

APPENDIX 1C

PUBLIC CONSULTATION WITH STATUTORY BODIES / COMMUNITY GROUPS

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Development Applications Unit
National Monuments Service
Dun Scéine
Harcourt Lane
Dublin 2

October 5th 2004

Roadstone Dublin Ltd. ("Roadstone Dublin")
Remediation of Unauthorised Landfill Sites at Blessington, Co. Wicklow

Dear Sirs,

Roadstone Dublin is to apply to the Environmental Protection Agency for a remediation Waste Licence to deal with unauthorised waste deposits on its lands at Blessington.

The total amount of unauthorised Domestic Commercial and Industrial (DCI) waste buried at the site is estimated by both Roadstone Dublin and Wicklow County Council to be approximately 50,000 tonnes. In addition an estimated 60,000 tonnes of largely inert construction and demolition (C&D) waste was also identified. The predominant source of the DCI waste was businesses located in the surrounding West Wicklow / East Kildare area. No significant amount of waste originated outside this area.

Roadstone Dublin is deeply upset that the dumping took place. The Company is now addressing its responsibility in cleaning up the site.

Following detailed investigations and technical assessments of unauthorised waste deposits on Roadstone Dublin lands at Blessington, Co. Wicklow, the Company, under the direction of and in consultation with the relevant technical and regulatory authorities has investigated all possible remediation measures.

As part of the regulatory process, a Section 55 Notice, under the Waste Management Act, has been issued by Wicklow County Council requiring Roadstone Dublin to apply to the

Environmental Protection Agency for a remediation Waste Licence to deal with unauthorised waste deposits on its lands at Blessington.

The principal elements of Roadstone Dublin's remediation scheme are:

- The removal of the waste from the three areas in which it has been deposited,
- On-site segregation and recycling where possible
- Removal of any hazardous waste found to off site licensed facilities
- Deposition of the remaining non-hazardous material in a fully monitored and engineered remediation landfill on Roadstone Dublin's lands.

This Waste Licence will be used to deal with the unauthorised material already on site only. There is no intention to operate a commercial or public landfill site now or in the future and the remediation landfill will be permanently capped on completion of the works.

The design and construction of the remediation landfill will comply with the Environmental Protection Agency's guidelines for such facilities.

Rigorous standards have been set by the relevant authorities to ensure that the waste is dealt with in an appropriate manner. Roadstone Dublin is following all guidelines and legal requirements to ensure that the local environment is fully protected.

Roadstone Dublin wishes to assure all concerned parties that it will follow best practice throughout the remediation process and has retained expert international consultants to advise on this.

To date comprehensive monitoring, sampling and environmental controls has shown there has been no impact on the local water supply. Roadstone Dublin will continue to operate this monitoring regime to ensure the ongoing protection of the local environment, water supply and air quality.

Enclosed is a copy of 'Consultation document on remediation of unauthorised landfill sites at Blessington, Co. Wicklow', on which Roadstone Dublin invites observations and comments.

Yours sincerely,

ROADSTONE DUBLIN LIMITED

CONSULTATION DOCUMENT

ON

REMEDICATION OF UNAUTHORISED LANDFILL SITES

AT

BLESSINGTON, CO. WICKLOW

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OCTOBER 2004



Prepared by :
John Barnett and Associates
7 Dundrum Business Park
Windy Arbour
Dublin 14

Prepared for :
Roadstone Dublin Limited
Fortunestown
Dublin 24

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1 EXECUTIVE SUMMARY

1.1 Background

Between December 2002 and February 2003, Wicklow County Council with full cooperation from Roadstone Dublin Limited ("Roadstone Dublin") undertook an environmental investigation of lands owned by Roadstone Dublin north-west of Blessington, Co. Wicklow. The investigations, in Dillonsdown, Deerpark and Newpaddocks townlands, were undertaken in response to allegations that unauthorised disposal of waste had occurred there in the past and uncovered domestic, commercial and industrial waste (DCI) at three separate areas within Roadstone Dublin's landholding.

The total amount of unauthorised DCI waste buried at the site is estimated by both Roadstone Dublin and Wicklow County Council to be approximately 50,000 tonnes. In addition an estimated 60,000 tonnes of largely inert construction and demolition (C&D) waste was identified. The predominant source of the DCI waste was businesses located in the surrounding West Wicklow / East Kildare area. No significant amount of waste originated outside this area.

Following discovery of the buried waste, Wicklow County Council issued notices under Section 55 of the Waste Management Acts (1996 to 2003) in July 2003, October 2003 and January 2004. These required Roadstone Dublin to submit details of

- (i) its environmental risk assessment and risk management strategy and
- (ii) its proposed remediation scheme

Roadstone Dublin responded to each of these notices as directed.

After further detailed environmental investigation and evaluation by its technical advisors, Roadstone Dublin concluded that its remediation strategy for the unauthorised landfill sites should provide for excavation and removal of the buried waste, processing of the excavated waste by segregation and recycling and transfer of the residual non-hazardous waste to a remediation landfill within the existing landholding.

