

KERDIFFSTOWN LANDFILL REMEDIATION PROJECT

Erosion and Sediment Control Plan (ESCP)



rps

Wills Bros Ltd
CIVIL ENGINEERING CONTRACTORS

**Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020**

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Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020

Contents

1.0 INTRODUCTION.....	4
1.1 Project Overview.....	4
1.2 Objectives.....	5
1.3 Document Review.....	5
2.0 CONTACT DETAILS.....	6
3.0 LIMITING CRITERIA.....	7
3.1 Working Hours.....	7
3.1 Erosion and Sediment Minimisation Requirements.....	7
4.0 SEDIMENT AND EROSION AND EMISSIONS SOURCES.....	8
4.1 Definitions:.....	8
5.0 MANAGEMENT MEASURES.....	9
5.1 General sediment and erosion management measures.....	9
5.1.1 Introduction.....	9
5.1.2 Induction - Training and Awareness.....	9
5.1.3 Internal Reviews.....	9
5.2 Management measures for control of sediment and erosion.....	10
5.2.1 Outfall at the River Morell.....	10
5.2.2 Pipeline crossing at the River Morell.....	10
5.2.3 Pouring of concrete.....	10
5.2.4 Dust suppression.....	10
5.2.5 Contamination control.....	11
5.2.6 Silt Traps and Oil Separators.....	11
5.2.7 Stockpiles.....	14
6.0 MONITORING, REPORTING AND RECORDING.....	16
6.1 Monitoring Programme.....	16
6.1.1 Monitoring of water courses:.....	16
6.1.2 Wind Erosion Monitoring (Dust Monitoring):.....	16
6.1.3 Auditing Procedure.....	16
6.2 Reporting and Recording.....	16
7.0 COMPLAINTS.....	16
8.0 RECORDS.....	17
9.0 CONTINGENCY MEASURES.....	17
9.1 Sedimentation/erosion on site.....	17

**Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020**

9.2 Onset of Contamination from sediment or excessive erosion 17

ASPPENDIX A – EROSION AND SEDIMENT INDUCTION

1.0 INTRODUCTION

This Sediment and Erosion Control Plan has been prepared by Wills Bros to satisfy the requirement of the Schedule of Commitments contained in the Outline Construction Environmental Management Plan (OCEMP) and in particular, to prevent the release of sediment into the Morell River (e.g. cofferdams, sediment fences and silt curtains). The Sediment and Erosion Control Plan will be revised as required to confirm/update the details of construction provided within the document (e.g. actions and sediment control measures).

1.1 Project Overview

The Project involves the remediation of the Kerdiffstown Landfill site and development of the site as a multi-use public park. This is to be achieved by clearing and reprofiling the existing site, installing an engineered capping system, improving the management of landfill gas, leachate and surface water and the provision of landscaped and recreational areas. The site is approximately 30 hectares in size and is located at Kerdiffstown, Nass, Co. Kildare and project specifics include the following:

- Reprofiling of waste mounds to ensure the capping system works effectively and to facilitate the use of the site as a public park.
- Preparation and placing of a regulation layer in areas to be capped
- Installation of a permanent capping system across all existing waste areas to prevent rainfall infiltration, to manage surface water runoff, to reduce the production of leachate and to capture landfill gas.
- Installation of new systems to manage and control leachate and landfill gas which will include the construction of a dedicated landfill infrastructure compound and landfill gas flares (where extracted landfill gas is burned off).
- Construction of a leachate pipeline from the site, which will cross under the Morell river and N7 into Johnstown Pumping Station.
- Construction of a foul/wastewater pipeline connecting the site with Johnstown Pumping Station. This pipeline will run parallel to the leachate pipeline and will carry foul/wastewater from the site office and changing room building.
- Installation of surface water drainage to manage water on, and draining from, the site including surface water ponds and a surface water outfall point to the Morell River.
- Decommissioning of existing services, in particular an underground storage tank approximately 20m³ in capacity. There are also a large number of concrete structures (walls of former buildings) to be demolished.
- Processing of demolished concrete and other waste materials on site to produce engineering grade materials for re use on site.
- Development of a public park with multi-use sports pitches, car parking, a changing room building, children's playground and a network of paths across the site.
- Landscaping works across the site including grass seeding, planting of trees and shrubs, and ongoing maintenance period of the works.

