins to Johnstown runs next to the western and southern site boundaries, with the nearest residential property approximately 10m from the site boundary, with the boundary being interpreted as the former redline boundary for waste licence W0047-02.

It should be noted that the redline boundary as shown on all figures in this report is the boundary of the waste facility authorised by, and as specified in, waste license number W0047-02 granted to "Neiphin Trading Limited". This redline boundary is used for illustrative purposes only in this report to show the location and approximate outline of the former waste facility and does not imply any legal ownership boundaries or any limitation on the area within which any action is being or can be taken by the EPA under Section 56 of the Waste Management Act 1996 (as amended).

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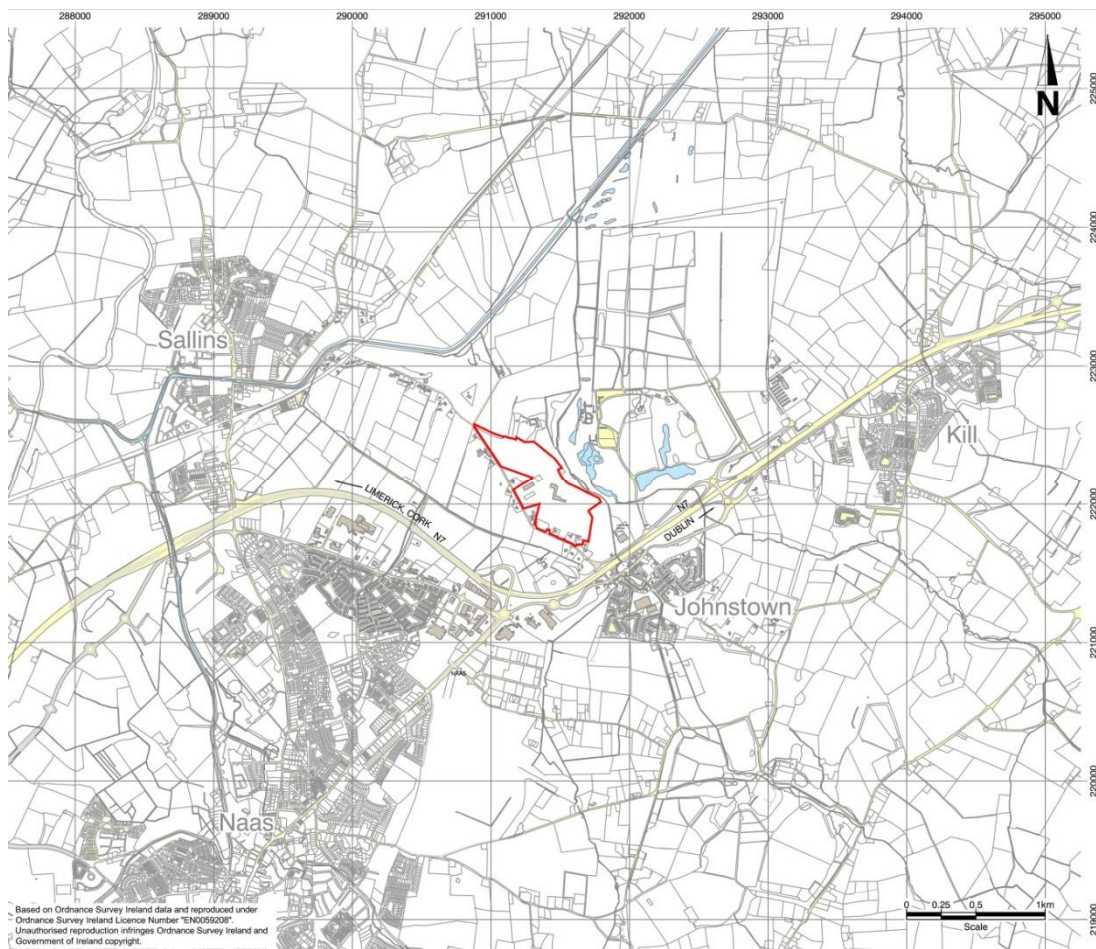
<sup>1</sup> It should be noted that a series of technical reports, which deal with management each of the key environmental issues (landfill gas, leachate, odour, surface water and groundwater) have been prepared by SKME which provide a greater level of detail on the remedial options than is presented in this summary document.

## 2.2. Site History

Kerdiffstown landfill is a former sand and gravel quarry, thought to have been excavated to above the local water table and which has been progressively backfilled with wastes by a variety of operators from the 1950s onwards.

In June 2010 Neiphin Trading, who operated the site between 1995 and 2010, vacated the site and the site was left in an unsecured condition. In January 2011 a major fire developed within the mass of the mounded waste material present in the north of the site which required the intervention of a number of regulatory agencies (including the EPA).

**Figure 1: Site Location Plan**



The site was under the control of the Kildare Fire Service until late February 2011, when it was handed over to the care of the EPA, who took emergency measures (under powers of the Waste Management Act) to contain and limit the environmental impact. Since the fire was brought under control and extinguished in 2011 the site remains under “emergency measures” and the EPA have implemented a series of follow up works to deal with the most immediate risks.

### 2.3. Current Interim Environmental Controls for Leachate and Landfill Gas

Following successful extinguishing of the fire within the wastes at the site in 2011 a number of interim “emergency measures” have been implemented by the EPA in order to deal with the key environmental liability issues arising from leachate and landfill gas production. These are summarised as follows:

- Control of landfill gas through the use of gas well fields and gas flares. Currently only one flare is required (known as the 250 flare), and operates 24 hours a day seven days a week, fed from two independent gas fields situated within the lined cell in the south of the site and north-western zone of the landfill.
- This system also serves to deal with odours generated from the landfill as gas and odour generation is to a large degree interlinked. Wastes in the north-western zone are not capped, and thus gas (and odours) will also freely vent to atmosphere.
- Wastes deposited in the lined cell during the operation of the site as a landfill (and a portion of waste deposited during post-fire clean-up operations) have been completely covered using a temporary cap system to limit the venting of landfill gases and odours.
- Provision of leachate collection facilities from the lined cell, currently involving tankering and off-site disposal of leachate which collects in a controlled area within the lined cell in the southern area of the site to a licenced facility on a daily basis.
- Deployment of a full time site manager who is involved in daily management of the gas and leachate collection systems and who oversees a number of other key daily environmental monitoring and surveillance activities at the site, (e.g. monitoring of surface water conditions, gas levels in monitoring wells etc.), development of interim site management procedures (and continued refinement of such), supervision of contractors, continued liaison with interested third parties etc.

### 2.4. Investigations to Characterise Site Conditions

Since 2010 the EPA has commissioned a series of intrusive and non-intrusive (e.g. geophysical) investigations at the site and the surrounding area to provide detailed characterisation of the site and surrounds. The objectives of these investigations can be summarised as follows:

- To evaluate the depth and extent of waste across the site;
- To assess the characteristics of the waste in terms of composition and leachate presence;
- To identify the nature of the natural ground underlying the wastes; and,
- Evaluation of groundwater conditions beneath and surrounding the site.
- Installation of permanent monitoring boreholes for on-going sampling of landfill gas and groundwater samples.

The table overleaf provides a summary of the level of investigation commissioned by the EPA to date.

**Boreholes Installed at Site between 2010 and 2012 for Environmental Monitoring Purposes**

Dates of SI	No. of Boreholes Drilled	No. of Monitoring wells	On / off site	Borehole Nos.
May 2010	10	10	Off site	EMW01 to EMW10
June 2011	7	7	On site	EMW11 to EMW17
Phase 1 January 2012	24	4	On site	BH2, BH6, BH7, BH24
Phase 2 August & September 2013	61	21 [17 GW, 1, leachate (now dry) 2 Inclinator, 1 Gas]	On and off site	BH26, BH36B, BH39B, BH40B, BH42, BH48, EMW18 to EMW24, BHEMW27 to EMW33.

Using the data generated from the site investigation, combined with existing topographic survey data it is possible to estimate the volume and broad composition of the waste materials present at the site. The current estimate of the total volume of waste present on site is 3.1 million cubic metres, compared to initial desk based estimates in 2010 of 1.7 million cubic metres. To date no hazardous waste has been discovered on the site with most waste classified as non-hazardous.

It is also possible to sub-divide the site into a number of discrete geographical areas, or zones, each of which have their own unique characteristics. The layout of the various zones is shown on the plan below, with information on the key characteristics of the materials within the zones as summarised in the table overleaf.

**Figure 2: Zones Plan**





Zone Number	Zone Key Characteristics
1	Wastes deposited in the northwest area of the site which account for approximately 65% of the entire estimated volume of waste on site. The wastes in this area are typically unprocessed, highly odorous and principally comprise non-hazardous mixed construction and demolition (C & D) wastes and household wastes. C & D wastes noted to contain varying amounts of clay, gravel, concrete, brick, wood, textile, plastic, rubber and metal. Wastes in this area of the site are uncapped and unlined and localised areas of free leachate are present within the wastes.
2	Much of this zone in the central portion of the site is covered by thick, reinforced concrete pads, which form an impermeable layer over the wastes and prevent direct rainwater ingress. Wastes noted to be unprocessed non-hazardous mixed Construction & Demolition (C & D) waste with varying amounts of clay, gravel, brick, concrete, wood, textile, paper, plastic, rubber and metal. Domestic waste also present in this area at varying depths mixed in with C & D materials. The smaller area of wastes not covered by concrete allows rainwater to infiltrate in a similar manner to Zone 1 above. Leachate production in this area is already significantly reduced by presence of the surface slabs.
3	A large part of this area is lined (the "lined cell") with processed waste materials filling 60% of the existing void space. Wastes in this area comprise processed non-hazardous C & D materials with domestic waste mixed through. C & D wastes contain varying amounts of clay, gravel, concrete, brick, wood, textile, plastic, rubber and metal. The bulk of leachate generated within the lined cell is contained within a leachate lagoon and removed for off-site treatment/disposal. There will be a long term requirement for removal and treatment of leachate from the lined cell zone as well as remedial works to ensure the integrity of the liner in the lined cell.
4	Containing large waste stockpiles, redundant infrastructure and concrete tanks/bays/walls in the lower yard area. Stockpiles comprise both processed and unprocessed non-hazardous mixed construction and demolition waste (C & D) and household waste. C & D wastes noted to contain varying amounts of clay, gravel, concrete, brick, wood, textile, plastic, rubber and metal. Leachate generation evident from the stockpiles of loose waste. The area also contains a surface water soakaway lagoon which is cut into waste deposits and into which leachate from the adjacent waste stockpiles drains. The bottom 1 to 2m of wastes are below the water table in this area. Without remediation, leachate will continue to discharge directly into groundwater in an uncontrolled manner.
5	Small volumes of non-hazardous C & D type wastes present in this area comprising varying amounts of clay, gravel, concrete, brick, wood, textile, plastic, rubber and metal. Waste materials noted to be unprocessed. This area also has a number of residential properties located on it which are within the site red line boundary.

Using the most recent (2012) site investigation data it is also possible to establish how the relative thickness of the waste materials varies across the site. Drawing 1, at the end of the report, shows the estimated thickness of waste materials together with an estimate of available future permitted waste capacity based upon earlier permissions for waste deposition. It can be seen that the greatest thickness of waste is to be found in Zone 1, where waste thicknesses slightly in excess of 40 metres are encountered in the central portion of this Zone. Waste thicknesses in the southern area of the site (e.g. Zone 4) are typically much less than this as can be seen from the drawing and are typically in the order of 5 to 25m thick.

### 3. Conceptual Site Model and Risks

In order to evaluate risks at the site a Source-Pathway-Receptor (S-P-R) based approach has been used. This is similar to many methodologies employed for the evaluation of contaminated land including the EPA Framework for Management of Contaminated Land and Groundwater at EPA Licenced Facilities (2012 draft for consultation) and the EPA Code of Practice<sup>2</sup> for the assessment of unregulated waste disposal sites.

For a risk to exist there must be a source (e.g. landfilled wastes), a receptor (or receptor groups) and an environmental pathway, through which contaminants present within the source can come into contact with an identified receptor. This is the basis for the Source-Pathway-Receptor (S-P-R) conceptual model for environmental management.

Completion of the various investigation works highlighted above and use of supporting information has allowed for development of a Conceptual Model for the site, key facets of which are described below and illustrated in the figures 3 and 4 overleaf.

#### 3.1. Contamination Source Term

In defining the potential source of pollution (commonly referred to as the source term) the key emissions (i.e. contamination sources) from the wastes present at the site are landfill gas, odours and leachate as follows.

##### 1) Landfill gas and odours

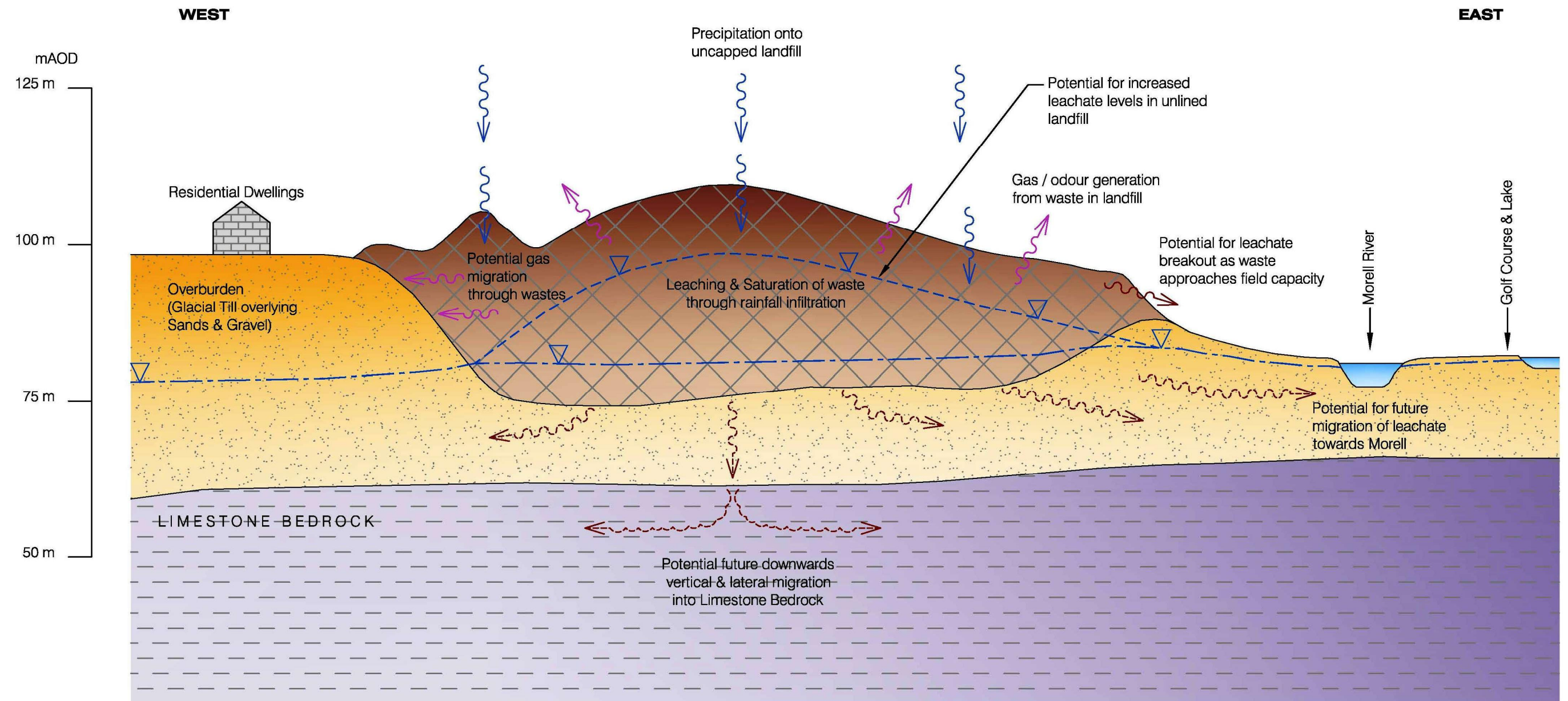
Landfill gas production is a consequence of waste degradation. Landfill gas is a mixture of methane, carbon dioxide and trace components. It is flammable and an asphyxiant and methane has an atmospheric warming potential of approximately 26 times that of carbon dioxide. Trace constituents within the gas are responsible for giving rise to landfill gas odour, some are potentially toxic and some also have significant atmospheric warming potential.