Wicklow County Council issued a supplementary Section 55 Notice in July 2004, which indicated that

- (i) it considered that the proposed remediation scheme provides an appropriate method to remedy the site;
- (ii) Roadstone Dublin should make application to the Environmental Protection Agency (EPA) for a waste licence in respect of the proposed remediation scheme and
- (iii) the remediation scheme should conform to a number of specified requirements.

The proposed remediation landfill facility will only be used for the remediation of the unauthorised landfills on Roadstone Dublin's landholding. No importation of waste will be permitted under any circumstances.

1.2 Public Consultation

Existing legislation requires an Environmental Impact Statement (EIS) to be prepared and submitted in support of a Waste Licence Application for both the proposed remediation of the unauthorised landfill sites and the development of a remediation landfill. Both are currently under preparation by Roadstone and its technical and planning advisors.

In line with established best practice, Roadstone Dublin is consulting the relevant statutorily nominated bodies and local representative organisations on the proposed remediation scheme.

The purpose of such consultation is to

- (i) identify public concerns about the potential impact of the scheme on the surrounding natural, cultural and built environment and
- (ii) ensure that these concerns are addressed in the Environmental Impact Statement being prepared in support of the Waste Licence Application to be submitted to the Environmental Protection Agency.

1.3 Proposed Remediation Scheme

The proposed remediation scheme for the unauthorised landfill sites on Roadstone Dublin's lands at Blessington, Co. Wicklow involves:

- (i) Prior removal of perched water from boreholes within the domestic commercial and industrial (DCI) waste at the unauthorised landfill sites (Areas 1, 4 and 6) and transport off-site to an approved wastewater treatment facility.
- (ii) Construction of sumps in advance of the excavation works to facilitate collection and extraction of any residual leachate;
- (iii) Excavation and removal of all DCI waste from the unauthorised landfill sites. This will include excavation and removal of 0.5m thickness of soil above, below and around the waste. Soil remaining in-situ will be subject to testing to confirm it is not contaminated.
- (iv) Segregation, temporary storage and classification testing of potentially hazardous waste (identified by visual inspection, in-situ monitoring and testing of the excavated DCI waste) at a designated waste inspection and quarantine facility.
- (v) Transfer of any hazardous material which is not acceptable at the engineered remediation landfill to off-site licensed hazardous waste recycling / disposal facilities.
- (vi) Segregation of any significant volumes of construction and demolition (C&D) waste, encountered during excavations for recycling (either on-site or off-site) or deposition in the engineered remediation landfill, as appropriate;
- (vii) Transfer of residual non-hazardous DCI waste to an engineered remediation landfill within Roadstone Dublin's landholding, south of the unauthorised landfill site at Area 1;
- (viii) Restoration of Areas 1, 4 and 6 using appropriate excavated soils overlying the waste bodies and excess overburden materials arising from construction of the remediation landfill;
- (ix) Capping of the remediation landfill and restoration to grassland;
- (x) Environmental monitoring (of surface water, groundwater and landfill gas) using the existing groundwater monitoring infrastructure around Areas 1, 4 and 6 and additional monitoring infrastructure to be installed at, around and down hydraulic gradient of the engineered cell.

The purpose of the remediation scheme is therefore to eliminate any risk to local groundwater supplies in and around Blessington and the risk of landfill gas migration to surrounding development (existing and proposed).

1.4 Remediation Landfill

The site of the remediation landfill within Roadstone Dublin's landholding was selected having regard to the following criteria:-

- (i) Provide a minimum 250m standoff from the landfill (at closest point) to any inhabited dwelling;
- (ii) Provide maximum possible depth of unsaturated soil between the base of the remediation landfill and the groundwater table in order to afford extra protection to the underlying water-bearing strata and satisfy requirements for landfill location set out in EPA guidelines;
- (iii) Minimise potential conflict with aggregate extraction / processing operations;
- (iv) Minimise the amount of HGV traffic generated on public roads by waste transfer;
- (v) Minimise visual impact on landscape.

The design of the lining system for the remediation landfill exceeds the requirements for a residual non-hazardous biodegradable landfill set out by the Environmental Protection Agency and the European Landfill Directive (Council Directive 1999/31/EC).

1.5 Submissions

This consultation document explains the need for the proposed remediation scheme and presents the principal findings of studies undertaken to date. It describes the proposed remediation scheme for the unauthorised landfill sites on Roadstone Dublin's landholding in Blessington Co. Wicklow, presents details of the proposed remediation landfill facility and identifies the principal environmental impacts thereof.

Roadstone Dublin invites observations and comments on the proposed remediation scheme. Written submissions should be made on or before **Friday 22 October 2004** to

Roadstone Dublin Limited
P.O. Box 9948
Dublin 24.

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2. NEED FOR THE PROPOSED REMEDIATION SCHEME

2.1 Environmental Investigations 2002 / 2003

Between December 2002 and February 2003, Wicklow County Council with full cooperation from Roadstone Dublin undertook an environmental investigation of lands owned by Roadstone Dublin in Dillonsdown, Deerpark and Newpaddocks townlands in response to allegations that unauthorised waste disposal had occurred there in the past.