1.2 Objectives

The objectives of this Sediment and Erosion Control Plan are:

1. To comply with construction requirements under the planning conditions.
2. To manage the risk of pollution from sediment to the adjacent watercourses.
3. To manage the risk of contamination from sediment on third party properties.
4. To manage the risk of contamination to the remediated landfill.

1.3 Document Review

The Erosion and Sediment Control Plan will be regularly reviewed during the lifetime of this project and updated to reflect changing conditions on site. Changes will be made subject to review taking into consideration of the conditions on site, and the effectiveness of the measures in controlling erosion and sediment on site. Any changes will be agreed with KCC and ER in advance through the normal communication channels.

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020

2.0 CONTACT DETAILS

Wills Bros Limited site management team will be responsible for ensuring that this Erosion and Sediment Control Plan is correctly implemented on site.

Contact details for Wills Bros Limited and Kildare County Council are provided below.

Contractor: Wills Bros Limited			
Address	Will Bros Ltd, Ballylahan Bridge, Foxford, Co. Mayo		
Contact	<p>██████████ EHS Manager</p> <p>██████████ EHS Officer</p>	Mobile	<p>██████████</p> <p>0 ██████████</p>
Telephone	094-9256221	e-mail	<p>████████████████████</p> <p>████████████████████</p>

Client: Kildare County Council			
Address	Áras Chill Dara, Devo Park, Naas, Co. Kildare, W9 X77F		
Contact	<p>Ultan Downes KCC Senior Executive Scientist</p> <p>James Mulligan KCC Senior Executive Engineer</p>	Mobile	<p>0879559494</p> <p>0863841655</p>
Telephone		e-mail	<p>udownes@kildarecoco.ie</p> <p>jmulligan@kildarecoco.ie</p>

3.0 LIMITING CRITERIA

3.1 Working Hours

Wills Bros Limited will comply with the working hours as set out in Appendix 1/13 programme of paragraph 3.b of Volume A1 – Works Requirements. WBL hours are from 08.00 to 18.00 Monday to Friday. Depending on the works during the project, WBL will work to the hours outlined in the contract as shown below on Monday to Friday.

Day	Time
Monday to Friday	07.00 to 19.00
Saturdays	08:00 to 14:00
Sundays and Bank Holidays	No Work Permitted

Wills Bros shall gain prior written approval for any intended out of hours works in accordance with the Contract requirements. Saturday work is not routine and will be;

- Co-ordinated with KCC and RPS
- Is on a “needs-must” basis

3.1 Erosion and Sediment Minimisation Requirements

The following requirements in accordance with the Works Requirements:

Appendix 1/75AR: Compliance with the Industrial Emissions Licence

Item 18

In compliance with Condition 3.9 of P1063-01, the Contractor shall install and maintain silt traps and oil separators at the Site as follows:

- a) Silt traps to ensure that all storm water discharges, other than from roofs, from the installation pass through a silt trap in advance of discharge;
- b) An oil separator on the storm water discharge from yard areas. The separator shall be a Class I full retention separator.

4.0 SEDIMENT AND EROSION AND EMISSIONS SOURCES

4.1 Definitions:

- **Sediment** is eroded material suspended in wind or water.
- **Sedimentation** is the deposition of this eroded material.
- **Erosion**, by definition is the process in which, by the actions of wind, rainfall or ice, soil particles are detached and transported. Erosion occurs in progressive stages.
- **Splash erosion** occurs when raindrop impact dislodges surface soils.
- **Sheet erosion** is when accumulated precipitation combines and flows in shallow “sheets” over the soil surface and cause soil particles to detach.
- As flow concentrates, small channels begin to form in the soil surface, which is **rill erosion**.
- When the runoff cuts rills deeper or several rills come together to form a large channel, it is called **gully erosion**.

Erosion is a naturally occurring process, but when land is disturbed for construction activities it erodes at much higher rates. The main factors that contribute to sediment and erosion are rainfall intensity, land slope and soil erodibility.

Environmental and Biological effects include the destruction of fish spawning areas, food sources and aquatic habitats within streams. Excessive sediments in lakes and ponds can cause fish kills by clogging their gills.

Erosion prevention practices protect the soil surface and prevent soil particles from being detached by rainfall or wind. These practices work to keep the soil in place. Erosion prevention is the preferred method because it treats soil as a valuable resource.

Sediment control practices trap soil particles after they have been dislodged and moved by wind or water. Sediment controls are generally passive systems that rely on settling particles out of the water or wind that is transporting them. Sediment control treats soil as a waste product and works to remove it from storm-water runoff.