Current management controls for landfill gas (and odours) comprises two gas flares (one of which is currently operational). Currently gas is extracted at a rate of c. 150m<sup>3</sup>/hr. The overall quality of gas entering the flare has declined gradually over time with current (April 2013) levels noted at 23% methane, 23% carbon dioxide and 0.3% oxygen.

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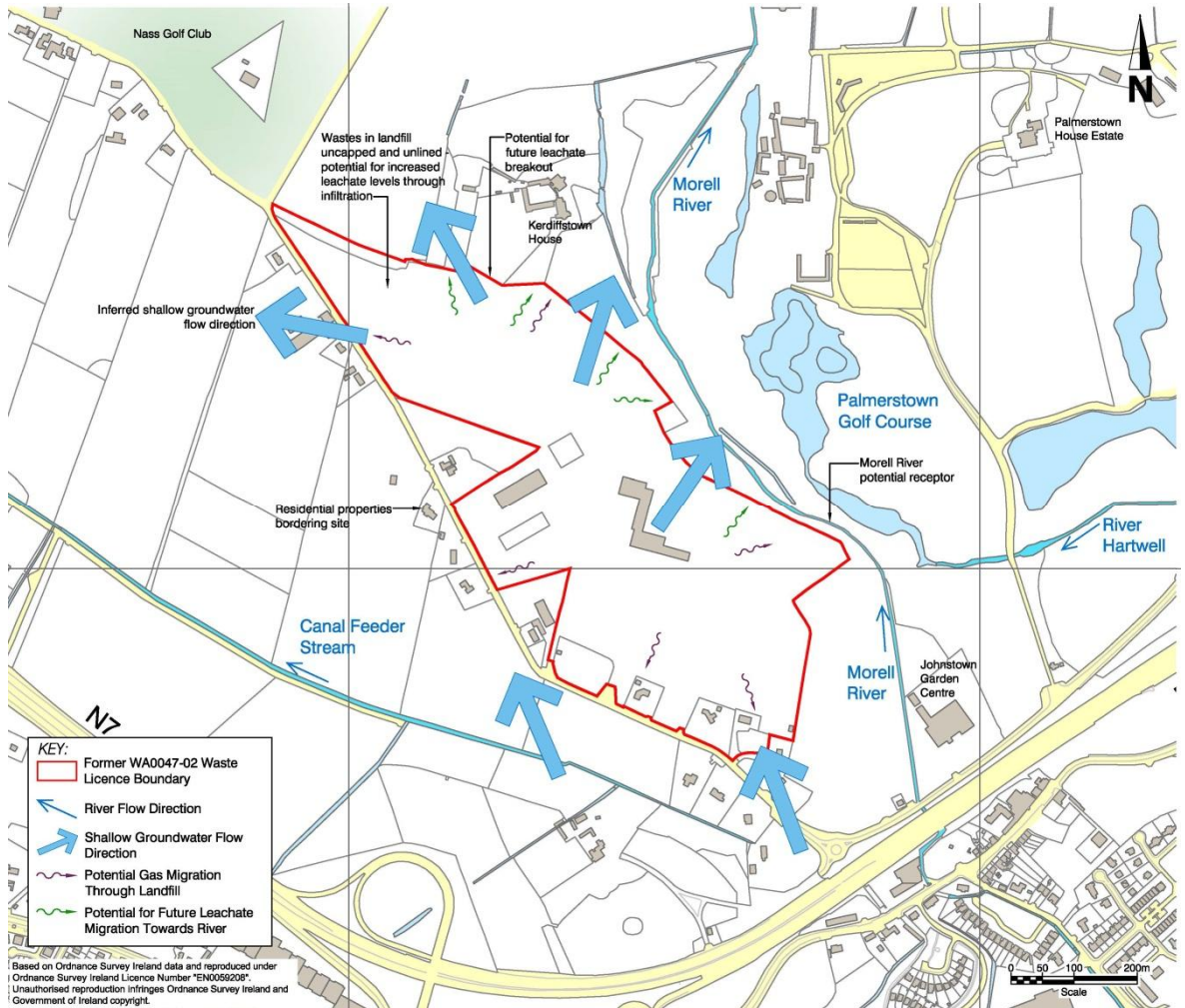
<sup>2</sup> Environmental Risk Assessment for Unregulated Waste Disposal Sites, EPA 2007.

Figure 3: Conceptual Site Model for Site in Current State





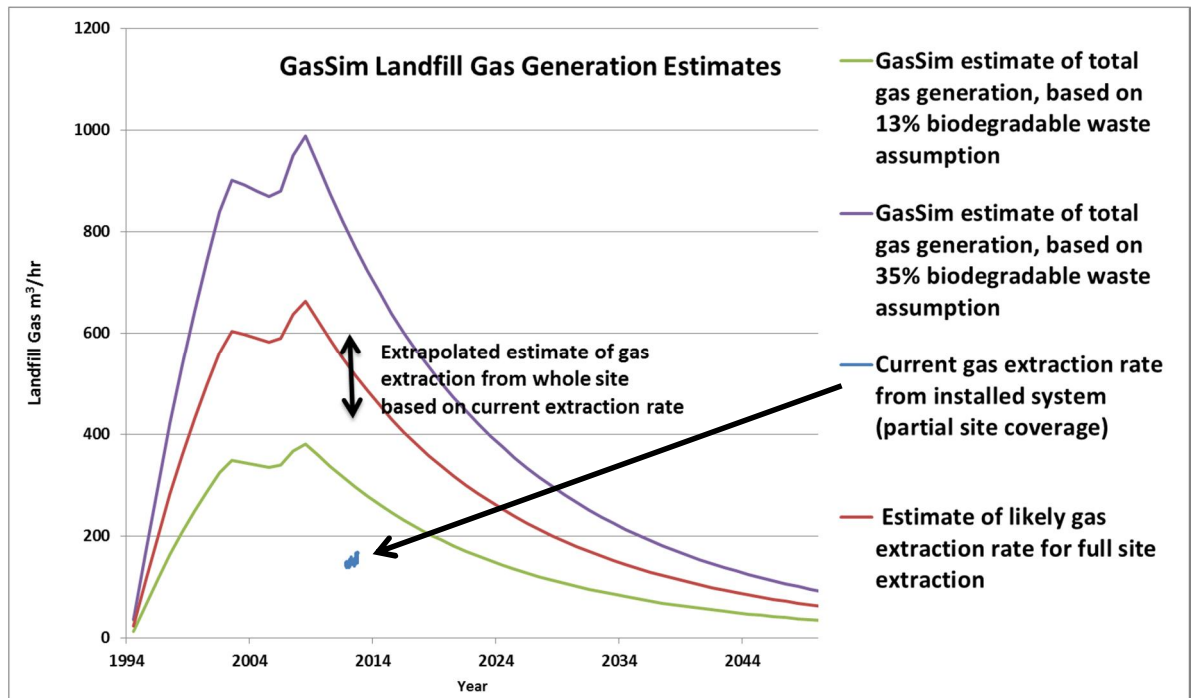
**Figure 4: Conceptual Site Model for Site in Current State (Plan View)**



Potential long term gas production at Kerdiffstown has been modelled using GasSim (an industry and regulator recognised model) and using updated information on the properties and volumes of the wastes obtained from site investigations completed in 2012. Output from the model suggests that the peak rate of gas production has passed as shown on the graph below.

Gas generation is declining, as observed in the decrease in gas yields in the existing well fields in the past 18 to 24 months. The decline in gas yields has meant that extracted gas is now pumped to only one flare, with the second flare remaining on site as a standby unit. However, future gas generation will be significant over the next 20 to 30 years and will require active management.





## 2) Leachate

Leachate is produced when rainwater contacts waste and dissolves products of waste degradation. The main components of concern with respect to water contamination are ammonia (directly toxic to fish and other aquatic life), dissolved organic material (mainly organic acids) which give rise to high demands for oxygen (chemical oxygen demand, COD, and biological oxygen demand, BOD) which can deoxygenate waters (leading to fish kills) and chloride (which increases salinity of water and changes ecological make-up). Leachate also contains other components such as dissolved metals including iron, which causes the characteristic brown colour associated with leachate seepages.

Previous investigations have identified the presence of contaminants which are characteristic of landfill leachate within boreholes advanced across the site (described in the following section).

### 3.2. Receptors and Environmental Pathways

The following key receptor groups and potential environmental pathways have been identified at the site.

#### 1) Groundwater and Surface Water Receptors

The site is underlain by relatively permeable glacial sands and gravels, which are underlain in turn by bedrock which comprises mudstone, shale and argillaceous limestone of the Ballysteen Formation. In the far northwest corner of the site is an inferred geological boundary between the Ballysteen Formation and the Waulsortian Limestone, which is described as a pale grey muddy limestone. Alluvium is also present in the vicinity of the nearby Morell River. Groundwater within both the superficial and bedrock materials can be regarded as potential receptors as future users of groundwater may seek to use this resource (while some of the golf course in the area have abstraction wells for irrigation there are no known users of drinking water wells locally).

Groundwater is present in the superficial sand and gravels at the base of the former quarry which now forms the landfill and within the underlying Ballysteen Formation. The Ballysteen Formation and the Waulsortian Limestone are both categorised by the Geological Survey of Ireland as locally important aquifers, which are bedrock aquifers which can be locally moderately productive. However, there are no known groundwater abstractions for drinking water purposes locally. The plan view conceptual site model, in Figure 4, shows the interpretation of anticipated shallow groundwater movement in the superficial materials beneath the site based on detailed piezometry and monitoring information gathered to date.

Previous and on-going investigations and monitoring undertaken on behalf of the EPA since 2011 have identified a number of potential contaminants of concern (e.g. ammoniacal nitrogen and chloride) and other physical indicators (e.g. reduced oxygen levels) within shallow groundwater beneath and adjacent to the site, particularly in the north eastern area of the site, which are generally indicative of a plume of contamination which shares many of the characteristics of landfill leachates.

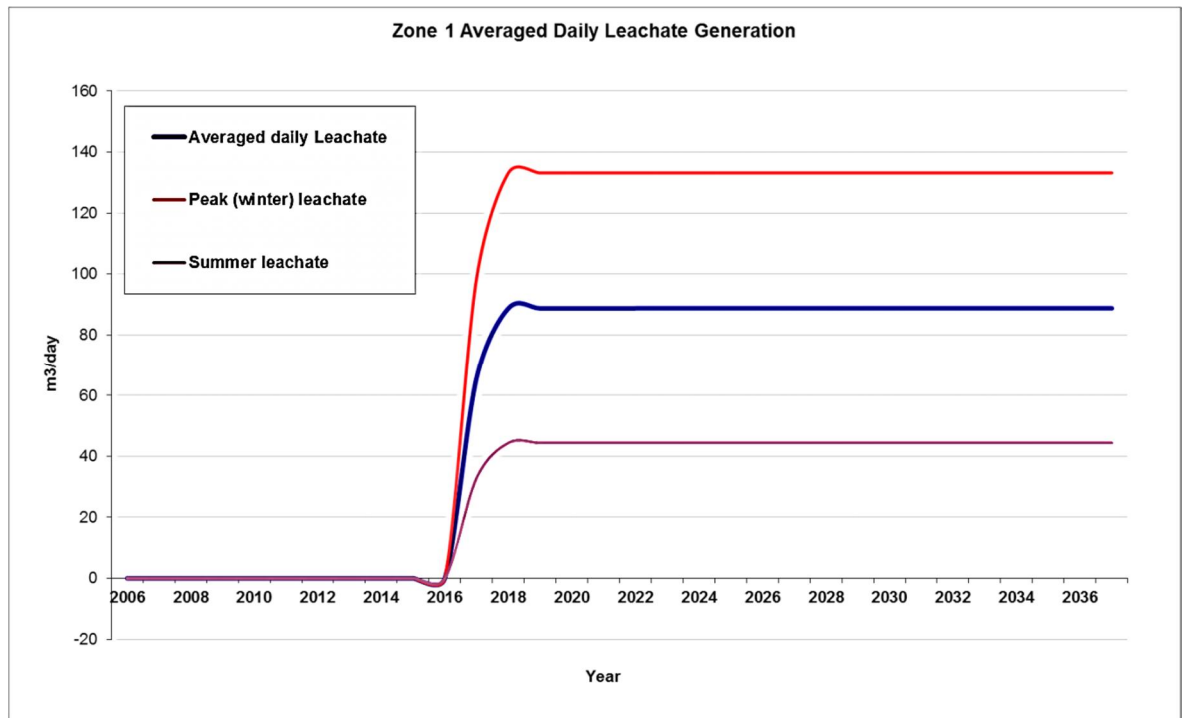
Current and long term groundwater quality is considered to be at risk from wastes currently present within the landfill because of the following factors:

- The majority of the landfill is unlined and therefore there is no engineered barrier across much of the site to prevent discharge of leachate to groundwater;
- The unsaturated zone (where it exists) between the base of the wastes and the local water table is relatively thin and there is therefore little attenuation capacity; and,
- The landfill is currently not capped, which will mean that in its current state leachate will continue to be generated, especially after the main waste mass reaches full saturation (referred to as field capacity).
- The nearest surface water course is the Morell River, which is present to the northeast of the site and which flows in a north-westerly direction, approximately 40m from the site boundary. Investigations have identified a potential groundwater flow component from the superficial deposits along the north eastern site boundary, with a potential component of flow towards the river representing an environmental pathway. Therefore, the river is considered to be at risk from leachate contamination derived from the landfill. It is likely that the level of risk will increase in the future if leachate continues to be generated from the site. The Canal Feeder which is situated to the west of the site (and flows into the Grand Canal which is currently designated as a proposed National Heritage Area (pNHA)) is also a potential receptor, though risks of contamination from the site to the Canal Feeder are likely to be significantly less than for the Morell.

There is also the possibility that leachate could break out (i.e. flow across the ground surface) when wastes in the northern area of the site become fully saturated along the steep infill embankment forming the north eastern site boundary and flow over land directly into the river.

It is difficult to conduct an accurate estimation of future leachate generation from Kerdiffstown, since many of the waste deposits have been placed, excavated, processed and the non-recyclable fraction replaced within the landfill over the past 40 plus years. There is also little information about how these historical wastes were emplaced (levels of compaction, etc.). However, current modelling of the water balance for the site predicts that the remaining absorptive capacity in Zone 1 will be largely eliminated by the end of 2016 after which time leachate could be expected to migrate from the site at a far more significant level than is shown by current monitoring.

The graph below shows the predicted generation of leachate in the coming years (under average, summer and winter infiltration scenarios) for wastes in Zone 1 in the northwest area of the site, which is currently uncapped.



The consequence of this increased leachate production would be an increased risk of impact upon underlying groundwater and surface water quality through downwards and lateral migration of leachate into the surrounding environment.

**2) Residents and occupiers of off-site properties, site workers**

While there is currently no proven gas migration at present and no reported incidents, in common with sites of a similar nature, occupants of nearby residential and other properties could potentially be at risk from landfill gas in the future due to the flammability and potential risk of explosion of methane and potential for accumulation of carbon dioxide and/or reduction in oxygen levels.



### 3) Buildings

Although there is no proven off-site migration of landfill gas there are a number of buildings and structures including enclosed spaces on site and residential dwellings close to the north western, south western and southern site boundaries which could be vulnerable to gas migrating from wastes within the landfill. The nearest off-site house is located approximately 10m from the site boundary, with another ten or so buildings and outbuildings present within 50m of the site boundary.

While there are a number of buildings currently on site it should be noted that none are occupied or used as the site is currently non-operational and these do not include significant enclosed spaces. Site offices are present on site but these comprise portakabins which are situated on a concrete slab with an intervening void space and are therefore considered not to be at risk.

Many of the buildings are in a dilapidated state and a recent structural survey has confirmed that not only should access to these building be restricted but that consideration should be given to early demolition works to reduce the risk of collapse during the remediation. It is considered that none of the buildings on the site have any residual value in the context of the potential end uses or in the implementation of the remediation and as such they are not considered further in this document.

### 4) Underground Services and Utility Workers

It should be noted that no site specific issues have been reported to date in relation to gas accumulation. However, underground services are potentially at risk from landfill gas entry and accumulation unless protective measures have been implemented to prevent gas ingress. The risks can arise due to the flammability and potential explosivity of methane in enclosed spaces. Services can also act as conduits for off-site gas migration.

The risks to utility workers from landfill gas are associated with the potential accumulation and explosion risk from methane and asphyxiation arising from the accumulation of carbon dioxide and / or reductions in oxygen in the sub-surface.