The environmental investigation comprised excavation of deep trial pits (up to and in excess of 15m deep) at eight separate areas, all of which were restored (i.e. backfilled) sand and gravel pits. The location and extent of the company's landholding, known locally as 'Doran's Pit', is shown on an extract from the 1:50,000 scale Ordnance Series Discovery Series map in Figure 1.

Wicklow County Council's investigation uncovered domestic, commercial and industrial waste (DCI) at three separate areas on Roadstone Dublin's landholding, specifically at Area 1 in Dillonsdown, at Area 4 in Deerpark and at Area 6 in Newpaddocks. The location of the unauthorised landfill sites within the landholding are shown in Figure 2 (1:12,500 scale)

The unauthorised disposal of DCI waste on Roadstone Dublin's landholding at Blessington was undertaken by third parties without its knowledge or consent. Neither Roadstone Dublin nor any CRH Company made, or will make, any gain whatsoever from these unauthorised activities. Roadstone Dublin has, at all times, fully co-operated with and supported the investigations of both Wicklow County Council and the Gardaí.

Following Wicklow County Council's initial investigations, Roadstone Dublin commissioned additional hydrogeological, geotechnical and environmental investigations at each of the unauthorised landfill areas. The objective of these investigations was to obtain sufficient data to assess the potential risk to environmental receptors (principally surface water, groundwater and air) presented by the buried waste. The scope of the investigations was agreed in advance with Wicklow County Council and its technical advisors and was supervised by them.

The principal findings of the investigations undertaken on Roadstone Dublin's landholding were:

- (i) The amount of unauthorised DCI waste buried at the site is estimated to be approximately 50,000 tonnes;
- (ii) Additional inert construction and demolition (C&D) waste, mainly rubble was uncovered, and is estimated at 60,000 tonnes;
- (iii) The total amount of waste buried at the site concurs with Wicklow County Council's estimate of 110,000 tonnes;
- (iv) Slow decomposition of the DCI waste has begun, signified by some landfill gas odour at most of the areas where buried DCI waste was encountered.
- (v) The predominant source of the DCI waste was businesses located in the West Wicklow / East Kildare area. The waste was mainly buried during the 1990's and up to 2001.

2.2 Environmental Risk Assessment

In March 2003, Roadstone Dublin appointed environmental consultant Parkman (now Mouchel Parkman) to assess the risk (if any) to the environment using all available hydrogeological and hydrochemical data acquired during the environmental investigations. They presented their report in August 2003.

The environmental risk assessment was undertaken to identify:

- (i) if any contamination from the buried DCI waste will travel in the underground water (aquifer or groundwater) to water wells supplying drinking water or to streams, rivers, ponds or lakes (surface water) at concentrations greater than allowed in drinking water or above levels protective of aquatic life;
- (ii) if the generation and migration of landfill gas (methane and carbon dioxide) presents a risk to nearby property;
- (iii) appropriate remediation strategies based on the environmental risk assessment.

The risk assessment report (Parkman, August 2003) was forwarded to the Regulatory Authorities (Wicklow County Council and the Environmental Protection Agency) in accordance with notices issued under Section 55 of the Waste Management Acts 1996-2003. The findings of the environmental risk assessment on Areas 1, 4 and 6 for water and landfill gas were as follows:

- Water*
- No current risk to existing drinking water supplies has been identified
 - The future risks posed to existing drinking water and surface water resources are generally low and should a risk arise, it may be many decades before it would occur. This allows adequate time to monitor the situation and take preventative measures / remedial actions.
- Landfill Gas*
- When assessed against Irish Department of the Environment Guidelines there is a potential risk to housing close to Area 6 from landfill gas;
 - Areas 1 and 4 do not pose such a risk;
 - There is no risk to human health from potentially volatile chemicals within the buried waste.

The purpose of the remediation scheme is therefore to further reduce or completely eliminate the risks.

2.3 Environmental Risk Management Strategy

Following on from the Environmental Risk Assessment, Parkman recommended the following actions. Current progress in addressing these recommendations is provided in bold italics:

- (i) As a precautionary measure a temporary vent trench should be constructed in Area 6 on the southeast / southwest sides of the site to prevent potential lateral migration of landfill gas generated by the DCI waste.
This was constructed in November / December 2003.
- (ii) A number of passive vents should be installed within the waste body in Area 6 to encourage the upward migration and safe escape of landfill gas from the waste body.
These were installed in December 2003 / January 2004.
- (iii) An environmental monitoring programme for the site should be put in place, which covers surface water, groundwater and gas monitoring in agreement with the Environmental Protection Agency and Wicklow County Council.
Monitoring has been in place since Spring 2003, and continues in accordance with the scope defined in the Environmental Monitoring Programme (August 2003) submitted to, and agreed by Wicklow County Council.
- (iv) Monitoring of groundwater and surface water should continue until such a time that the Regulatory Authorities are satisfied that there is no risk to groundwater, surface water and drinking water supplies. The scope of the monitoring programme will be defined by the EPA as part of the waste licensing process.
Monitoring programme in place as described in (iii) above.