Soil particles raised by site activities can be a source of sediment and erosion. This dust may be transported as a contaminant suspended in water (e.g. mud on the wheels of vehicles) or in air (e.g. dust from the haul roads).

5.0 MANAGEMENT MEASURES

5.1 General sediment and erosion management measures

5.1.1 Introduction

This section describes a number of general mitigation measures which will be implemented by Wills Bros to minimise the effects of sediment and erosion during the construction activities.

Some of the general recommendations are also included in more detail within the specific construction stages recommendations.

With reference to the sediment and erosion sources listed in 4.1 above, the following principles of prevention will assist proper selection, implementation and management of erosion and sedimentation:

1. Minimize the amount of area that is disturbed.
2. Protect the soil by keeping vegetation intact.
3. Minimize the amount of time the soil is exposed.
4. Time clearing and restoration in stages.
5. Minimize the amount of runoff flowing through disturbed areas within the site and off the site.
6. Minimize runoff velocity.
7. Filter and trap sediment.
8. Inspect and maintain control measures regularly to ensure maximum effectiveness.

5.1.2 Induction - Training and Awareness

The site induction, health and safety and environment training programmes will reinforce Wills Bros employees and sub-contractors of the need for controlling environmental performance at each works location. Control measures for sediment and erosion mitigation and sediment and erosion restoration methods will be specifically addressed during the site induction and training. All Wills Bros employees will have responsibility for preventing sediment and erosion damage from their work activities.

All site personnel working on site will be required to sign the online environmental induction document. This will be made available online through an online portal. In the event, that the online service is not accessible, a copy of the inductions will be made available on site and all site personnel will be required to sign this induction sheet. WBL will ensure that this environmental induction document is to be read and signed by all site personnel.

5.1.3 Internal Reviews

Review of work practices and on-site equipment to identify where practices can be improved will be performed prior to moving to new works locations as part of the site design and planning process and if sediment and erosion issues are identified. This process will involve:

On site management to identify the areas of sediment and erosion on the site and carry out daily and weekly inspections/audits to proactively anticipate environmental and sediment and erosion issues and instigate a resolution process and to ensure that previously identified control measures continue to be implemented.

5.2 Management measures for control of sediment and erosion

5.2.1 Outfall at the River Morell

The design of the outfall is to avoid disturbance of the natural bank and tie in with the existing rock armour. Control measures include:

1. Constructing surface water ponds (Pond 2 and 3, located within Zone 4) and a petrol interceptor provided to reduce the potential impacts of fine sediment input into the channel and excessive flows discharging from the outfall therefore minimising sediment input to the river; Wills Bros will erect a Silt Trap at the outfall of site drainage to the River Morell when the works have advanced to a point where they are required. These Silt Traps will consist of an excavation surrounded by clean stone wrapped in a filter material such as Terram through which the runoff from the site will be culvert.
2. Directing the outfall downstream and away from the banks to minimise the impact to flow patterns and minimising any potential risk of erosion (particularly on the opposite bank); by tying into existing rock armour
3. limiting the size and extent of headwalls where possible, reducing the potential impact on the banks.

5.2.2 Pipeline crossing at the River Morell

The initial design stated in the EIAR incorporating a gravity flow has being since superseded. The design will eliminate any interference of the Morell river at this point. There will be a minimum of 3m cover from the top of the pipe to the riverbed. Our Surface Water and Groundwater Management Plans will detail how silt and water will be managed during this phase of the works.

5.2.3 Pouring of concrete

Any pouring of cement for the provision of the outfall and/or pipeline crossings for the works will be carried out in the dry and allowed to cure for 48 hours before re-flooding. Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. A designated concrete wash out area will be set up on site or ideally if local supplier sourced, the vehicle should return to supplier yard for wash out. The designated concrete wash out area on the site is to be confirmed and will be updated in this plan.

5.2.4 Dust suppression

Dust control measures shall be implemented in line with the Dust Minimisation Plan section of the Site Construction Environmental Management Plan.

5.2.5 Contamination control

Existing waste will be exposed during remediation which may allow the infiltration of rainfall to the waste and result in contaminated run-off. This will be controlled by:

1. Working in discrete areas to minimise the area of exposed waste.
2. Interception of any leachate outbreaks identified during waste excavation and re-profiling activities.
3. Provision of daily cover to exposed wastes, occurring as part of the remediation works; and
4. Progressively remediating the site with a landfill cap.