## 4. Principles of Future Remedial Strategy

### 4.1. Overarching Remediation Objectives

Based upon the existing Conceptual Site Model for the site and our current review of available information a number of key S-P-R linkages have been identified. Remediation of the landfill is therefore required to meet the following broad objectives:

- To take all necessary and reasonable measures to prevent and limit future leachate impact upon groundwater and surface water receptors and reduce/control the future production of leachate from the site;
- Reduce contaminant loads discharging to groundwater;
- Manage and control landfill gases and odours in such a way that they do not constitute a future risk to nearby properties and residents and other identified receptors. In relation to odour control this will be of particular significance during future remedial works at the site; and,
- Allied to these overarching objectives is the aim to provide a future landform and end use which fits within planning and any other relevant licensing conditions to the extent possible.

Further more detailed commentary on each of the above aspects is provided below.

#### 4.2. Requirements for Leachate Management

As highlighted previously the principal contaminants associated with leachate include ammonia (directly toxic to fish and other aquatic life), dissolved organic material (mainly organic acids) which give rise to high demands for oxygen (chemical oxygen demand, COD, and biological oxygen demand, BOD) which can deoxygenate waters (leading to fish kills) and chloride (which increases salinity of water and changes ecological make-up).

Contaminants which are likely to be derived from landfill leachate have been found in groundwater samples taken from the gravel aquifer beneath the site (including the presence of "hazardous substances"), though no evidence of impact on surface water quality within the Morell has been observed to date.

In 2012 the EPA commissioned a report to evaluate the quality of water within the Morell River<sup>3</sup> in the vicinity of the site measured in terms of the ecological status of the river. Currently, the quality of water within the Morell is assessed as being good along its length with sites achieving scores of Q4 and most achieving Q4-5 (i.e. Class A Unpolluted) with no evidence of ecological deterioration or impact from the landfill.

Given the potential impacts of the contaminants associated with leachate on water quality and ecology within the Morell, principally through potential migration through a shallow groundwater pathway leachate must be managed to prevent it entering water, or to ensure the risk of impact is at an acceptable level where complete prevention of leachate ingress into the groundwater system is not technically feasible or is disproportionately costly.

#### 4.3. Requirements for Groundwater Control

As highlighted above the concern relating to environmental damage from leachate upon groundwater beneath the site largely arises from its high organic and inorganic contaminant concentrations. The majority of the site is unlined and therefore there is a potential migration pathway into the underlying aquifer systems.

Regulation 4 of the Groundwater Regulations places a duty on public authorities to take all reasonable steps to prevent the input of hazardous substances and limit the input of non-hazardous substances to groundwater and reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order to progressively reduce pollution of groundwater. The 'prevent' objective relates to hazardous substances, whereby all necessary and reasonable measures should be taken to avoid the entry of such substances into groundwater and to avoid any significant increase in concentration in groundwater, even at a local scale. The 'limit' objective relates to non-hazardous substances, whereby all necessary measures should be taken to limit inputs into groundwater to ensure that such inputs do not cause deterioration in status of groundwater bodies, or a significant and sustained upward trends in groundwater concentrations<sup>4</sup>.

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<sup>3</sup> Water Quality Assessment of the Morell & Hartwell Rivers Adjacent to the Kerdiffstown Facility in Co. Kildare", Dec 2012 Aquens Ltd.

<sup>4</sup> EPA, December 2011. Guidance on the Authorisation of Discharges to Groundwater



The term "reasonable" means technically feasible without involving disproportionate costs. Therefore, under the Groundwater Regulations 2010, inputs can be exempted from the "prevent and limit" requirements if inputs are considered incapable, for technical reasons, of being prevented due to:

- i. measures that would increase risks to human health or to the quality of the environment as a whole, or
- ii. disproportionately costly measures to remove quantities of pollutants from or otherwise control their percolation in, contaminated ground or subsoil.

An example of where such an exemption could apply is given by the EPA in Appendix A of Ref. 4 as an old, unlined landfill where full remediation of the site may do more harm than good.

Groundwater has been monitored at the site on a regular basis to establish what contaminants are present in the groundwater and whether these are migrating to the local surface waters, including the Morell River. The monitoring has shown that whilst there is contamination in the groundwater on the site's north eastern boundary (demonstrating a clear environmental pathway), to date this has not migrated to the river and no impacts on any surface waters have been observed. However, observations on site indicate that the waste in the landfill is not fully saturated and a large proportion of the rainfall that currently enters the waste soaks into the waste rather than produces leachate.

Without any remedial intervention rainfall will continue to infiltrate the wastes.

A water balance has been undertaken for the site including Zone 1, where the majority of the wastes have been deposited in an unlined area. The water balance considers the estimated volume of wastes present, their likely remaining absorptive capacity and uses local meteorological data on likely infiltration rates to estimate when this capacity is likely to be used up.

For Zone 1, the water balance indicates an average annual infiltration to wastes of 32,400m<sup>3</sup> and shows that the remaining absorptive capacity in Zone 1 may largely be eliminated by the end of 2016 as described above. This may then lead to more extensive groundwater contamination and also surface water contamination as the head of leachate in the wastes progressively increases.

An assessment of leachate discharging to groundwater from Zone 1 would indicate that currently, leachate discharges due to rainfall infiltration will be low as the majority of rainfall infiltration will be absorbed by the waste. It is estimated that once the waste becomes saturated, without capping Zone 1, approximately 85 m<sup>3</sup>/day of leachate would discharge to the underlying groundwater from rainfall infiltration. If the site were to be capped then it is estimated that the amount of leachate discharging to ground would be in the order of 15 m<sup>3</sup>/day; almost a six fold decrease. As an example of what this means in terms of contaminant loads, if ammoniacal nitrogen is taken as a typical leachate constituent and was present in the leachate at a concentration of 400 mg/l, then by capping the site, contaminant loads would be reduced from 34 kg/day to 6 kg/day.

Therefore, it is essential to manage groundwater at all stages in development of the site (in its existing condition, throughout the period of remedial works and long term post restoration, potentially of the order of thirty years or longer). The objectives of groundwater management are to:

- Ensure the site is compliant with regulation and best practice during the remedial works and post restoration including consideration of the reasonableness of any works and ensuring that the costs incurred are proportional;

- Minimise or control leachate migration off-site through identified pathways particularly to protect the local surface waters where elevated concentrations of leachate could lead to unacceptable impacts on fauna in the local rivers; and,
- Protect any current or future users of groundwater, for example use of the water as a drinking supply.

#### 4.4. Requirement for Surface Water Control

The Morell River to the east of the site and the Canal Feeder to the west are the key surface water receptors in the vicinity of the site and a potential environmental pathway exists via migration of leachate through shallow groundwater towards the surface water courses. Chemical analysis of the river water does not show any contamination from the site at present and there is no evidence to suggest deterioration in the ecological status of the Morell in the vicinity of the site as evidenced by the study of water quality referenced above. In terms of contamination issues potentially affecting the Morell there are two key issues:

- Direct contamination from the site in its unremediated state; and,
- Management of surface water during and following future site remediation.

Currently, as rain falls on the site there is the potential that it may become contaminated due to contact with wastes at the surface which may either dissolve into the surface water runoff or the surface water runoff may carry suspended particles. These particles may be contaminated with, for example, metals or the silts themselves may cause a problem by settling out on the beds of rivers and smothering flora and fauna that grow on the river bed or block channels leading to an increased flood risk.

During the site restoration phase, the creation of additional volumes of slightly contaminated water is inevitable, especially when excavation works are in progress and more loose soils are present at the surface to be washed off in to drains. This will increase the volumes of surface water being collected and would require a substantial on-site treatment capacity to deal with water during the works. Such large volumes of slightly contaminated water will present an operational challenge to manage, to ensure environmental impacts are minimised and to prevent or reduce interference with the remediation programme.

Following site restoration, there will be a requirement for the long term management of surface water to ensure that waters being collected on areas of hardstanding and that which runs off the re-profiled landfills is controlled in such a way as to not cause contamination of local rivers and streams or present an unacceptable flooding risk.

Effective water management of surface water will produce the following benefits:

- Reduced damage to the aquatic environment – uncontrolled construction activities can severely degrade natural waterbodies and their associated flora and fauna;
- Reduced degradation of potable supplies – contamination of surface waters used as potable supplies can result in high treatment costs or, in some circumstances, preclude them from being used, temporarily or permanently; and,
- Reduced concern of local residents - changes in the aesthetic quality of a waterbody which could be brought about by discharge of contaminated water could raise concerns from local residents and recreational users.



#### 4.5. Requirements for Landfill Gas and Odour Control

Odour emissions at Kerdiffstown landfill are primarily linked with diffuse landfill gas emissions, while other potential secondary odour sources include the leachate lagoon and gas flare emissions.

While the site was operational, the odour emissions from Kerdiffstown landfill gave rise to sustained complaints from people living in and visiting the area. This culminated in serious concerns regarding odour and air pollution when the underground landfill fire ignited in January 2011.

Future landfill gas yield at the site has been estimated by means of GasSim as described previously, which has been calibrated using site specific information obtained from ground investigations and results of collecting and flaring gas from parts of the landfill for over two years. Based on the results of the modelling it is essential to manage landfill gas at all stages in development of the site (in its existing condition, throughout the period of remedial works and long term post restoration, potentially of the order of thirty years or longer).

#### 4.6. Landform Design

The landform created by future remedial works needs to be stable and safe, avoiding steep and tall slopes, eliminating drops and sudden changes in gradient. It also needs to be able to accommodate potential future settlement caused by the continuing degradation of waste beneath the surface while at all times needing to drain efficiently to minimise infiltration and avoid the potential for surface ponding, waterlogging and flooding. As far as practicable, the landform should also blend into the surrounding landscape, with an objective for achieving a natural shape in preference to any obviously constructed uniform gradients, straight edges, corners and horizontal plateaux.

#### 4.7. Sustainability Issues

In addition to the requirement to address identified environmental pathways to deal with future risks issues in relation to future emissions should also be considered in considering the development of a remedial solution for the site.

Methane present within landfill gas is a known Green House Gas (GHG) and has a Global Warming Potential (GWP) estimated to be approximately 26 times higher than carbon dioxide.

Section 4 of Annex 1 of the 1999 EU Landfill Directive outlines the gas control requirements for all classes of landfills. The specific requirements with regards to treatment and use of landfill gas are:

- Landfill gas shall be collected from all landfills receiving biodegradable waste and the landfill gas must be treated and used. If the gas collected cannot be used to produce energy, it must be flared; and,
- The collection, treatment and use of landfill gas under paragraph 4.2 shall be carried on in a manner which minimises damage to or deterioration of the environment and risk to human health.

Current arrangements for collection of methane from the site involve flaring of landfill gas and conversion to carbon dioxide across approximately one fifth of the site. Therefore, combustion or oxidation of landfill gas across the wider site area through development of a permanent solution for collection of emitted gas will significantly reduce the future GWP of the site.

## 5. Remediation Options Assessment

The starting point for identifying the remedial options to be assessed for the successful remediation of Kerdiffstown Landfill were those identified in October 2010<sup>5</sup> when the site was operated by Neiphin Trading. These options involved four scenarios:

- Minimal reconfiguration and capping;
- High quality cap across whole site, groundwater interception and treatment;
- Development of fully lined containment site for all wastes;
- Excavation and off-site disposal of all wastes.

Subsequent work has confirmed the unviability of the scenario involving complete off site removal of wastes to a suitably licensed site.

Complete removal of wastes is now considered to be an unsustainable option which is not considered further as the volume of waste now estimated to be present at the site is 3.1 million cubic metres against earlier estimates in 2010 of 1.7 million cubic metres. It is unlikely that a local facility exists which could accommodate this volume of waste excavated from Kerdiffstown, which would necessitate transport of wastes outside of the local area, and potentially to disposal sites in Northern Ireland or the UK. However, there is currently no guarantee that all wastes from the site could be accommodated.

From experience of other sites with waste deposits of a similar scale to Kerdiffstown safe removal of very large quantities of wastes off site is considered impractical without causing unacceptable impacts upon the surrounding community in terms of significant nuisance impacts arising from odours, noise and increased road traffic alone.

Taking account of all of the above factors this option is considered infeasible and is not considered further.

An additional "Do Nothing" scenario is similarly not considered further in this report on the basis that the risks associated with the various pathways highlighted in the previous chapters require mitigation.

The original work to identify options was carried out with very little reliable information on site conditions and as such the options were very much outline in status. Since 2010 there has been extensive work carried out on the site, including intrusive ground investigations and monitoring, to establish a much more robust picture of site conditions, enable the conceptual site model detailed above to be confirmed and the original options exercise to be re-run to establish whether the outline options remained valid or new options needed to be considered.

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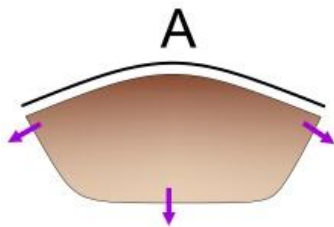
<sup>5</sup> Evaluation of Environmental Liabilities at Kerdiffstown Landfill, SKM Enviro, 20<sup>th</sup> October 2010.

There are a number of constraints posed by the site which limit the options available for remediation (the size and setting of the site, nature of the wastes). Notwithstanding this, the remediation options need to be underpinned with the robust technical supporting analysis that has been carried out since the EPA took over responsibility for the site and is included in the various technical documents identified in Section 1. Identified options also need to be reviewed in the context of their sustainability.

Current work has therefore confirmed and refined the three remaining options, although they remain broadly similar representing a practical way of capping wastes in-situ (**Scenario A**); rationalising all wastes with the minimum of excavation by creating both a lined and unlined capped landfill with provision for perimeter collection and treatment of any significant leachate migration (**Scenario B**); and, the creation of a new lined landfill in the south eastern area of the site (**Scenario C**). These scenarios as assessed in this report are summarised below and are illustrated in simple conceptual terms by the schematics, repeated later in this document as an aide memoir.

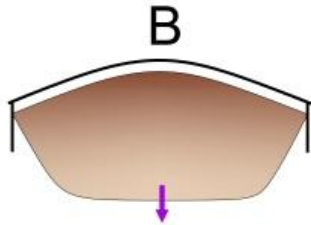
**Scenario A –**

- Majority of wastes left in-situ;
- Peripheral wastes to the north western area of Zone 1 moved within Zone 1;
- Waste from Zone 2 not covered by concrete moved to Zone 1;
- Existing liner in Zone 3 to be repaired;
- Waste from Zone 4 moved into the lined cell in Zone 3 (any excess to be moved to Zone 1);
- Reprofile the waste in Zone 1 and completion of lined cell in Zone 3 to an acceptable, safe landform;
- Install a capping layer over Zones 1 along with completion/capping of the lined cell in Zone 3;
- Installation of a gas management system in conjunction with capping;
- Acceptance of reduced leakage through the base of unlined zones (and to a lesser extent Zone 3) into the underlying groundwater system;
- Allow potential lateral leachate migration from Zones 1 and 2 (on the basis of much reduce leachate generation potential as a result of the cap);
- Collection and management of surface water run-off;
- Continue to collect and manage leachate from Zone 3.



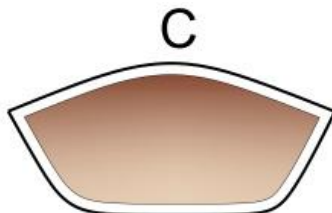
**Scenario B –**

- As with Scenario A, leave the majority of the waste in-situ with limited movement of waste in Zone 1;
- Repair and expand the lined cell in Zone 3 to allow receipt of all waste from Zone 4 along with uncovered waste from Zone 2;
- Reprofile the waste in Zone 1 and completion of lined cell in Zone 3 to an acceptable, safe landform;
- Install a capping layer over Zones 1 along with completion/capping of the lined cell in Zone 3;
- Installation of a gas management system in conjunction with capping;
- Acceptance of reduced leakage through the base of unlined zones (and to a lesser extent Zone 3) into the underlying groundwater system but in addition to Scenario A, installation of a hydraulic control/cut-off along the north eastern area of the site between the wastes and the Morell River;
- Provide for treatment of collected contaminated groundwater.
- Collection and management of surface water run-off;
- Continue to collect and manage leachate from Zone 3.

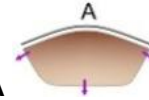


**Scenario C –**

- Completion of the existing lined cell in Zone 3;
- Construction of new lined cells to form a new lined landfill in areas currently occupied by redundant waste processing plant;
- Cells filled/completed sequentially;
- Placement of remaining wastes, including all wastes currently deposited in north western area into lined cells;
- Installation of leachate and gas collection infrastructure;
- Restoration with a low permeability capping layer and creating a safe landform after the existing wastes have been excavated.
- Collection and management of surface water run-off;
- Collect and manage of leachate from all cells

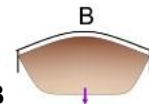


For each of the options A, B and C highlighted above in order to arrive at a preferred remedial concept an assessment of their relative merits has been undertaken and is summarised in the following three tables and included as Appendix A. Schematics showing the movement of waste material required to implement each scenario are presented on Drawing 2.