The environmental risk management strategy prepared by Parkman identified two potential remediation options for the unauthorised landfill sites on Roadstone Dublin's landholding:-

Option 1 required the removal of buried waste from Area 6 to Area 1, capping of Areas 1 and 4 and establishing a long-term groundwater monitoring regime to monitor groundwater quality.

Option 2 required the removal of all buried waste in Areas 1, 4 and 6 to an engineered remediation landfill elsewhere on Roadstone Dublin's landholding.

Although the risk management strategy undertaken by Parkman indicated that the risks associated with Option 1 were acceptably low, Roadstone Dublin concluded that it would be preferable to excavate and remove the buried DCI waste from the unauthorised landfill sites, process and transfer it to a remediation landfill within its landholding.

3. THE SITE

3.1 Site Location

The site to which the Waste Licence Application refers is located within Roadstone Dublin's landholding, north of Blessington, Co. Wicklow. The plan extent of the company's landholding is outlined in blue on Figures 1 and 2. For the purposes of the Waste Licence Application, the 'Application Area' comprises the three areas where unauthorised waste was uncovered, the site of the proposed remediation landfill and the interlinking road network. The plan extent of the proposed application site is outlined in red on Figures 1 and 2.

3.2 Site Description

Roadstone Dublin's total landholding at Blessington currently comprises 267 hectares (643 acres). At the present time, the company extracts sand and gravel from an area in excess of 200 acres to the west of the N81 National Secondary Road. The excavated materials are transferred by conveyor, under the N81, for processing at the washing and screening plant in Doran's Pit on the eastern side of the N81.

Reserves of sand and gravel in some areas of the company's landholding have been completely worked out and the company has progressively restored these areas to agricultural and forestry use. To date, approximately 53 hectares (130 acres) have been restored to agricultural use, with a further 60 hectares (147 acres) restored to forestry.

3.3 Site Access

At the present time, public road access to Roadstone Dublin lands is principally via the N81 National Secondary Road. Access to the lands may also be gained via a minor county road to the north of the application site, known locally as 'Darkers Lane'. There are extensive rights of way to the land. Traffic movement within the landholding itself is via a network of unpaved haul roads.

3.4 Planning History

At the present time, Roadstone Dublin is extracting sand and gravel at a 6 hectare (15 acre) site at Glen Ding ridge, on the western side of the N81 National Secondary Road. This activity is proceeding on foot of a planning permission originally granted by Wicklow County Council in July 1970 and a more recent planning permission granted by Wicklow County Council in December 1999.

Roadstone Dublin submitted a planning application to Wicklow County Council in June 2001 to relocate the washing and screening plant from Doran's Pit on the eastern side of the N81 National Secondary Road, to a site on the opposite side of the road in Deerpark townland, in the middle of the company's landholding, closer to where existing sand and gravel extraction takes place. Following the discovery of buried waste at the application site in January 2003, Roadstone Dublin requested an extension of time so that site remediation measures could be agreed and implemented. This request was acceded to by Wicklow County Council.

Planning permission was granted to Cookehill Limited by Wicklow County Council in August 2002 to construct the northern part of the Blessington Inner Relief Road across part of the Roadstone Dublin lands fronting onto the existing N81. Part of the new road runs in cutting through the unauthorised landfill site in Newpaddocks townland (Area 6).

3.5 Surrounding Land Use

At its closest point, Roadstone Dublin's landholding lies approximately 700m north-west of the village of Blessington, Co. Wicklow. The surrounding land use is varied, with recent housing and industrial development located immediately beyond the southern and south-eastern corner of the landholding. The lands to the south-west of the landholding are forested and provide an important local amenity at Deerpark Wood.

A number of other sand and gravel companies operate from sites adjacent to the Roadstone Dublin landholding. These include J.W Carnegie and Co. to the north-west and Hudson Brothers to the east. The sand and gravel pits at Blessington are a major source of sand and gravel used in the production of construction materials in the Greater Dublin area.

The other lands surrounding Roadstone Dublin's landholding are used for agricultural purposes, mainly pastoral grazing of sheep and cattle, and forestry.

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4 REMEDIATION SCHEME

4.1 Principal Elements

The proposed remediation scheme for the unauthorised landfill sites on Roadstone Dublin's lands at Blessington, Co. Wicklow involves:

- (i) Prior removal of perched water from boreholes within the domestic commercial and industrial (DCI) waste at the unauthorised landfill sites (Areas 1, 4 and 6) and transport off-site to an approved wastewater treatment facility. Perched water is water held at an artificially high level above the groundwater, normally by a low permeability layer.
- (ii) Construction of sumps in advance of the excavation works to facilitate collection and extraction of any residual perched water.
- (iii) Excavation and removal of all DCI waste from the unauthorised landfill sites. This will include excavation and removal of 0.5m thickness of soil above, below and around the waste. Soil remaining in-situ will be subject to testing to confirm it is not contaminated.
- (iv) Segregation, temporary storage and classification testing of potentially hazardous waste (identified by visual inspection, in-situ monitoring and testing of the excavated DCI waste) at a designated waste inspection and quarantine facility. Hazardous waste is for example, tyres, oil and grease containers, car batteries and vehicle components, such as oil filters, and empty chemical containers. These were found in very small quantities during the original investigations by Wicklow County Council.
- (v) Transfer of any material which is not acceptable at the engineered remediation landfill off-site to licensed waste recycling / disposal facilities.
- (vi) Segregation of any significant volumes of construction and demolition (C&D) waste, encountered during excavation of the DCI waste for recycling (either on-site or off-site) or deposition in the engineered remediation landfill, as appropriate;
- (vii) Transfer of residual non-hazardous DCI waste to an engineered remediation landfill within Roadstone Dublin's landholding, south of the unauthorised landfill site at Area 1;
- (viii) Restoration of Areas 1, 4 and 6 using appropriate excavated soils overlying the waste bodies and excess overburden materials arising from construction of the remediation landfill;
- (ix) Capping of the remediation landfill and restoration to grassland;
- (x) Environmental monitoring (of surface water, groundwater and landfill gas) using the majority of the existing groundwater monitoring infrastructure around Areas 1, 4 and 6 and additional monitoring boreholes to be installed at, around and down hydraulic gradient of the engineered cell.

The engineered remediation landfill will ONLY be used for the remediation of unauthorised landfills on this site and no importation of waste will be permitted under any circumstances.

4.2 Waste Removal

4.2.1 Excavation of Buried Waste

The proposed remediation works at each of the three unauthorised landfill areas on Roadstone Dublin's lands at Blessington essentially comprises

- (i) excavation and removal of all buried domestic, commercial and domestic waste from unauthorised landfills at Areas 1, 4 and 6;
- (ii) segregation and transfer of unacceptable waste off-site
- (iii) recycling and temporary stockpiling of construction and demolition waste
- (iv) transfer of residual non-hazardous waste to the engineered remediation landfill.

At each of the three unauthorised landfill areas, site preparatory works will include construction of approximately 3m to 5m high earth mounds around the boundary using the inert soils overlying the main body of waste to screen on-site activities from external view and provide additional security and safety.

If significant volumes of construction and demolition waste are mixed through the overburden soil, it will be transferred to the recycling areas east of the unauthorised landfill at Area 4, where it will be passed through a mobile trommel screen fitted with a series of large screening grids and magnets to draw off any recyclable concrete or metal waste. Large boulders, concrete blocks, metal panels, large tyres and other waste which may be too large to pass through the trommel, will be removed by excavation plant and stockpiled separately to overburden soil. Segregated material will be transferred by public road to suitably licensed recovery facilities. Where practicable, oversize stone and concrete waste will be stockpiled on-site for future crushing and/or re-use.

A programme of soil sampling and validation testing will be established on-site to confirm that separated overburden soils are inert and free of contamination before they are re-used for site restoration and reclamation works.

A minimum of 150mm of soil will be left in place over the main body of domestic, commercial and industrial waste prior to its excavation and removal, in order to prevent windblown litter, odours etc. Where necessary, any existing leachate within the waste bodies will be removed by active pumping from existing boreholes to a mobile tanker prior to excavation and transferred to an approved / agreed treatment plant. Sumps will be constructed in advance of excavation works to facilitate collection and extraction of any residual leachate within the waste bodies.

The DCI waste in each area will be excavated in a systematic and controlled manner ('strip mining') using conventional tracked excavation plant.

If the excavated DCI waste is considered on the basis of visual inspection, in-situ monitoring and testing to be non-hazardous, it shall be placed directly onto sealed (watertight) dump trucks, covered and immediately transferred to the remediation landfill.

Where visual inspection, in-situ monitoring and testing indicates the presence of potentially hazardous or unacceptable material within the excavated DCI waste, it shall be segregated, placed onto sealed trucks and transferred to the enclosed waste inspection and temporary quarantine area for more detailed testing. Any material which is not acceptable at the remediation landfill will be transferred off-site to an appropriately licensed hazardous waste disposal or recycling facility.

During excavation operations, the area of waste exposed to the atmosphere will be minimised in order to limit odour emissions. Exposed waste will be covered at the end of each working day with available soil cover or alternatively, with hessian, impermeable PVC sheeting or recovered construction and demolition waste.

Excavation side slopes will be benched and graded as necessary to prevent instability. The width and gradient of temporary access roads into each excavation will be sufficient to ensure safe access and egress of plant and personnel. A programme of gas monitoring will be established around and within each excavation to monitor ambient concentrations of landfill gas and to safeguard the health and safety of site staff and operatives.

In order to minimise dust emissions at each excavation area, water from a tractor drawn bowser will be sprayed as and when required.

Waste excavation, removal, transfer, landfilling and processing and temporary storage activities will only be undertaken between 07.30 hours and 17.30 hours Monday to Friday and 08.00 hours to 13.00 hours on Saturdays. No works will be undertaken on Sundays or public holidays.

4.2.2 Waste Transfer

Roadstone Dublin will be responsible for overall operational control of the remediation landfill. Site management and direction of landfilling activities will be undertaken by Roadstone Dublin personnel, assisted as necessary by appropriately qualified and experienced technical advisors.