When the site is cleared, a flood berm may be constructed at the downhill side of the site in order to intercept flood waters from transporting sediment from the landfill site to sensitive areas such as remediated sections of the landfill or watercourses. This berm shall be drained via the Silt Traps at via a drainage ditch or pipe as appropriate.

A wheel wash shall be established at the site exit. All vehicles should use this wheel wash if they have collected sediment from the site that may contaminate the public road. Access roads to the main compound should be kept clean in order to reduce the risk of contamination of vehicles and therefore reduce the risk of contamination of the road from contaminated vehicles.

5.2.6 Silt Traps and Oil Separators

Mitigation Measure (in compliance with Appendix 1/75AR, Item 18)

Figure 5-1 below shows our proposed set up for the existing wheel wash on site and how this will be utilised for cleaning LVGs and staff vehicles. A suitable system will be installed to manage the contaminated water and safe discharge of clean water infiltrating back into the ground. An outlet pipe will be fitted with an oil and silt dewatering bag. Water will be discharged to a suitable buffer zone as shown in the picture. A Geotextile lined pit backfilled with CL503 with the silt bag placed on top. This mitigation measure will reduce any risk of contaminated water infiltrating down into the groundwater. Any silt, solids or contamination at the bed of the tank be sucked out by a pump and tankered to a licensed facility for treatment.

Bowser power washer set up.



Oil & Silt De – Watering Sack

Contain Sediment and Oil Pumped out During Dewatering operations.

- Detains both oil and sediment, offering a combination of benefits not available in alternative dewatering bags.
- Standard and custom sizes available.
- Accommodates up to 4" discharge hoses.
- Helps comply with NPDES, 40 CFR 122.26 (1999) when used as Best Management Practice in Storm Water Pollution Prevention Plans.



Figure 5-1 Silt Trap Measure at Existing Wheel Wash

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020

Figure 5-2 below shows the proposed use of an oil boom in the existing concrete tank on site. The oil boom will capture oil or contaminants at this junction and prevent the discharge into the outlet pipe and reduce the infiltration into the groundwater from this area on. This tank will collect most of the surface water captured in the drainage system in Zone 2A.



OIL BOOMS



Oil boom to be placed at inlet of existing concrete tank.

Figure 5-2 Oil Boom in Existing Concrete Tank

Figure 5-3 below shows the gate valve in the existing concrete tank. This gate valve is fully functional and will be utilised when required, in the prevention of discharging contaminated water.



Figure 5-3 Gate Valve in Concrete Tank

5.2.7 Stockpiles

Appropriate management of excess material stockpiles to prevent siltation of watercourses through run-off during rainstorms shall be undertaken. This shall include allowing the establishment of vegetation on the exposed soil and surrounding stockpiles with cut-off ditches to contain any run-off and early planting of landscaping. Exposed slope will be minimised. Stockpiles will not be stored within 50m of a watercourse.

Stockpiles will be managed in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA 2009) <https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites> to ensure that surface water and groundwater are protected from contamination. As a minimum stockpile management will include:

1. Visual screening for potential contaminated materials.
2. Segregation of material suspected to be contaminated from clean materials.

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020

3. Stockpiling of materials at appropriate heights / batters to prevent potential instability.
4. Protection of stockpiled materials from scour / erosion.
5. The provision of adequate drainage to limit and control potential contaminated surface water runoff, including silt mitigation; and
6. The avoidance of un-necessary trafficking / handling of stockpiled materials. With the exception of topsoil (or soil forming materials), stockpile heights will be restricted to a maximum of 4m to facilitate adequate management during the works.
7. A reduced stockpile height of 2m will apply to any topsoil / soil forming materials to prevent possible degradation of soil structure

There will be existing stockpiles located on site to be removed and other areas at the southern end of the site re profiled. Some of this material will be moved to reprofile the existing waste mass.

WBL will ensure that stockpiles of excavated and recovered waste will be stored in designated areas, clearly labelled, appropriately segregated and appropriately protected against erosion, dust generation and burrowing animals.

Wills Bros will adopt a range of mitigation measures aimed at minimising sediment and erosion movement during the project construction phase. The timing and implementation of the controls will be dependent on the construction schedule, weather conditions and proximity to sensitive receptors.