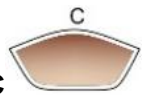
### Respective Benefits and Issues Related to Remediation Scenario A

- ✓ Relatively short construction period with limited excavation minimising potential environmental impacts during works (noise, traffic, odour etc.).
- ✓ Post remediation gas and odour control.
- ✓ Post remediation surface water control.
- ✓ Least cost option.
- ✗ On going groundwater impact post remediation (but leachate generation should be limited by capping of wastes to reduce infiltration).
- ✗ Potential off site leachate migration from Zone 1 posing risk to Morell River.
- ✗ Reliant on repairs to existing liner integrity to prevent leachate from Zone 3 with migration potential posing risk to Morell River.



### Respective Benefits and Issues Related to Remediation Scenario B

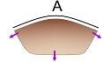
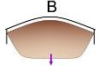
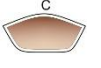
- ✓ Relatively short construction period with limited excavation minimising potential for environmental impacts (noise, traffic, odour etc.).
- ✓ Post remediation gas and odour control.
- ✓ Post remediation surface water control.
- ✓ Off site leachate migration controlled by barrier to prevent groundwater/surface water impact, mitigating risk to Morell River.
- ✗ On going groundwater impact post remediation (but leachate generation should be limited by capping of wastes to reduce infiltration).
- ✗ Reliant on repairs to existing liner to prevent leachate from Zone 3 with potential for impact on groundwater.



### Respective Benefits and Issues Related to Remediation Scenario C

- ✓ Groundwater and surface water impacts controlled by total containment solution.
- ✓ Post remediation gas and odour control.
- ✓ Post remediation surface water control.
- ✗ Extended construction period, longer duration of temporary construction related impacts.
- ✗ Extensive excavation works required increasing potential for environmental impacts (noise, traffic, odour etc.) during works.
- ✗ Temporary mitigation measures required to address construction related impacts.
- ✗ Highest cost option.

Based on the above summary and information contained within Appendix A it is possible to qualitatively consider the relative merits of each of the three scenarios in terms of order of preference against a number of key issues which are summarised in the table below.

Issue	Scenario A	Scenario B	Scenario C
			
Groundwater Protection	●	●	●
Surface Water Protection	●	●	●
Landfill Gas Control	●	●	●
Odour and Nuisance Impacts	●	●	●
Traffic & Noise & Vibration Impacts	●	●	●
Visual Impact/Intrusion During Works	●	●	●
Timescale	●	●	●
GHG emissions	●	●	●
Cost	●	●	●

● = Most preferred option    ● = Intermediate option    ● = Least preferred option

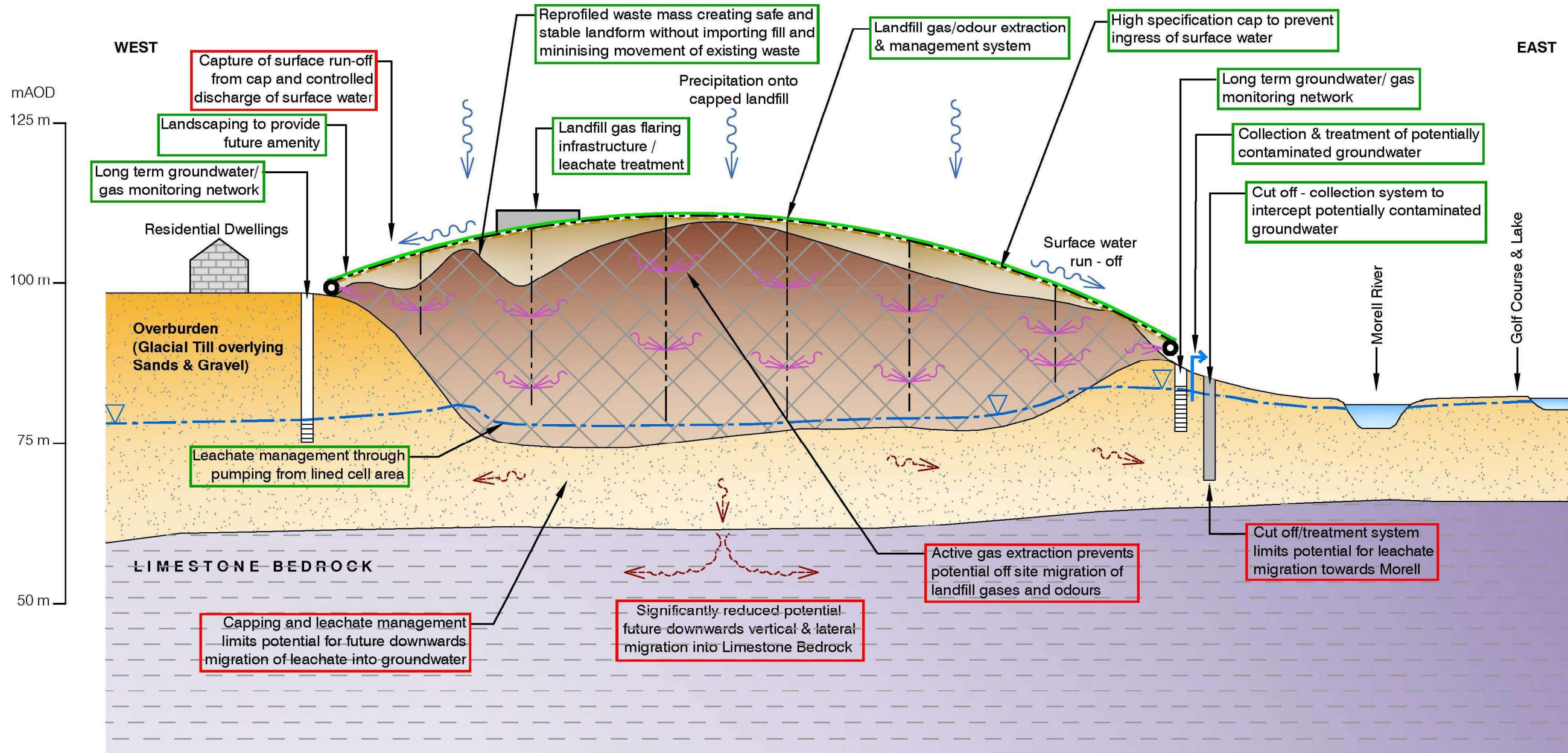
Based on our review of the respective comparisons between the three above options, **Scenario B** emerges as the preferred option for the following key reasons:

- In relation to Scenario A, post restoration Scenario B includes an allowance for treatment of groundwater beyond the timescale for remediation but expenditure would only be incurred if monitoring assessments demonstrated a clear requirement for future treatment. Furthermore, Scenario B would optimise the use of the existing lined cell in order to further reduce the volume of leachate could potentially leak from the site by relocating waste to the lined cell. Scenario B would also allow the flexibility for procurement of a total remediation solution which included the option for post remediation groundwater treatment (if required), whereas under Scenario A it may be necessary to let a separate contract for retrospective groundwater treatment, which could ultimately prove to be more expensive overall.
- In relation to a comparison against Scenario C, the timeframe for completion of remedial works would be significantly reduced, the benefits of which would include reducing potential for groundwater impact. In addition, because of a reduction in timescale for remediation the potential for impact from odours, noise, vibration, visual intrusion etc. is reduced through the remediation period. Also, this option reduces the risk of a potential environmental impact arising from transient groundwater and surface water contamination and landfill gas impact. Furthermore, it is highly probable that creation of in effect a new landfill facility through implementation of Option C would be unacceptable to the local community. We would also note that the local community are likely to object to a longer timeframe for remediation of the site, through implementation of Scenario C.

Given the above, the preferred (recommended) remedial strategy is Scenario B. Further refinements and rationalisation of the remediation scheme may be possible as design progresses. The implications on the conceptual site model post implementation of the remediation strategy set out in Scenario B is illustrated on the following figure.



Figure 5: Conceptual Site Model – Post Remediation



- KEY:
- Remediation Scheme Infrastructure/Features
  - Environmental Benefits of Remediation



## 6. Outline Remediation Strategy

The overarching remedial strategy for dealing with leachate, groundwater, surface water and landfill gas/odours is summarised in the following sections.

It should also be noted that it is important to integrate the proposed remedial measures to deal with each of the above aspects against the requirements to produce an overall landform which provides options for future site use and also balances the requirements to achieve effective remediation of the site.

In order to assess landform a three dimensional digital model of the site has been created to provide an estimate of the existing volume of waste within the facility (approximately 3.1 Million cubic metres based upon most updated estimates). Cut and fill calculations have then been made to estimate the balance of materials transfers between zones of the site to arrive at a suitable landform. This has been based on consideration of planning constraints in terms of restoration levels against available void space and waste materials requiring re-deposition. The calculations indicate that a cost-efficient and sustainable landform scheme can be designed in which:

- cutting and filling can be minimised, both reducing the amount of engineering work required and the associated environmental impacts, such as odour, dust and noise;
- there is no requirement to export any existing waste materials from the site; and,
- the only requirement for bulk imported fill is for the construction of the capping system and restoration soils, including perimeter stabilisation and protection works.

An indicative landform which takes account of the earthworks balance undertaken is presented in Drawing 3.

### 6.1. Proposed Leachate Management

The proposed remediation option is a combination of leachate containment and controlled leakage from the base of the site, since it is not feasible to construct a fully lined facility across the whole site, through a combination of breaking and management of the identified environmental pathway to underlying groundwater and surface water receptors. For each of the Zones 1 to 5 proposed measures for dealing with leachate are as shown in the following table.

Zone Number	Proposed Leachate Management Measures
1	Regrading wastes to achieve domed restoration profile and placement of high quality engineered capping over the whole area of wastes using engineered clay or a synthetic liner, or a combination. Capping <sup>6</sup> will reduce infiltration such that future leachate generation and leakage from the base of the zone is controlled.
2	Retention of the slabs and to provide engineered capping in areas where surface concrete is absent.
3	The preferred restoration design proposes that a fourth side will be constructed on the existing cell creating a larger lined volume. The existing liner provides good, but not full containment of leachate. Where feasible, obvious defects in the existing liner will be repaired by placing and welding new sections of liner. Replacement of the whole liner would require excavation, stockpiling and redeposit of wastes which are currently in the lined cell and known to be particularly odorous, which would create potential odour nuisance for periods of months. The potential incremental benefit in achieving a small overall improvement in leachate containment when the bulk of the site will not be lined and the lined cell will be subject to high quality capping to minimise future leachate production is considered to be not justified when compared with the potential odour nuisance which would be created and additional costs involved in waste excavation, re-lining and waste replacement. In addition, maintenance of low head of leachate in cell through pumping will limit potential for future impact on underlying groundwater. Wastes from the south-eastern area of the site will be excavated and used to fill the cell to create a domed structure, which will be restored with a high quality engineered cap to minimise future rainwater infiltration (similar capping specification as for Zone 1).
4	All waste deposits removed and placed within the lined cell in Zone 3. Post restoration, there will be no degradable wastes remaining in this area, so no leachate control will be required.
5	All waste deposits will be removed and placed within the lined cell in Zone 3. Post restoration, there will be no degradable wastes remaining in this area, so no leachate control will be required.

Leachate collected from the lined cell will be pumped out and subject to treatment. The following options are available for treatment of leachate:

- Pump leachate into temporary storage tanks and tanker to off-site treatment works (existing situation);
- Pump leachate directly to local sewage treatment works (Osberstown) works in Naas which will require a connection from the site into the sewer main, and installation of a methane stripping plant prior to discharge from the site. This would require the future status of the works at Osberstown to be established in terms of its capacity to receive leachate from the site. However, it is understood that the works have submitted a funding application for a grant to upgrade the plant but at the present time no such grant has been issued;
- Pump and treat on site, with pre-treated leachate transported to sewer for final treatment (either by road tanker or via a new direct link to the sewer main); or,
- Pump and treat on site, with passage through a tertiary treatment system (gravel filled reed bed) prior to discharge to surface water (Morell River).

<sup>6</sup> In relation to a capping solution for the site it is currently anticipated that this will comprise a full engineered system, the precise details of which would be determined at detailed design stage, but which in outline would comprise a regulation layer, a barrier layer (e.g. low permeability clay or geo-composite), a drainage layer and subsoil/topsoil.

It should be noted that uncertainties exist with all options highlighted above. Long term tankering of leachate off-site (for a period of the order of 30 years) requires long term acceptance of leachate at an off-site waste water treatment plant. Such long term acceptance cannot currently be guaranteed. Discharge of leachate to Osberstown sewage treatment works relies on upgrades to the works being completed (currently scheduled for completion in 2018) and long-term agreement of the treatment plant operator to accept leachate from Kerdiffstown. The timeframe for upgrade cannot be guaranteed, although a contract for long term (of the order of 30 years) acceptance of leachate from Kerdiffstown may be possible (but again cannot be guaranteed). Full treatment on site to a high quality which can be discharged to surface water (Morell River) is the only option not dependent on long term agreement of a third party to accept leachate and at this point in time (June 2013) is a guaranteed option for long term leachate treatment and disposal. However, this option would require long term management and operation of the treatment plant and agreement of the permitting/licensing authority that direct discharge of treated effluent of an agreed quality standard to surface water is acceptable in principle.

During remedial works, interim measures for leachate control will need to be maintained and additional temporary measures will be introduced as required, based on assessment of risk of remedial activities on leachate generation and potential for off-site migration (particularly through contamination of surface water run-off). Temporary control measures include provision of settlement chambers for suspended solids and silt traps to remove suspended solids, and passing clarified contaminated run-off through gravel reed beds, which will remove low concentrations of ammonia, metals and dissolved organic material rendering the treated effluent acceptable for discharge to surface water. Alternatively, contaminated surface water could be diverted into the lined cell or an alternative collection and retention area and removed (by tanker) for off-site treatment and disposal, though this option could involve significant cost. The preferred option is to implement through on site treatment and avoid the need for off-site disposal.

#### 6.1.1. Integration with Restoration

Permanent leachate management infrastructure is required to manage leachate from Zone 3 (i.e. the lined cell area). Permanent works will comprise a submersible pump, pumping chamber and leachate holding tank.

If the final destination for leachate is to sewer, a new below ground connection will be installed to link the site with the existing sewer along the Naas to Sallins Road. This will not impact the overall restoration plan for the site, other than requiring access to the line for regular maintenance.

If on site treatment is the preferred option, the treatment plant will be situated within Zone 2, close to the gas flare and for tertiary treatment (should it be necessary) a reed bed system will be incorporated into the overall landscape design, and can be situated in either Zone 2 or Zone 4. The reed bed can be managed to enhance the ecological diversity of the restored site. A gravel filled reed bed can also form part of the treatment system for contaminated surface water during the remedial works, as it can be adapted to act as the tertiary treatment facility for pre-treated leachate.

#### 6.2. Proposed Groundwater Management

Groundwater management is currently in place by way of a network of groundwater monitoring boreholes. Groundwater is currently being sampled on a quarter yearly basis with chemical analysis for a range of inorganic and organic compounds. The purposes of this monitoring are twofold; the first to provide baseline information against which any changes at the site can be assessed; and the second to provide any warnings that the situation with respect to groundwater contamination has deteriorated and there is a threat to the surface water receptors that may require immediate works.

The proposed long term management of leachate and groundwater at Kerdiffstown is to minimise the production of leachate in both Zone 1 and Zone 3. For Zone 1, the wastes have been placed directly on to the underlying natural soils and any leachate that is produced will readily enter the groundwater system. In this area, it is not possible to isolate the leachate from the groundwater so in order to minimise the amount of leachate that enters the groundwater it is proposed that a low permeability "cap" will be installed over the waste.

For Zone 1, the data indicate that a relatively small volume of waste is below the water table which will be generating leachate. Putting a cap on the landfill will not prevent leachate from being produced in this way and contaminated groundwater is likely from this source although concentrations should decrease over time as contaminants are leached from the waste.

Zone 3, this will be a contained landfill and it is proposed that this will have a low permeability cap installed as described for Zone 1. However, Zone 3 also has an engineered low permeability base such that any leachate that is produced is largely prevented from leaving the landfill. However, for this basal liner to be effective, a build-up of leachate in the landfill must be prevented as the increase in leachate level will provide pressure on the basal liner and potentially cause it to leak. Therefore, it is proposed that leachate is abstracted as described above.