All waste unloaded from trucks at the remediation landfill will be visually inspected by qualified staff to ensure that no hazardous waste or other unacceptable waste is placed within it. Any potentially unacceptable waste identified amongst the existing buried waste will be segregated

and brought to the waste quarantine area for further testing. Any material which is not acceptable for disposal at the non-hazardous remediation landfill will be removed off site to a suitably licensed hazardous waste disposal or waste recycling facility.

4.3 Remediation Landfill

The engineering design of the remediation landfill has been carried out in accordance with the Environmental Protection Agency's (EPA) Guidance on Landfill Site Design on the basis that the waste to be placed within the repository is classified as non-hazardous, biodegradable. In recognition of possible local concerns about potential groundwater contamination, the design of the basal lining system for the remediation landfill exceeds the requirements set out in EPA guidance documents.

The dimensions of the cell are dictated by the requirement to create a void sufficient to accommodate the volume of waste identified by the environmental investigations undertaken in 2003 plus an allowance for intermixed and contaminated soils and some C&D waste that may be intermixed with, or encountered during the excavation of, DCI waste.

4.3.1 Construction Duration

It is currently envisaged that the basal and formation works for the remediation landfill facility and the associated long-term infrastructure (such as the surface water management system) will be constructed in one phase by an externally appointed Works Contractor in three to four months. Thereafter, the buried waste will be excavated in sequence at Areas 4, 6 and 1 using plant and equipment owned or leased by Roadstone Dublin and operated by its employees or external Contractors. It is currently estimated that these works will take a further four to six months. The final phase of the works, final landfill capping and restoration will be undertaken by an external Works Contractor. This work is expected to take no more than one to two months.

4.3.2 Material Requirements

Roadstone Dublin will source natural drainage stone from its own sand and gravel processing facility at Doran's Pit, on the opposite side of the N81 to the remediation landfill. Topsoil and subsoil will be sourced from ongoing restoration works on sand and gravel pits on its lands at Blessington. A suitable source of clay liner material has been identified off-site (glacial till) at the Applicant's Huntstown Quarry in North Dublin and will be imported by road. Other materials, including geosynthetic liners, geotextiles, pipework etc. will be imported by road.

4.3.3 Removal of Materials Off-Site

Any hazardous waste contained within the excavated DCI waste bodies will be removed to off-site licensed facilities. Any water or perched water collecting in sump excavations within Areas 1, 4 or 6 or by the leachate management system at the remediation landfill will be pumped to a mobile tanker and transferred off-site to an approved treatment facility.

4.3.4 Formation Levels and Gradients

The topography of the preferred location for the remediation landfill currently provides a relatively flat area bounded on the eastern and western sides by existing slopes formed in sand and gravel. To create the required formation for the remediation landfill, excavation and filling will be required to generate the basal falls and side slopes, refer to Figure 3.

4.3.5 Bund Design

Around the western boundary of the remediation landfill, containment is provided by a bund constructed as part of the lining system. A bund has also been used to split the basal area of the remediation landfill into two cells. Containment bunds will be formed from clay liner material to a height of 2m and overlain with the geomembrane, geotextiles and the leachate drainage layer. Cross-sections through the containment / internal bunds are provided on Figure 3.

4.3.6 Capacity

The remediation landfill has been designed to provide a storage capacity of up to 175,000m³. Ultimately however, it is expected that the total volume of waste placed at the remediation landfill will be less than that provided for in the engineering design. No waste will be imported from outside the site.

4.3.7 Basal and Side Slope Liner Design

The design of the lining system exceeds the requirements for a residual non-hazardous biodegradable landfill set out by the Environmental Protection Agency in its publication 'Landfill Manuals – Landfill Site Design' which interprets the European Landfill Directive (Council Directive 1999/31/EC). The proposed lining system shall comprise the following elements:

- (i) geotextile separator to prevent fine-sized particles (clay and silt) being washed out of the waste into the underlying leachate drainage blanket;
- (ii) 500mm thick leachate drainage blanket with a minimum permeability 1×10^{-3} m/s to collect leachate produced by the degradation of the DCI waste;
- (iii) geotextile protection layer to reduce strain applied by the drainage stone to the underlying geomembrane as waste is placed
- (iv) 2mm thick HDPE geomembrane liner to contain leachate
- (v) geosynthetic clay liner comprising a bentonite layer, approximately 6mm thick between two layers of geotextile. (This liner provides enhanced protection, over and above that specified for non-hazardous engineered landfills in EPA guidance documents).
- (vi) 1m thick clay liner of maximum permeability (k) 1×10^{-9} m/s.

The construction of the remediation landfill will be subject to a process of construction quality assurance (CQA) by an external independent consultant appointed by Roadstone Dublin. Details of CQA procedures to be implemented on site will be set out in a CQA Plan to be approved by the Environmental Protection Agency.

4.3.8 Leachate Management System

The volume generated within the proposed remediation landfill is expected to be too low to require provision of an on-site leachate storage or treatment facility.