6.0 MONITORING, REPORTING AND RECORDING

6.1 Monitoring Programme

As part of the Industrial Emissions Licence (IEL) attributed to the project, daily visual inspections of surface drainage, sediment control measures and watercourses will be undertaken by KCC site manager and Wills Bros. This is also undertaken to assess the effectiveness of control measures undertaken mentioned in section 5.0

6.1.1 Monitoring of water courses:

Weekly visual inspections of watercourses shall be carried out and recorded (i.e. at the Morell river).

This monitoring shall be carried out in line with the WBL Environmental Management Controls and associated record keeping.

6.1.2 Wind Erosion Monitoring (Dust Monitoring):

WBL will be responsible for the dust monitoring. Results will be made available to KCC to view at any time. Daily visual monitoring of dust will be carried out in accordance with the Dust Management Plan.

6.1.3 Auditing Procedure

Regular audits of these monitoring procedures shall be carried out in line with Wills Bros inspection (Weekly) and auditing requirements (internal and external audits)

6.2 Reporting and Recording

Any issues arising from the monitoring programme should be reported and addressed according to their urgency and in consultation with Kildare County Council site manager and RE/ER.

All sediment and erosion monitoring reports (if applicable) shall be maintained at site offices and made available for inspection at all times.

7.0 COMPLAINTS

Should complaints be made regarding the effect on the surrounding lands from the work, they will be treated by Wills Bros in a constructive manner. The specific procedures shall include (but not be limited to):

- Notification of complaints to KCC Site Manager and RE/ER, complaints protocol followed.
- Inspection of the location from which the complaint originated.
- Comparison of the measured levels with limiting criteria.
- Identification of engineering control or management procedure (if appropriate) to be adopted to reduce the levels at the complainant location
- Each complaint will be thoroughly investigated, and appropriate remedial action carried out promptly.
- Where corrective measures have been taken, the complainant will be updated by Wills Bros of the corrective action implemented.

8.0 RECORDS

All records and documents associated with monitoring of the Works shall be retained by Wills Bros. Information retained shall include:

- a) All monitoring data collected.
- b) Maintenance schedules and records for the maintenance of the instrumentation and the monitoring systems; and
- c) Records of systems checks and testing, and commissioning carried out.

9.0 CONTINGENCY MEASURES

9.1 Sedimentation/erosion on site

Where there is excessive sediment/erosion recorded at a location or identified at any location within the site but no apparent signs of contamination then the following shall be carried out:

1. All construction activities shall cease within the affected area.
2. Increased monitoring at the location shall be carried out. Repairs are to be carried out as required or protection measures should be put in place. The area will be monitored, as appropriate, until such time as the threat of contamination has receded.
3. Re-commencement of limited construction activity shall only start following inspection.

9.2 Onset of Contamination from sediment or excessive erosion

Where there is the onset or actual contamination due to sediment or erosion (e.g. a build-up of contaminated water in berms close to watercourses) then the following shall be carried out.

1. On alert of a sediment/erosion incident, all construction activities will cease and all available resources will be diverted to assist in the required mitigation procedures.
2. Where considered possible reinforcing action will be taken to prevent sediment from reaching a watercourse/road/property. This will take the form of the construction of berms on land or other temporary storage or diversion of contaminated water to a suitable filtration area.
3. For a localised sediment/erosion instance that does not represent a risk to a watercourse/road/property and has essentially settled, the area will be monitored, as appropriate, until such time as appropriate control measures have been put in place.

APPENDIX A
Erosion and Sediment Induction

**Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Erosion and Sediment Control Plan
November – 2020**

Erosion and Sediment Induction

All site personnel will be made aware of the environmental impact of Erosion and Sediment issues on site.

Avoid environmental harm: large amounts of silt suspended in water can suffocate fish by blocking their gills, remove essential oxygen from the water and kill plants, animals and insects living in the water by stopping sunlight reaching them.

Silt can often combine with other contaminants such as oils and chemicals potentially causing greater pollution than silt alone

DON'T dewater any excavation without getting approval from your Supervisor as to where to discharge too

DON'T pump silty water directly into rivers, ditches or surface water drains

DON'T strip land of vegetation unless absolutely necessary, vegetation natural stops silt run off

DON'T store soil, stone or similar materials within 50 metres of watercourses or drains

DON'T dig a grip to release ponded water to a watercourse

DO

The installation of silt fences to prevent release of sediment into the nearby watercourses

Dust minimisation on site to be in line with Dust Management Plan

Monitoring of watercourses