The capping system will be needed in accordance with the design guidelines for a non-hazardous landfill set out in the EPA's landfill design manual. The standard solution described in the manual is:

- 1.0m of restoration soil (including a minimum 150mm of topsoil);
- 0.5m stone drainage layer with hydraulic conductivity greater than  $1 \times 10^{-4}$  m/s;
- minimum 0.6m barrier layer of low permeability soil (equal or less than  $1 \times 10^{-9}$  m/s); and
- 0.3m stone gas drainage layer with hydraulic conductivity greater than  $1 \times 10^{-4}$  m/s.

At this feasibility study stage, this standard is used to estimate the volume of construction materials required. However, alternative capping system designs are allowable provided that equivalent protection is afforded. For this project, the site profile considerations and volume estimates indicate that the designer will have all options open.

Bulk imported construction materials will be required for the capping systems. All materials on site should be considered for re-use in the design and utilised wherever possible, with an appropriate balance being struck between the cost and sustainability benefits of material reuse versus the environmental impact of material processing. The materials available on site that are currently known to be suitable for construction are limited to:

- a small stockpile of clay near to the site entrance; and
- concrete that can be re-used as aggregate following the dismantling of redundant structures and crushing of concrete panels.

The clay might be suitable for use in the barrier layer subject to testing but would be suitable for subsoil. The recycled concrete aggregate might be suitable for use in gas blankets or surface water drainage layers. Some subsoil might be recoverable by sorting and segregation from embankments to be re-profiled along the north-eastern perimeter. However, these are all relatively small volumes and will only displace a very small proportion of the total materials requirement. The suitability of other materials will be assessed as the detailed remedial works design progresses and the material needs are more closely defined.



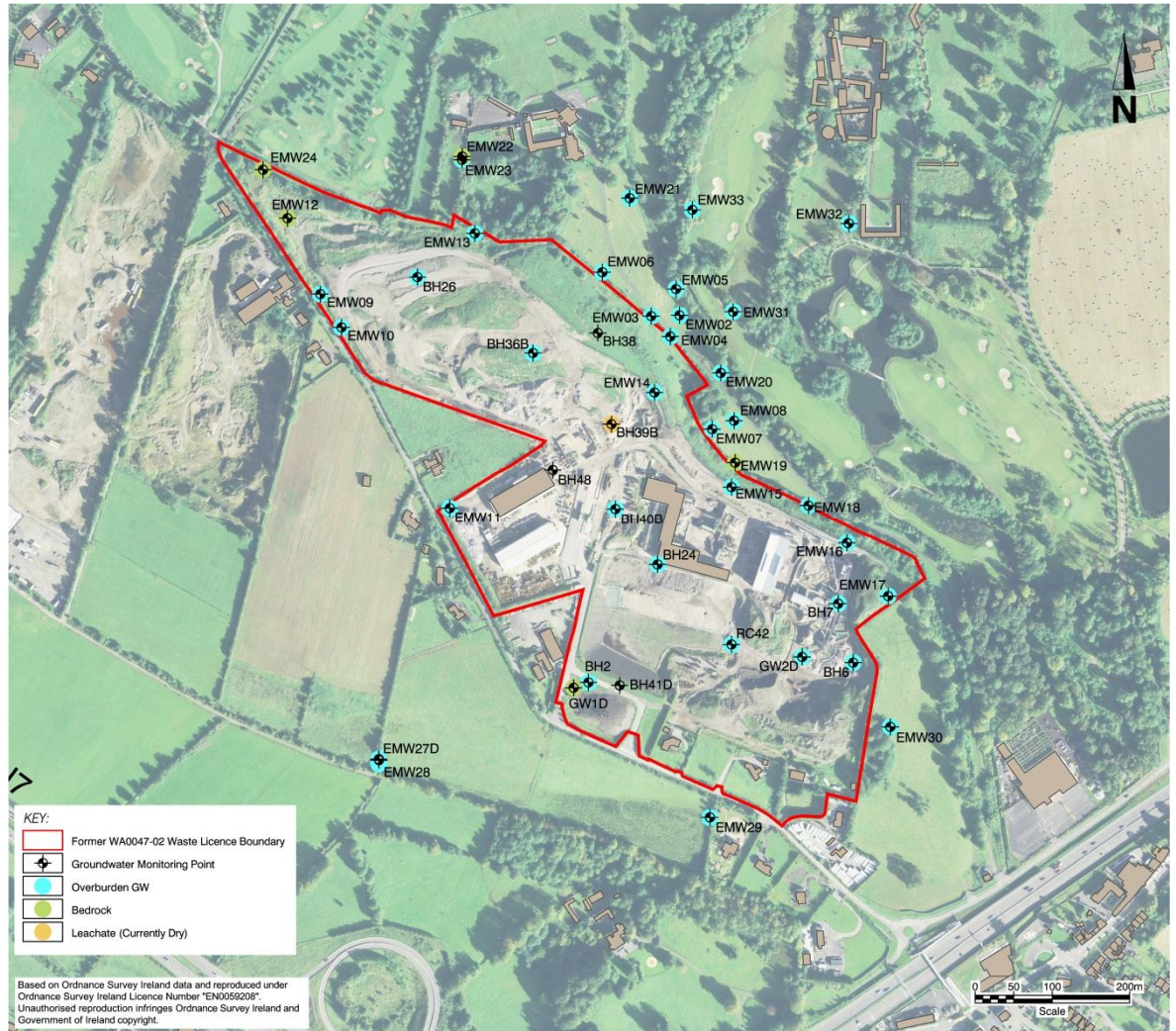
To assess the effectiveness of the groundwater protection measures, groundwater monitoring will be undertaken by periodically collecting groundwater samples for chemical analysis. It is proposed that the groundwater monitoring network would be enhanced as part of the site restoration works by a small number of additional boreholes. Providing no significant impacts are observed, the monitoring frequency would reduce over time. Current groundwater borehole and surface water monitoring locations are shown overleaf. The approach proposed is in common with that at any landfill facility, where a programme of compliance monitoring and maintenance of the monitoring network is required to ensure data gathered is representative of conditions at the site.

It is recommended that provision is made for protection of off-site receptors on the basis of a potential unacceptable impact on the Morell River from contaminated groundwater. This should take the form of a cut-off wall or a line of groundwater abstraction boreholes situated between the landfill and the river along the eastern boundary of the site, the extent and depth of which would be determined by the findings of additional planned groundwater monitoring, but at this stage would extend along the north eastern site boundary as a minimum. At this stage the preferred solution will be through the use of physical (e.g. bentonite cement barrier wall) with associate leachate management. The need for this physical barrier can be reviewed and amended if appropriate during the detailed design phase of the remediation. Other options that may be worthy of consideration include the use of permeable reactive barriers to limit the need for other leachate management measures or hydraulic rather than physical containment, although the latter could involve generation of large volumes of slightly contaminated water requiring management.

Early planning for the installation of the barrier would be required (ideally at commencement of remedial works) including; (1) monitoring against existing baseline defined trigger levels; and, (2) negotiations with adjacent landowners, should construction activities require access onto third party lands.



**Figure 6: Existing Groundwater Monitoring Network**



### 6.2.1. Integration with Restoration

The groundwater protection system will require long term maintenance and upkeep, including:

- Maintenance of the groundwater monitoring boreholes with possible replacement of boreholes should they become blocked or collapse;
- Ensuring that access is maintained for boreholes situated off-site;
- Ensuring the leachate abstraction system in Zone 3 continues to function as designed; and,
- Ensuring that the caps over the landfills remain effective. As the site settles it is possible that cracks may be formed in the cap and these will require repair.

### 6.3. Proposed Surface Water Management

Surface water management is currently practiced on site by way of collection of water from a small area of the site's roads and other areas (excluding the lined cell in Zone 3) and diverting this water into a soakaway (discharged to ground).

However, this soakaway is in the process of being decommissioned and the surface water collected from these areas will be diverted to the pipe which discharges to the Canal Feeder stream. Run off from lined cell in Zone 3 is discharged to a soakaway situated in the far south of the site.

During remediation additional control of water will be required. For this type of temporary works it is usually most efficient and cost effective to implement a separate system for dealing with the transient large volumes of slightly contaminated water which will occur during the remediation period from the long term surface water management at a site. Therefore, for the restoration works it is proposed to implement a temporary drainage system for which a water retention area will be needed, which will require sufficient capacity to deal with likely foreseeable peaks of run-off during the course of the remediation period. This will need to include medium term rainfall events and short term high intensity storm events.

Having collected contaminated surface water it will need to be disposed of or treated on site. Options include discharging the water to sewer, tankering the water off site or treating the water on site to allow discharge to the local rivers.

The retention area should be designed to encourage settlement of solids, which can then be removed from the base of the retention area on a regular basis. On-site treatment of slightly contaminated surface water is likely to be the most cost effective and sustainable option through the use of reed beds and gravel beds and is therefore the recommended approach in this instance.

Surface water will need to be considered as an integral part of the remediation design for the long term control of surface water runoff. This will include the control of surface water from:

- Capped areas;
- Areas of hardstanding including areas where buildings are now present but will be demolished;
- Road surfaces; and,
- Any roofs on buildings which may be constructed as part of the remediation works such as a leachate treatment plant.

This water would be collected in drains to be discharged to the local surface water system, likely to be both the Morell River and the Canal Feeder stream. This water should be largely free from dissolved contaminants as the water will not come into contact with contaminated soils or other materials such as waste. However, the water is likely to have some suspended solids in it and possibly oils washed off roads and these will need to be removed prior to discharge to the rivers. This can be achieved either by passing the water through below ground silt and oil traps or passing the water through reed beds or "swales" (grassed drainage ditches). Good quality water from the site can then be discharged to surrounding surface water courses, which will be of long term benefit.



Flood risk studies<sup>7</sup> do not highlight historic flooding issues within the Morell in the vicinity of the site and the predicted volume of water arising from the site following restoration is estimated to be relatively low compared to flow volumes within the Morell. While no significant impact is currently predicted in the detailed design of the remedial works, consideration will need to be made to the increased flood risk that the drainage system may have on the river and downstream local communities and mitigation measures such as retention ponds included in order that the release of water from storm events is spread over a longer time period.

#### 6.3.1. Integration with Restoration

The surface water protection system will require long term maintenance and upkeep, including:

- Maintenance of silt and oil traps, reed beds and swales; and,
- Ensuring that drains and discharge points are maintained and repaired as required.

The drainage system is likely to be largely below ground and therefore would not affect the appearance of the site. For any above ground features such as reed beds, swales or retention ponds these will be integrated into the restoration plan to enhance the site and these features have the potential to provide valuable ecological habitat.

#### 6.4. Proposed Permanent Landfill Gas Management

The primary function of the proposed landfill gas management system at the site is to break the pathway to surrounding environmental receptors by prevention of uncontrolled release of gas and odours from the site.

The proposed long term gas control system at Kerdiffstown is to collect gas in wells constructed within the wastes, pump out gas and deliver it for combustion in a high temperature flare to convert methane to carbon dioxide and destroy potentially odourous identified trace constituents. Gas extraction wells will be installed on a grid basis in restoration Zones 1, 2 and 3, with closer spacing of wells around the edges of zones to ensure interception of gas before it can migrate from the site as shown, on the plan overleaf. Control of the rate of extraction of gas from perimeter gas wells and presence of high quality capping will reduce air ingress into the wastes thereby reducing odour potential and also future risk of fire.

Routine monitoring and management of the gas well fields and extraction infrastructure will need to be conducted throughout the period of restoration to ensure optimum collection of gas and minimisation of air ingress, and flare combustion above 1000°C. Condensate, a contaminated liquid, is produced in gas extraction pipework when warm extracted gas contacts cooler air and will be drained and where feasible collected and treated in the same manner as leachate.

Following remediation Zones 4 and 5 will not contain degradable wastes, and therefore do not require a gas management system to be installed.

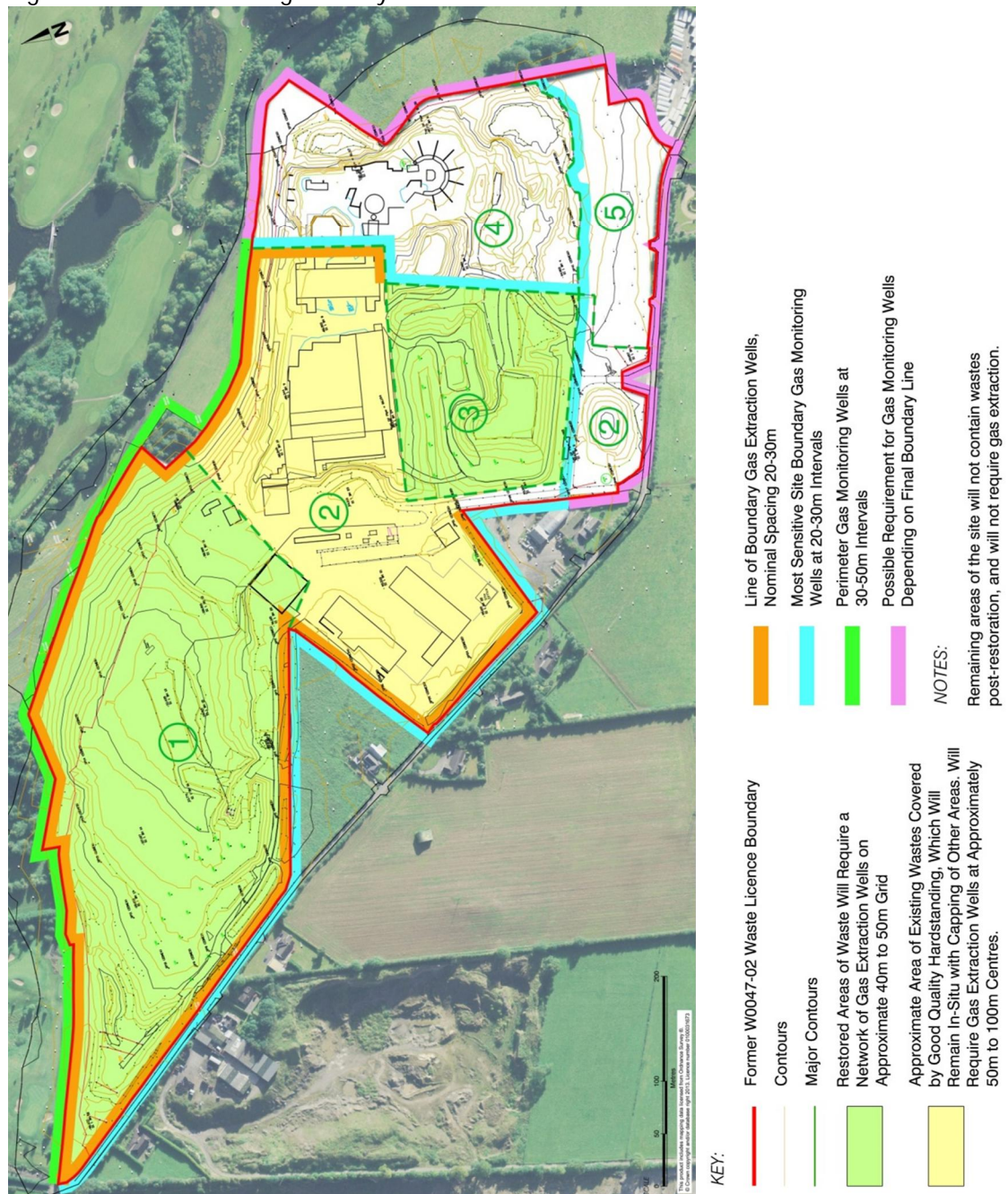
Additional off-site monitoring boreholes will be installed around the perimeter of the site, with closer spacing along the most sensitive boundary adjacent to L2005 County Road from Sallins to Johnstown Sallins Road as shown, on the plan overleaf, in line with regulatory guidance and good practice.

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<sup>7</sup> Kill and Johnstown Flood Alleviation Measures Report, June 2002, JB Barry & Partners Ltd.

Interim measures for gas control will be maintained and introduced as required during remediation, based on assessment of risk of remedial activities on gas migration and emissions to atmosphere. Gas control will be based on a similar extract and flare basis as the proposed long term measures, using existing on site high temperature gas flare units to combust gas. This is normal practice for dealing with gas on any restored landfill site. The proposed layout of the future gas management system at the site is shown below.

Figure 7: Future Gas Management System





#### 6.4.1. Integration with Restoration

The permanent gas control system will require long term maintenance and upkeep, including protection against interference and vandalism.