Any leachate produced within the lined remediation landfill will be collected by a leachate drainage blanket and herringbone pipework system and will flow to submersible pumps at leachate extraction wells (see Figure 3). Leachate will be transferred from the wells directly to road tankers and taken off-site to an approved treatment facility, most likely an existing local wastewater treatment plant. Notwithstanding this, provision will also be made in the design for recirculation of the leachate within the waste body, should it be required. Leachate will not be allowed to rise in excess of 1m above the base of the landfill.

4.3.9 Gas Management System

The predicted volume of gas produced by the DCI waste transferred to the remediation landfill will be insufficient to support a generation unit and also be insufficient to support flaring.

In line with EPA guidance, the design of the remediation landfill has incorporated details for the passive venting of gas from beneath the capping system. The volume of gas released to the atmosphere is likely to be relatively low and will be significantly diluted. However, it is intended that the proposed passive venting system will have the capability to connect the vents to a small flare should monitoring ever indicate that landfill gas production rates are sufficiently high.

Passive vents will comprise 180mm diameter perforated HDPE pipe installed through the waste body in a 300mm diameter bore, backfilled with pea gravel, connected to 180mm diameter solid HDPE pipes protruding through the capping layer and extending approximately 1.5m to 3m above ground level.

4.3.10 Capping and Restoration

In accordance with EPA Guidance, the permanent capping system will comprise the following elements:

- (i) 150mm thick topsoil layer
- (ii) 850mm thick subsoil layer
- (iii) 500mm thick drainage layer of minimum permeability 1×10^{-4} m/s
- (iv) 1mm thick linear low density polyethylene (LLDPE) geomembrane over
- (v) a geosynthetic clay liner (GCL) and
- (vi) a 300mm thick gas collection layer of minimum permeability 1×10^{-4} m/s.

Suitable restoration soils and materials for each of the drainage layers will be sourced elsewhere within the Doran's Pit site. A detailed specification and construction quality assurance (CQA) procedure covering the supply and installation of materials used in the capping and restoration will be set out in a CQA Plan similar to that developed in respect of the basal and side slope liner.

4.4 Site Infrastructure

The following site infrastructure is in place or will be put in place as part of the remediation scheme:

4.4.1 Site Security

During the site remediation works, all materials and plant will access the site via the existing gate entrance fronting onto the western, northbound carriageway of the N81 National Secondary Road. For the duration of the construction works and the filling and capping operations, manned security will be provided at gates on a 24 hour / 7 day basis. Site security cameras (operational 24 hours/day) and lighting will also be fixed to the roof of a temporary site office adjacent to the remediation landfill.

4.4.2 Site Roads and Parking Areas

The HGV lorries transferring waste from excavation areas to the remediation landfill facility will be confined within the Roadstone Dublin landholding for the duration of the site remediation works and will travel over the existing internal road network. The extent of paved and unpaved roads is delineated on Figure 4. Temporary unpaved access roads required to access or egress each unauthorised landfill area will be constructed from the existing haul roads to the unauthorised landfill sites and the remediation landfill, as shown on the site infrastructure layout in Figure 4.

Provision will be made for additional employee car-parking near existing accommodation facilities in the middle of Roadstone Dublin's landholding (beside the rising conveyor).

4.4.3 Hardstanding Areas

A temporary compound for storage of plant, equipment and materials, covering an area of approximately 200m by 75m, will be provided west of the unauthorised landfill at Area 1 and the remediation landfill. A hardstanding area will also be provided east of Area 4 for recovery of any C&D waste encountered above the main body of DCI waste at each unauthorised landfill site.

4.4.4 Wheelwash and Weighbridge

In order to prevent transport of mud and potential contaminants on internal and public roads, a temporary self-contained wheelwash facility will be provided at the egress from each unauthorised landfill site and the remediation landfill, as shown in Figure 4. During the installation of the lining system, construction of the site infrastructure and subsequent landfill capping activities, a temporary self-contained wheelwash facility will also be provided at the end of the existing paved internal access road as shown on Figure 4 in order to prevent the transport of fines onto the public road network by HGV's delivering construction materials to the site. A weighbridge will be provided along the access track to the remediation landfill to record the waste tonnages placed therein.

4.4.5 Fuel and Oil Storage

Fuel and oil for plant and equipment undertaking the site remediation works will be stored at an existing bunded tank facility in Doran's Pit, on the eastern side of the N81 National Secondary Route. Insofar as possible, re-fuelling of all wheeled plant and vehicles will take place at Doran's Pit, *within the bunded area to prevent oil spillage*. Tracked plant and equipment will be re-fuelled from a mobile bunded fuel bowser at either of the proposed hardstanding areas located on Figure 4, *which are also bunded to prevent oil spillage*. All wheeled plant and vehicles will be serviced as necessary using existing facilities in Doran's Pit. Tracked plant will be serviced off site.

4.4.6 Waste Inspection and Quarantine Area

Should inspection or testing identify hazardous waste, it will be segregated and temporarily stockpiled at a waste inspection and quarantine area (possibly enclosed) to be constructed north of Area 4 and west of the remediation landfill (see Figure 4), pending removal off-site to suitably licensed hazardous waste disposal or recovery facilities. Any liquid waste (leachate) arising during storage of this material will be collected and transferred off-site to an approved treatment facility.