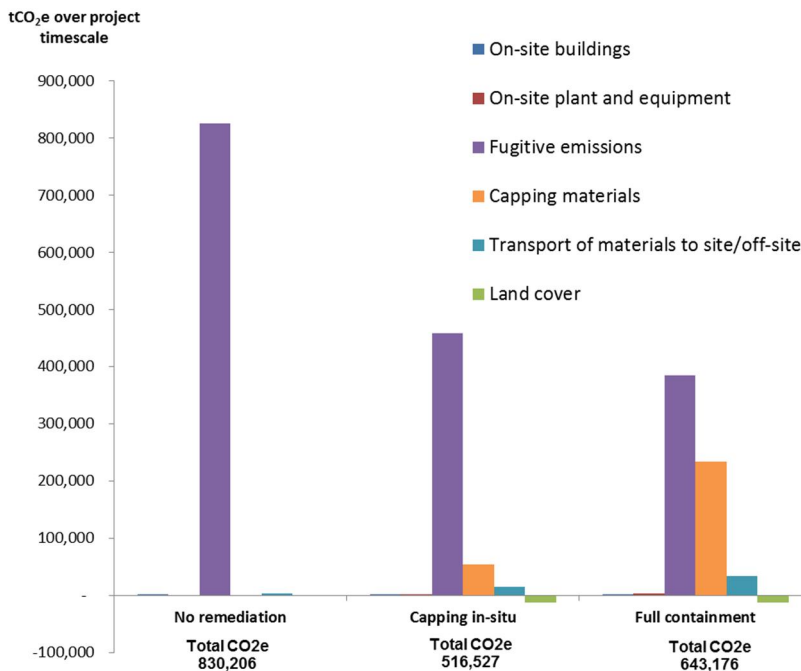
It is likely that gas flare and associated control systems will be located on existing hardstanding in Zone 2, within a secure fenced compound.

Telemetry systems will be utilised to monitor performance of the gas management system, and will provide an alert of any early problems requiring on site attention. This will allow for the site to be unmanned, which over the long term will be a low cost option relative to one involving a constant on-site presence.

#### 6.5. Sustainability Principles

As part of this study a high level Life Cycle Assessment (LCA) has been undertaken using a series of assumptions to consider potential future Green House Gas (GHG) emissions from direct and indirect activities which can reasonably be anticipated to be associated with the remediation of the site at this stage. Two scenarios, referred to as “Capping in-Situ” (which most closely match Scenarios A and B) and “Full Containment” (which most closely matches Scenario C) have been compared against a “Do-Nothing” scenario in which gas generated at the site is released as a fugitive emission, i.e. the site remains in an un-remediated state with no capture of landfill gas.

When account is taken of the likely activities associated with remediation of the site, our initial modelling indicates that GHG emissions resulting from uncontrolled release of methane are likely to be very high relative to all other factors due to the high GHG potential of this gas. If effective capping and landfill gas capture can be put in place while minimising the need for materials and plant/equipment, this is likely to be optimal in terms of achieving a significant reduction in GHG emissions. The graph below provides an indication of the total estimated GHG emissions (measured in tonnes of CO<sub>2</sub> equivalent over an approximate 34 year timescale) for the Do Nothing, Capping-in-Situ and Full Containment scenarios highlighted above.



## 7. End Use Options

A summary of the three potential end use options that could be considered at this stage, together with their respective pros and cons is summarised in the table below and continued overleaf.

Possible landforms have also been considered in conjunction with the assessment of possible future uses for the site to ensure compatibility:

- Mixed use development would require the most re-distribution of materials around the site to lower the high points and raise the low points. Redistribution of materials, particularly across the northern area of the site is not an attractive option due to the potential for generation of significant odours during any works which exposes new surfaces which would subsequently require detailed management to avoid adverse impacts upon the surrounding environment.
- Mass movement of material from this area would also lead to significant increases in the overall timescale to complete the remedial works in order to allow for control of odours generated from wastes in this area during the construction period.
- Agricultural type end use has some flexibility – while an undulating site surface sloping at gradients of up to 1 in 3 and a sub-surface barrier layer requiring protection might not be suitable for growing and harvesting crops, there would be few constraints for the grazing of livestock; and,
- Passive amenity function/open space has maximum flexibility, with possible leisure activities identified to suit the terrain. Re-distribution of materials can be minimised, with the design objectives for surface profiling limited solely to the technical requirements for capping and drainage.

### Summary of Potential Outline End Use Options

Options	Description	Environmental Considerations Specific to Option	Planning & Other Considerations Specific to Option
1. Site Completion in accordance with previous planning permission.	Domed Cap (i.e. laying of waste and/or cover material above original ground contours) with final restoration level of 108m AOD. Agricultural end use.	Landscape and visual impacts. Existing materials deficit would require importation of significant volumes of material to fill existing voids in south-eastern area of site with attendant impacts. Would require long term environmental management (gas, leachate etc.). Potential increase in nuisance if agricultural end use involved livestock.	Would conform with original planning permissions for site. Reduced landscape and visual value for community. Reduce level of amenity for end users as final restoration plans involved grassing of site and limited peripheral tree planting.



Options	Description	Environmental Considerations Specific to Option	Planning & Other Considerations Specific to Option
2. Medium to high density mixed-use redevelopment.	Utilising existing concrete slab area for industrial/commercial end use, possible educational centres, and activity parks. Employment and cultural projects could be included.	Landscape and Visual. Stability of future landforms as development platforms. Building protection measures against gas ingress. Wastewater treatment capacity. Traffic and Transport impacts including parking. Water quality impacts (management). Could involve significant movement of waste materials to create development platforms. Would require long term environmental management (gas, leachate etc.).	Traffic issues, site access and road widening requirements. Uncertainty for investors due to waste on site. Limited commercial interest in new employment related uses in the current economic climate given number of vacant units of similar nature in Naas area and surrounds. Initial capital costs associated with development of such a site for provision of infrastructure, services etc. may limit opportunity.
3. Passive amenity function, i.e. informal recreation.	Landscaped whole site with retention of raised area in north western area of site, retention of hardstand in central portion and landscaped area in southeast, with option to gift portion to Kerdiffstown House, or offer direct access into amenity area.	Visual enhancement of the area. Increased biodiversity and positive ecological impact. Would require long term environmental management (gas, leachate etc.).	Public access, but allow access from Kerdiffstown House land (e.g. gated access). Community gain as options for public open space end use could be integrated into remedial proposals. Leisure activities could be included to suit terrain including disability access. Can be accommodated within current proposals for site remediation.

Taking the above factors into account currently, Option 3 in the above table emerges as the preferred option largely due to improved landscape and visual impacts, flexibility in terms of incorporation of end use into remedial proposals and provision of an amenity site for the local community and enhancing the overall area.

The current outline restoration proposals are supported by the indicative end use plan (Drawing 3) shown at the end of the document, which are based on the end use option highlighted above, i.e. "Creation of a positive asset that will complement the local landscape, benefit the surrounding community and enhance the biodiversity of the site".

They are necessarily indicative and preliminary, at this stage and prepared to provide an indication of how this site might be restored and used in the long term. The key components comprise:

- Creation of opportunities for informal recreation (i.e. open space end use), in addition there is an emphasis on providing a local educational resource;
- Creation of a spiral path leading the high point at the northern end of the site, providing long distance, open views across the surrounding landscape;
- Creation of open meadow spaces in the central part of the site for recreation and enhancing biodiversity;
- Creating a wildlife area in the south eastern part of the site for biodiversity benefit as well as providing an educational resource;
- Facilitating access to the site through the provision of parking, maintenance of the existing vehicle access and creation of a network of informal paths through the site.

Woodland planting is proposed across the site to provide habitat as well as dividing spaces. The areas of trees around the edges of the site have also been proposed to provide privacy for surrounding residential properties.

Large areas of open grassland are proposed to provide flexibility in the use of the space, provide habitats and create a sense of openness. These areas could be adaptable providing a canvas for educational use; for instance they could be used for the creation of sculpture or as outdoor classroom.

The sunken area at the south eastern part of the site is retained, but separated from other areas through the use of woodland planting. This woodland would enclose the space promoting the creation of an area for wildlife to flourish. The focus would be on allowing natural regeneration to take place, with wetland creation in the lower part to provide a focal point. Two hides are proposed, which will provide an educational resource and reduce the potential for disturbance.

At the main entrance and around the car parking area a slightly greater sense of formality is proposed.

As well as the main access to the site, it is proposed to create a gated entrance from Kerdiffstown House. This will open up the site to visitors to Kerdiffstown House and allow them to make the most of the new resource that is created. The principle of this and exact location would need to be agreed with the Society of St. Vincent de Paul.

There will be an operational compound to house flares, leachate loading/handling and other operations infrastructure with this being secured and screened by landscape features from the rest of the amenity.

## 8. Cost and Timescale Estimates for Remediation

### 8.1. Cost Estimates

Estimates of cost and timescale for the recommended remediation option have been prepared, along with outline comparative costs for the other scenarios. To allow for uncertainty in defining costs for the proposed outline remedial option at this stage, the approach to defining costs and benefits has taken the three point estimating technique to define the “Low Cost”, “Most Likely” and “High Cost” scenario. The low cost represents the ‘risk free’ estimate i.e the minimum cost that the project can be undertaken for, with no allowance for financial risk. This has been based on the 5% confidence limit meaning that there is a 95% chance that the project will cost more than this to complete. The high cost represents the realistic maximum cost of the project making reasonable assumption about the financial risks associated with the project. This has been based on the 95% confidence limit meaning that there is a 5% chance of the project will cost more than this. The most likely cost is based on the 50% confidence limit and therefore the costs are as likely to go up from this point as down. This provides a reasonable basis for budgeting (in accordance with best practice for provisions against environmental liabilities and accounting standard IAS 37). The cost model can be refined as the project progresses and more knowledge is available on financial risk. These detailed costings are presented in the Appendix 2 of this report, with only the Most Likely costs presented below.

	Scenario A		Scenario B		Scenario C	
	Most Likely Estimate ('000s)	Inc VAT	Most Likely Estimate ('000s)	Inc VAT	Most Likely Estimate ('000s)	Inc VAT
Landfill Gas Control	€██████	€██████	€██████	€██████	€██████	€██████
Construction & Restoration	€██████	€██████	€██████	€██████	€██████	€██████
Groundwater & Surface Water Control	€██████	€██████	€██████	€██████	€██████	€██████
Leachate Control	€██████	€██████	€██████	€██████	€██████	€██████
Management & Operation	€██████	€██████	€██████	€██████	€██████	€██████
<b>Total</b>	€██████	€██████	€██████	€██████	€██████	€██████

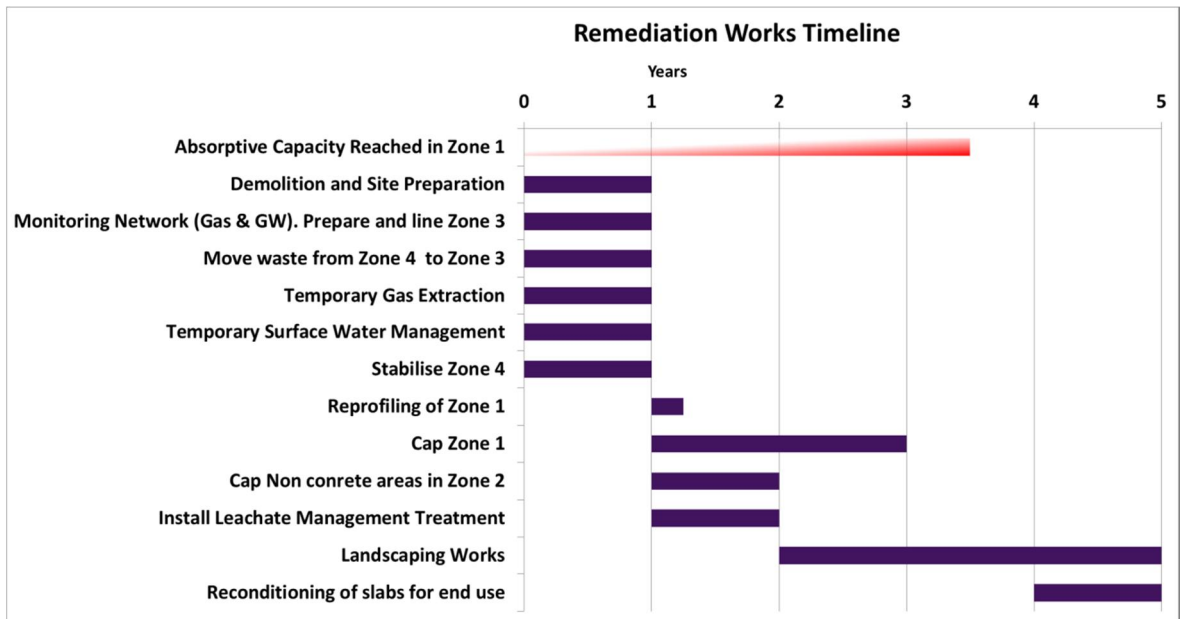
**Notes:**

1. Assumes average mix of VAT rates at 20%
2. Costs include works costs and operational costs based on a nominal 30 year period

### 8.2. Programme

Based on the remedial works required under Scenario B the following indicative programme has been developed. This shows the sequence of key work elements required and considers the interrelation between these elements assuming that the remediation scheme is implemented as one continuous project. It would be possible to re-programme the works if necessary to take account of varying engineering needs, breaking the works down into discrete packages as required to ensure that the works address the environmental priorities. The timescales allocated are broad estimates only and will require refinement as the remedial design is progressed but this serves to illustrate the likely timeframe for completion of the remedial works. The following Gantt chart assumes that all necessary consultations, permissions and consent are in place at the start of Year 1 and that the contractor for the works has been procured.





## 9. Conclusions

This options assessment has considered the potential remedial options appropriate to manage and mitigate environmental risk. Potential end use options for the site in its remediated form have also been considered. The key points arising from this exercise are as follows:

- The Conceptual Site Model (CSM) indicates that the site poses a risk in its current state as environmental pathways are present which provide a potential link between identified contamination sources present within the wastes (gases, odours and leachate) and surrounding environmental receptors. It is estimated using site investigation data gathered from 2010 to date that approximately 3.1 million cubic metres of non-hazardous waste are present on site. This compares with an initial estimate in 2010 of 1.7 million cubic metres.
- The majority of the wastes are present in Zone 1 in an unlined and uncapped area. Modelling suggests that the unlined wastes in Zone 1 will reach their absorptive capacity around the end of 2016, after which time significant migration of leachate could be expected. Modelling also indicates that the wastes deposited across the site will act as a long term source of landfill gas (and odours).
- The preferred remedial option to deal with the identified environmental pathways within the CSM comprises the capping of all uncapped wastes to limit infiltration of rainfall and therefore limit the generation of leachate. Engineered drainage will be required to deal with surface water and leachate.
- Options for leachate management include off-site disposal, discharge to sewer, or on-site treatment with the latter likely to provide the optimal solution insofar as it is the only option currently not dependent on long term agreement of a third party to accept leachate.
- The remedial works will also provide control of gas (and therefore odours) via an enhanced network of gas collection wells linked to a flare situated in Zone 2.
- The preferred option includes for acceptance of reduced leakage through the base of unlined wastes into the underlying shallow groundwater system and installation of a cut off wall.
- Potential end use options have been proposed that allow public access to the site for recreation.
- Estimated cost for the completion of the preferred remedial option B is € [REDACTED] (exc. VAT) and the indicative programme indicates that wastes will be capped and therefore the primary risks mitigated within the first 3 years of a 5 year works duration.



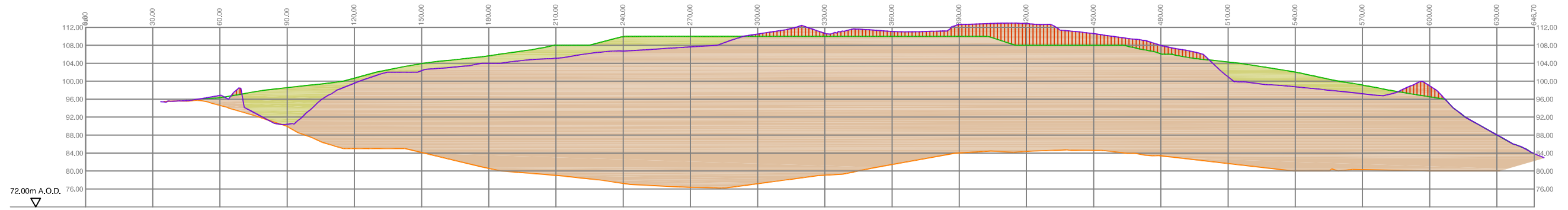
## **DRAWINGS**

**Drawing 1: Site Cross Sections**

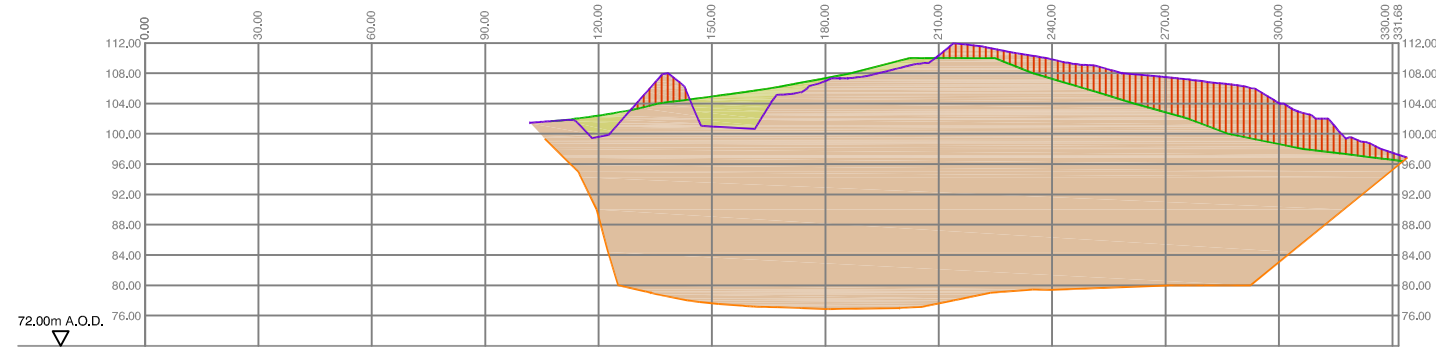
**Drawing 2: Remedial Scenario Schematics**

**Drawing 3: Potential End Use**

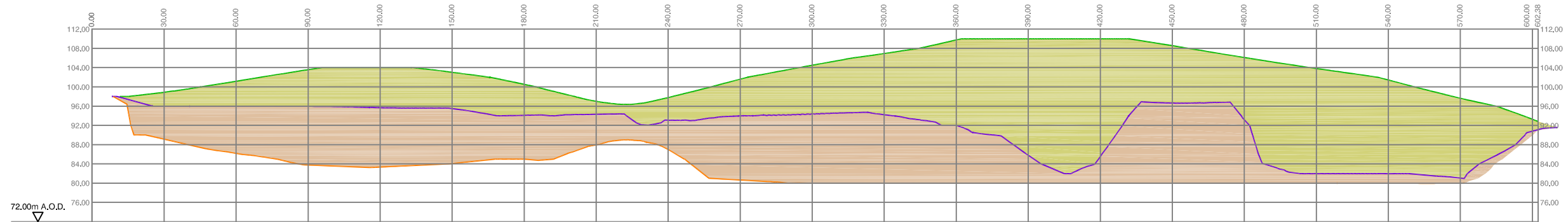
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 Ref: I:\Enviros\Design\PROJECTS\JL30689\Figures\Task 9  
 © Sinclair Knight Merz (Ireland) Ltd



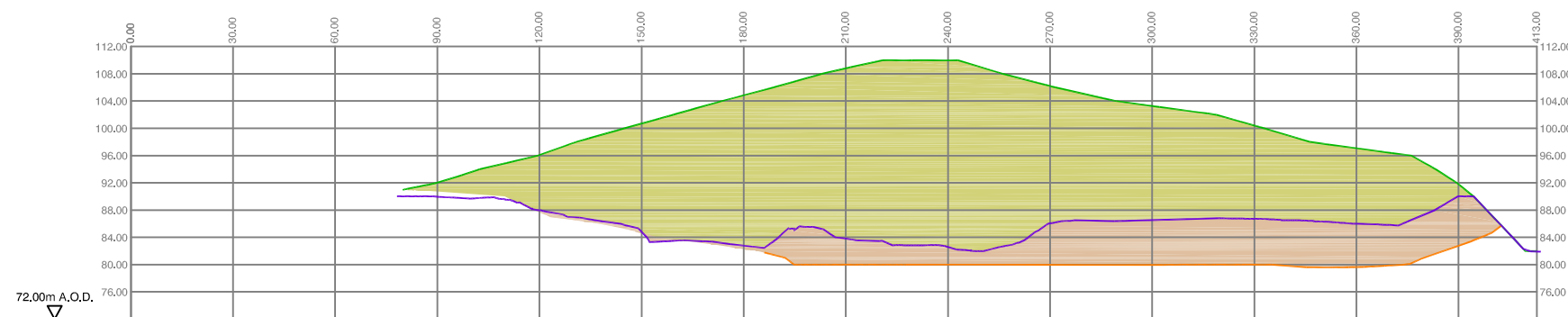
**Section A-A'** Horiz. 1:2000 Vert. 1:1000



**Section B-B'** Horiz. 1:2000 Vert. 1:1000

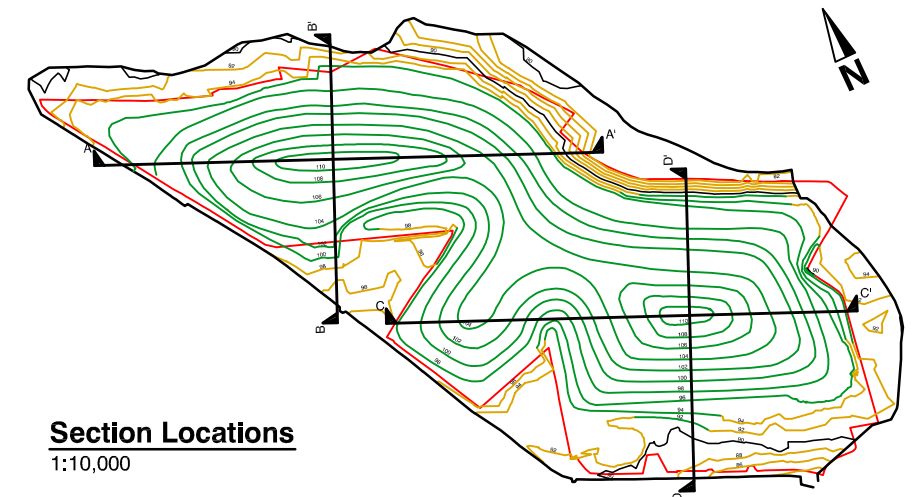


**Section C-C'** Horiz. 1:2000 Vert. 1:1000



**Section D-D'** Horiz. 1:2000 Vert. 1:1000

**NOTE:**  
All levels above OS Datum (Malin Head)



**Section Locations**  
1:10,000

- KEY:**
- Existing Survey (Coastway, February 2011)
  - Estimated Base Levels (April 2013, Following Ground Investigations)
  - Restoration Contours (Planning Permission, 2002, Adjusted to Suit Survey)
  - Existing Waste
  - Permitted Void Space Capacity (Planning Consent)
  - Waste Cut (Fill to Void Space)



SCALE  
AS SHOWN @ A3

CONTENT  
KBe

CHECKED  
KBe

PROJECT No.  
JL30689

DRAWN  
HLD

DATE  
MAY 2012

**KERDIFFSTOWN LANDFILL  
SITE REMEDIATION PROJECT**

**DRAWING 1  
SITE CROSS SECTIONS**

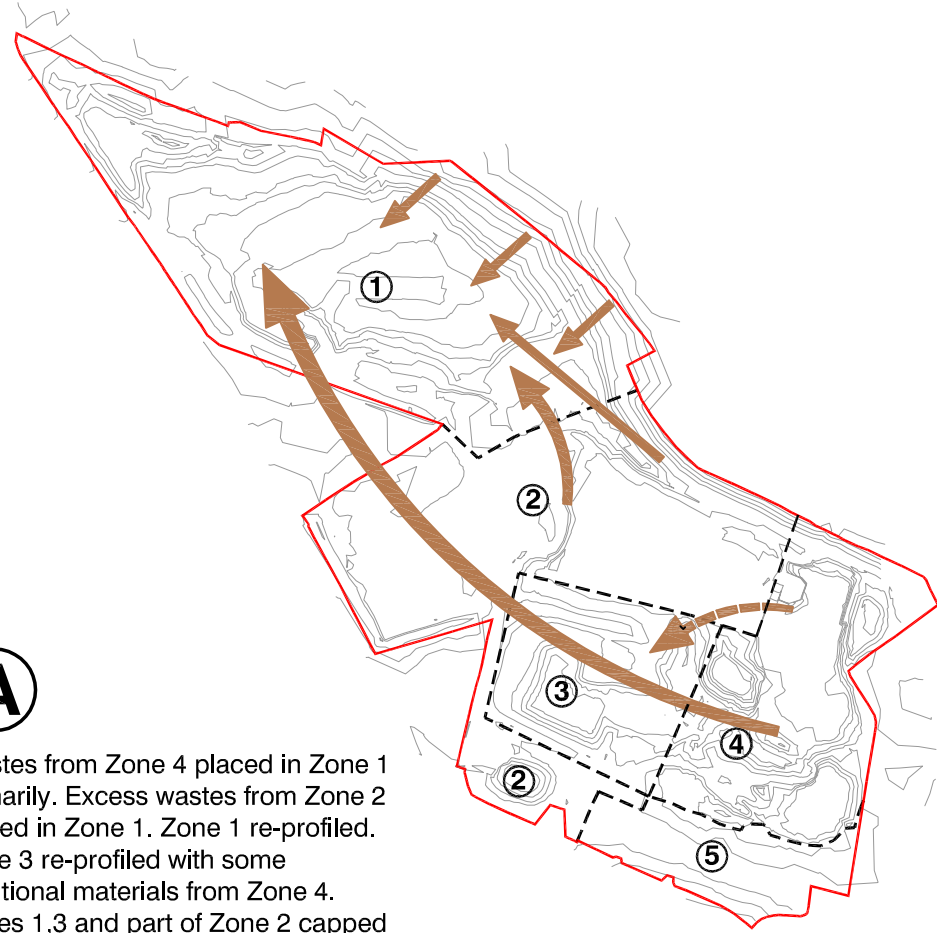


**KEY:**

- Arrows denote movement of waste. Thickness of arrows denotes relative volumes of waste moved
- Extent of lined landfill (C)

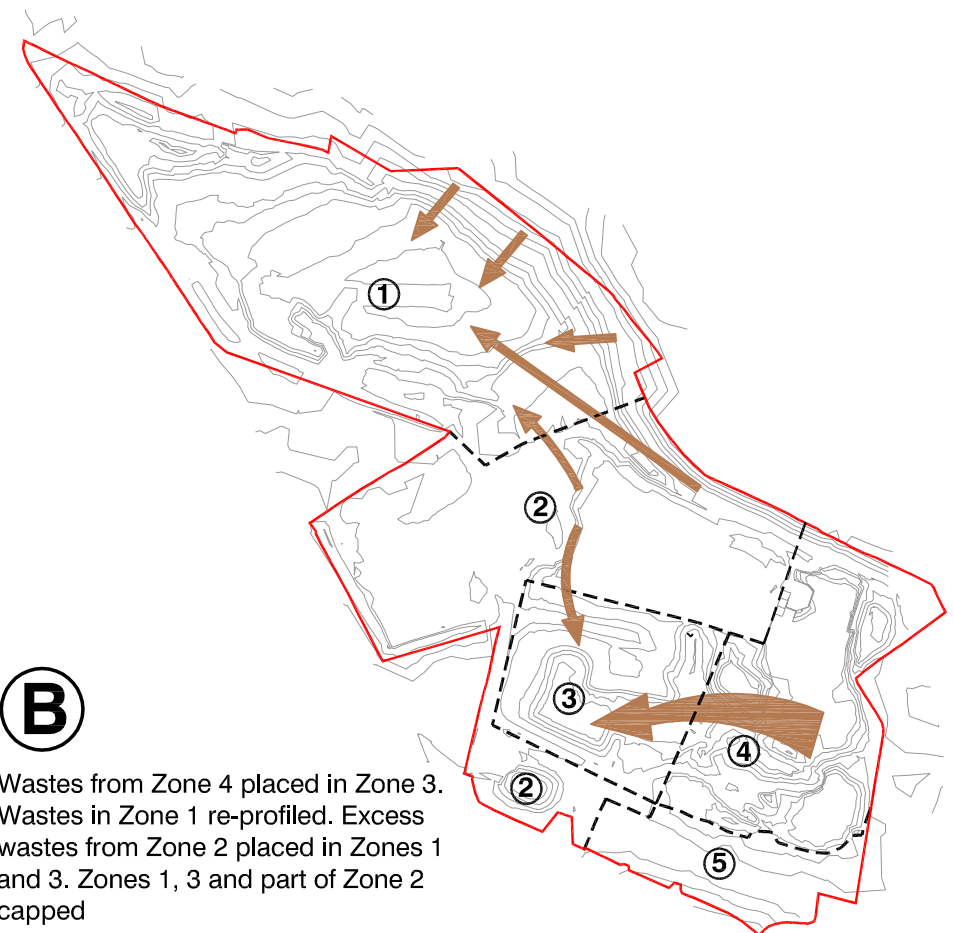
**A**

Wastes from Zone 4 placed in Zone 1 primarily. Excess wastes from Zone 2 placed in Zone 1. Zone 1 re-profiled. Zone 3 re-profiled with some additional materials from Zone 4. Zones 1,3 and part of Zone 2 capped



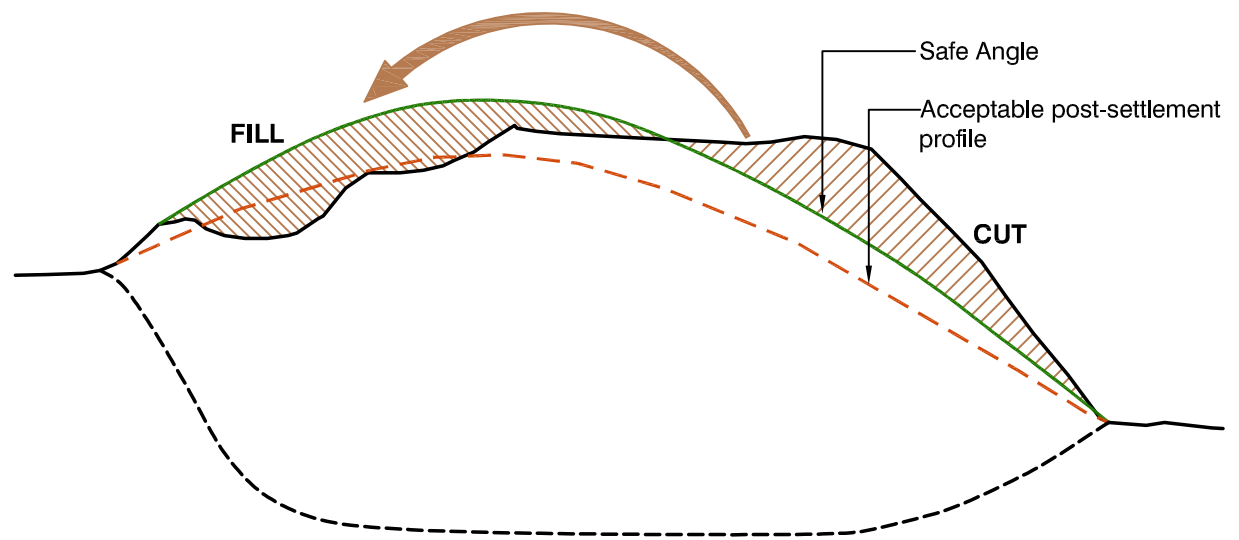
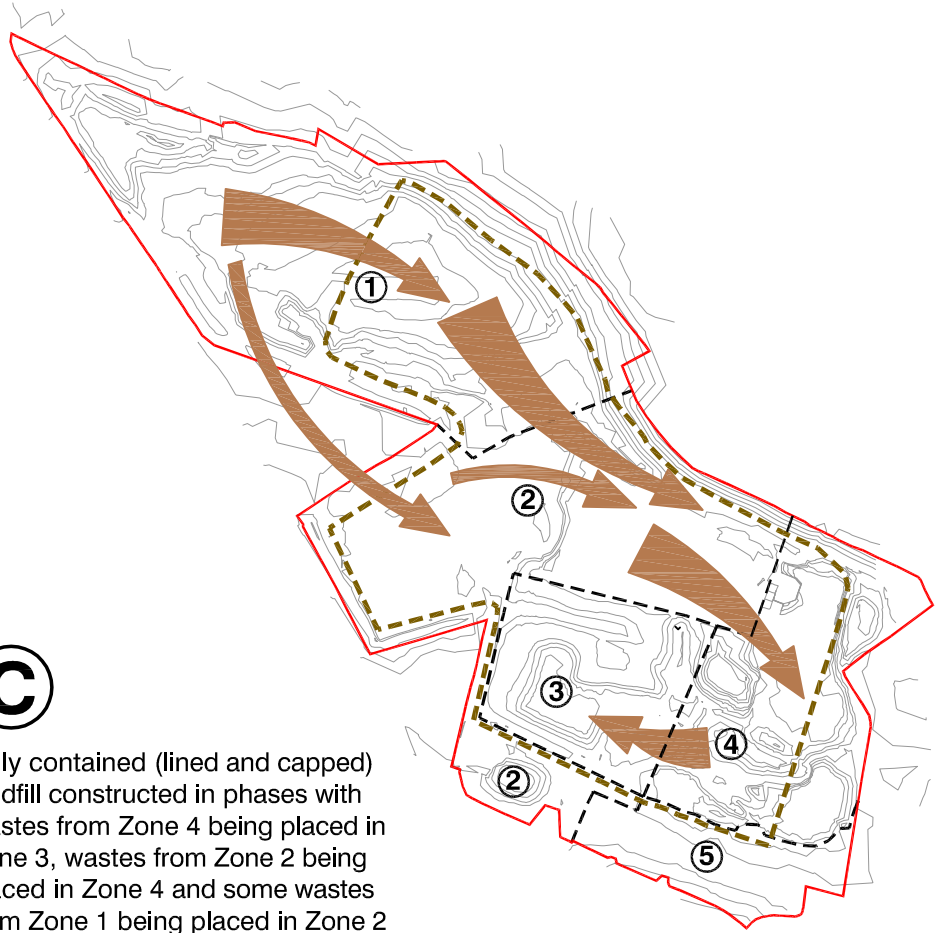
**B**

Wastes from Zone 4 placed in Zone 3. Wastes in Zone 1 re-profiled. Excess wastes from Zone 2 placed in Zones 1 and 3. Zones 1, 3 and part of Zone 2 capped

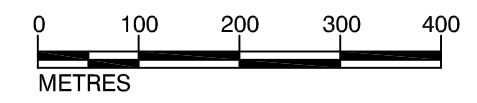


**C**

Fully contained (lined and capped) landfill constructed in phases with wastes from Zone 4 being placed in Zone 3, wastes from Zone 2 being placed in Zone 4 and some wastes from Zone 1 being placed in Zone 2



**Section Through Zone 1 (Options A and B) - (nts)**



**KERDIFFSTOWN LANDFILL SITE REMEDIATION PROJECT**

**DRAWING 2**

**REMEDIAL SCENARIO SCHEMATICS**

SCALE	AS SHOWN	PROJECT No.	JL30689
CONTENT	KBe	DRAWN	AJR
CHECKED	KBe	DATE	JUNE 2013



Plot date: Jul 10, 2013 - 10:14am  
File name: AJR10374.dwg  
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 File name: HLD3847a.dwg Plot date: Jul 10, 2013 - 12:59pm  
 Ref: I:\Enviros\Design\PROJECTS\JL30689\Figures\Task 151



**KEY:**

Former WA0047-02 Waste Licence Boundary	Individual Trees	Potential Links to Kerdiffstown House
Grassland / Meadow	Pond / Wetland	Wildlife Hides and Viewing Locations
Woodland	Access Road / Car Park	Indicative Surface Water Drainage



SCALE	1:3,000 @ A3
CONTENT	SJM
CHECKED	SJM

PROJECT No.	JL30689
DRAWN	HLD
DATE	24/05/2013

**KERDIFFSTOWN LANDFILL  
 SITE REMEDIATION PROJECT**  
**DRAWING 3  
 POTENTIAL END USE**



## APPENDICES

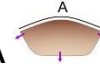
### Appendix A Evaluation of Remedial Scenarios

Respective Benefits and Issues Related to Remediation Scenario A



Issue	Pros	Cons
<b>Scenario A</b>		
Groundwater Protection	Does not require lengthy excavation periods with exposure of waste to rainfall.	Groundwater will continue to be impacted beneath the site. No provision to install interception system to protect groundwater off site. Reliance on groundwater protection only through capping to limit infiltration. Relies on integrity of existing lined cell to protect long term groundwater quality in this area of the site and does not involve increasing containment capacity.
Surface Water Protection	Does not require lengthy excavation periods with exposure of waste to rainfall and attendant risk of run-off to surface water.	Risk of impact exists prior to capping through direct run-off. Relies on integrity of existing lined cell to protect long term surface water quality in this area of the site and does not involve increasing containment capacity. Long term risk of surface water impact by contaminated groundwater in response to off-site leachate migration, particularly from northwestern area of site.
Landfill Gas Control	Provision for installation of long term gas and odour control measures in waste materials.	None identified.
Odour and Nuisance Impacts	Timescale for remedial works is relatively limited compared to Scenario C. Avoids requirement for large scale excavation of waste materials avoiding /limiting risk of widescale odour generation during remedial works. Amount of waste to be excavated is relatively limited. Degree of site disturbance/re-profiling required is relatively limited compared to Scenario C.	Will require establishment of odour and nuisance control/mitigation measures during remedial works period.





**Respective Benefits and Issues Related to Remediation Scenario A**

Issue	Pros	Cons
Traffic & Noise & Vibration Impacts	<p>Timescale for remedial works is relatively limited relative to Scenario C.</p> <p>Extent of earthworks relatively limited in relation to Scenario C.</p> <p>Importation of materials required only to form capping layer.</p> <p>Degree of disturbance/re-profiling required relatively limited.</p>	<p>Will require establishment of mitigation measures during remedial works period.</p>
Visual Impact/Intrusion During Works	<p>Activities in northwest corner (highest part of site) relatively limited therefore unlikely to be significant degree of visual impact during remedial works.</p> <p>Lower requirement for creation of temporary mounds/stockpiles across site than Scenario C.</p>	<p>Some form of mitigation measures likely to be required during remedial works period (though relatively limited).</p>
Timescale	<p>Timescale for potential community impact is limited relative to Option C.</p> <p>Reduced period before wastes are fully capped lowering risk of major impact of leachate on groundwater/surface water relative to Scenario C.</p>	<p>None identified in relation to physical works on-site.</p>
Cost	<p>Current best estimate of cost is €■■■M exc VAT, significantly less costly than Scenario C but also less than Scenario B.</p>	<p>None identified. Likely lowest cost option. However, potential for additional costs to be incurred if requirement to deal with leachate/groundwater plume post remediation.</p>



**Respective Benefits and Issues Related to Remediation Scenario B**

Issue	Pros	Cons
<b>Scenario B</b>		
Groundwater Protection	<p>Does not require lengthy excavation periods with exposure of waste to rainfall.</p> <p>Construction programme could be developed such that early capping of northwest corner could be programmed to limit potential for on-going rainfall infiltration.</p> <p>Allowance for interception and treatment of off-site contaminated groundwater will mitigate risk of widespread groundwater impacts.</p>	<p>Groundwater may be impacted beneath site (Note – this scenario allows for treatment of groundwater, if required).</p>
Surface Water Protection	<p>Does not require lengthy excavation periods with exposure to rainfall and risk of run-off to surface water, i.e. shorter timescale than Scenario C.</p> <p>Option to install interception system to protect surface water off site.</p>	<p>Risk of direct run-off only exists prior to capping – minimum period of risk.</p>
Landfill Gas Control	<p>Provision for installation of long term gas and odour control measures in waste materials.</p>	<p>None identified.</p>
Odour and Nuisance Impacts	<p>Timescale for remedial works is relatively limited relative to Scenario C.</p> <p>Avoids requirement for large scale excavation of waste materials in northwestern area of site avoiding risk of widespread odour generation.</p> <p>Amount of waste to be excavated is relatively limited relative to Scenario C.</p>	<p>Will require establishment of odour and nuisance control/mitigation measures during remedial works period.</p>
Traffic & Noise & Vibration Impacts	<p>Timescale for potential community impact is limited relative to Option C.</p>	<p>Some form of mitigation measures likely to be required during remedial works period (though relatively limited).</p>
Visual Impact/Intrusion During Works	<p>Activities in northwest corner (highest part of site) relatively limited therefore unlikely to be significant degree of visual impact during remedial works.</p> <p>Temporary stockpiles can be placed in southeastern corner of site where activities will be screened by former quarry walls.</p> <p>Excavation/construction activities in northwest corner relatively limited during period of remedial works.</p>	<p>Some form of mitigation measures likely to be required during remedial works period (though relatively limited) to limit potential visual impact.</p>
Timescale	<p>Timescale for potential community impact is limited relative to Option C.</p> <p>Reduced period before wastes fully capped lowering risk of major impact of leachate on groundwater/surface water relative to Scenario C.</p>	<p>None identified.</p>



**Respective Benefits and Issues Related to Remediation Scenario B**

Issue	Pros	Cons
Cost	Current best estimate of cost is €■■■M exc VAT, more expensive than Scenario A but significantly less cost than Scenario C.	None identified.

**Respective Benefits and Issues Related to Remediation Scenario C**



Issue	Pros	Cons
<b>Scenario C</b>		
Groundwater Protection	Employs use of capping and full lining solution created in new lined landfill to provide full protection of groundwater.	<p>Period for construction likely to be significantly increased relative to Options A &amp; B therefore requiring contingency measures to deal with prevention of groundwater contamination interim period.</p> <p>Movement of waste from northwest of site could only occur following construction of new reception facilities in south during which time migration of leachate into groundwater system could occur via uncapped wastes in northwest, which would require additional management.</p>
Surface Water Protection	Employs use of capping and full lining solution to provide full protection of surface water.	<p>Period of construction likely to be significantly increased relative to Scenarios A &amp; B with lengthy excavation periods and potential for exposure to rainfall and risk of run-off to surface water.</p> <p>Movement of waste from northwest of site could only occur following construction of new reception facilities in south during which time migration of leachate into groundwater system could occur via uncapped wastes in northwest, which would require additional management.</p>
Landfill Gas Control	Provision for installation of long term gas and odour control measures in waste materials.	Longer time period before full scale landfill gas management is installed compared with Scenarios A and B, with attendant longer period for risk of off-site migration which may require additional interim gas control measures to be provided.
Odour and Nuisance Impacts	None identified.	<p>Full lining and containment would require excavation of all existing wastes, temporary storage on site, creation and lining of new cells and re-deposition of wastes into the lined areas.</p> <p>Period of construction likely to be significantly increased relative to Scenarios A &amp; B with lengthy excavation periods.</p> <p>Mass movement of waste materials across site likely to lead to significant potential for odour and nuisance impact for a longer time period.</p> <p>Longer time period before full scale gas control is installed compared with Scenarios A and B, leading to increased risks of interim and temporary odour nuisance requiring additional odour controls.</p>
Traffic & Noise & Vibration Impacts	None identified.	<p>Will require establishment of mitigation measures during remedial works period.</p> <p>Full lining and containment would require excavation of all existing wastes, temporary storage on site, creation and lining of new cells and re-deposition of wastes into the lined areas.</p>

**Respective Benefits and Issues Related to Remediation Scenario C**



Issue	Pros	Cons
		<p>Period of construction likely to be significantly increased relative to Scenarios A &amp; B with lengthy excavation periods.</p> <p>Mass movement of waste materials across site likely to lead to significant potential for noise nuisance impact for a longer time period</p>
Visual Impact/Intrusion During Works	None identified.	Mass movement of wastes from north western area of site into lower part of site would lead to increased potential for visual impact during remedial works period, which could be significant.
Timescale	None identified – would be longest Scenario to complete physical remedial works.	<p>Likely to be significantly increased timescales relative to Scenarios A &amp; B.</p> <p>Potential timescale for full implementation may exceed predicted timescale for leachate breakout requiring emergency (contingency) measures during remediation without detailed planning.</p>
Cost	Current best estimate of cost is €■■■M exc VAT, significantly more expensive than other options	Would be highest cost Scenario.



## Appendix B Cost Estimates



Cost Estimates Scenario A

	Base Cost ('000s)	Incl VAT	Upper Rate ('000s)	Incl VAT	Best Estimate ('000s)	Incl VAT
Landfill Gas	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Construction & Restoration	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Groundwater & Surface Water	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Leachate	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Management	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Total	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████

Cost Estimates, Scenario B (preferred option)

	Base Cost ('000s)	Incl VAT	Upper Rate ('000s)	Incl VAT	Best Estimate ('000s)	Incl VAT
Landfill Gas	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Construction & Restoration	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Groundwater & Surface Water	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Leachate	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Management	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Total	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████

Cost Estimates Scenario C

	Base Cost ('000s)	Incl VAT	Upper Rate ('000s)	Incl VAT	Best Estimate ('000s)	Incl VAT
Landfill Gas	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Construction & Restoration	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Groundwater & Surface Water	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Leachate	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Management	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████
Total	€ █████	€ █████	€ █████	€ █████	€ █████	€ █████

## **APPENDIX 7 LETTERS FROM IRISH WATER**

Letter 7.1 Proposed Kerdiffstown Landfill Leachate Management Connection

Letter 7.2 Proposed Kerdiffstown Landfill Water Supply



James Mulligan  
Senior Executive Engineer  
Environment Department  
Kildare County Council  
Áras Chill Dara  
Devoy Park  
Naas,  
Co Kildare  
W91 X77F

Letter Ref: CDSCOF2

**Uisce Éireann**  
Bosca OP 860  
Oifig Sheachadta  
na Cathrach Theas  
Cathair Chorcaí

**Irish Water**  
PO Box 860  
South City  
Delivery Office  
Cork City

[www.water.ie](http://www.water.ie)

28 July 2017

Dear Sir/Madam,

**Re: CUST16236 Kerrdiffstown Landfill Remediation Scheme**

Irish Water has reviewed your pre-connection enquiry in relation to a water connection at Kerrdiffstown Landfill Remediation Scheme, Kerrdiffstown, Naas, Co. Kildare (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on the capacity currently available as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network can be facilitated.

Before completing the design of water services infrastructure at the Premises, and prior to submitting any planning application, you are advised to contact Irish Water.

You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed at a later date.

A connection agreement can be applied for by completing the connection application form available at [www.water.ie/connections](http://www.water.ie/connections). Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Energy Regulation.

If you have any further questions, please contact Dermot Phelan from the design team on 01 8925466 or email [dphelan@water.ie](mailto:dphelan@water.ie) For further information, visit [www.water.ie/connections](http://www.water.ie/connections)

Yours sincerely,

**Maria O'Dwyer**

**Connections and Developer Services**





James Mulligan  
Senior Executive Engineer  
Environment Department  
Kildare County Council  
Áras Chill Dara  
Devoy Park  
Naas,  
Co Kildare  
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[www.water.ie](http://www.water.ie)

5<sup>th</sup> May 2017

Our ref: IW KERDIFFSTOWN LANDFILL PLANNING LETTER 20170505

**RE: Proposed Kerdiffstown Landfill Leachate Management Connection**

Dear Mr Mulligan,

Based upon details provided by Kildare County Council and their consultants Jacobs, Irish Water undertake to accept leachate, subject to a number of conditions, transferred by Kildare County Council from the Kerdiffstown Landfill, Kerdiffstown, Naas, Co. Kildare:

1. via sewer discharge to Johnstown Pumping Station, Johnstown, Naas, County Kildare;
2. via tanker to Osberstown WWTP, Co. Kildare, where discharge to Johnstown Pumping Station is not feasible;
3. via tanker to Ringsend WWTP, Co. Dublin, where acceptance of leachate at Osberstown WWTP is not feasible;
4. via tanker to a suitable Irish Water facility, in case of emergency.

Acceptance of leachate, discharged via sewer to Johnstown Pumping Station will be subject to a Connection Agreement and associated conditions agreed by Irish Water and Kildare County Council. Irish Water undertake to specify the emission limit values that will be required in the Connection Agreement in any response sought from the Environmental Protection Agency as part of the Agency's deliberations on an Industrial Emissions Licence for the Kerdiffstown Landfill.

Acceptance of leachate at Irish Water facilities via tanker will be subject to agreement of acceptance criteria specified by Irish Water.

This agreement for acceptance of leachate via sewer or via tanker shall be subject to fees to be agreed by Irish Water and Kildare County Council.

Yours Sincerely,

*PP. Dermot Delaney*  
.....

Maria O'Dwyer

**Connections and Developer Services Manager**