4.4.7 Sewerage and Surface Water Drainage Infrastructure

Existing toilet and hand washing facilities are provided for Roadstone Dublin staff employed in quarrying activities at the site. Temporary washrooms will be provided in portacabins behind (east of) the existing offices at the centre of the site (see Figure 4) for the extra personnel employed in the construction and site remediation works. A number of temporary self-contained toilet units ('portaloos') will also be provided in the same area.

At the remediation landfill facility, a surface water management scheme will be implemented to minimise the volume of water entering the waste body. The proposed surface water management system comprises a series of lined ditches which allow run off around the remediation landfill to drain to an intermediate surface water pond, from which discharge to the existing lagoon to the west can be controlled. The surface water management system will be established prior to the main construction works. Outline details of the surface water management system are shown on Figure 5.

The temporary hazardous waste inspection and quarantine area, including delivery and collection areas, will be constructed on reinforced concrete with a surface water collection system in place to ensure no liquid will infiltrate the underlying aquifer. The storage and sorting areas will be bunded to a design storm volume or else be constructed under cover.

4.4.8 Site Services

Electric power, lighting and heating will be provided to the temporary site office at the site of the remediation landfill by a temporary generator or a connection to nearby overhead power lines. Personnel directing or overseeing the site remediation works will be contactable by mobile phone. Additional telephone landline and fax facilities can be established at existing site offices.

4.4.9 Plant Sheds, Garages and Equipment Compounds

Plant and equipment will be stored at a temporary site compound adjacent to the waste inspection and quarantine of the unauthorised landfill at Area 1 and west of the engineered remediation landfill, or if necessary, at the existing sheds and garages in Doran's Pit on the opposite side of the N81. Temporary workshops may also be provided by the construction Works Contractor and/or Roadstone Dublin at the same location.

4.4.10 Site Accommodation

It is currently envisaged that temporary 'portakabin' offices will be located on high ground immediately behind, and north of, the remediation landfill facility, adjacent to the proposed access road. This will permit technical and managerial staff employed by the construction Works Contractor and/or Roadstone Dublin to monitor all construction activity, traffic movements and operational activities. Temporary staff changing (drying) facilities, a canteen and washrooms will

be provided for construction personnel in portacabins at the hardstanding area alongside existing facilities in the centre of Roadstone Dublin's landholding.

4.4.11 Waste Recovery Infrastructure

If a significant volume of C&D waste is mixed through the soils overlying the main body of DCI waste at each unauthorised landfill site, it will be transferred for processing to a hardstanding area immediately east of Area 4 in Deerpark (see Figure 4). The C&D waste will be processed at that location by passing it through a mobile trommel screen fitted with a series of large screening grids and magnets to draw off any recyclable concrete or metal waste.

4.5 Environmental Nuisance Control

The proposed remediation works on Roadstone Dublin's lands will include a number of environmental controls to eliminate or minimise the nuisance to the public arising from the excavation of buried waste and its subsequent transfer and placement in the remediation landfill. The environmental nuisance controls will accord with established best practice for operation of landfills and the EPA publication 'Landfill Manuals: Landfill Operational Practices'.

The Waste Licence Application and Environmental Impact Statement will provide details of environmental controls for the following nuisances associated with the excavation, transfer and disposal of DCI waste:

- (i) scavenging birds
- (ii) dust
- (iii) litter
- (iv) odour
- (v) vermin
- (vi) fire

4.6 Environmental Monitoring

Immediately after evidence of unauthorised waste disposal had been uncovered at Roadstone Dublin's lands at Blessington, the company began to extend its established environmental monitoring programme to measure what, if any, impacts the buried waste had on surrounding environmental receptors. The scope of the existing environmental monitoring programme was agreed with officials from Wicklow County Council and the Environmental Protection Agency (EPA).

Limit values for all environmental emissions arising during the site remediation works and the subsequent aftercare period will be set by any Waste Licence issued by the EPA in respect of the proposed remediation works. It is envisaged that the existing environmental monitoring regime will be extended to monitor compliance with these limits.

Environmental sampling, monitoring and testing will be undertaken by trained and qualified staff as for the current monitoring programme, operating to accepted quality standards. Testing will be carried out by external laboratories conforming to recognised international standards, with external consultants used as required. Records of environmental monitoring and testing will be maintained on-site and will be forwarded to Wicklow County Council and the EPA as required under the terms of the Waste Licence.

The Waste Licence Application and the Environmental Impact Statement will include details of provisions for environmental monitoring of the following:

- (i) Dust
- (ii) Ecology
- (iii) Groundwater
- (iv) Landfill Gas
- (v) Leachate
- (vi) Weather
- (vii) Noise
- (viii) Odour
- (ix) Surface Waters

4.7 Restoration and Aftercare

Following excavation and removal of buried waste at each unauthorised landfill area, the resultant void will be partially backfilled using the inert overburden soils used in the construction of the 3m to 5m high boundary earth mounds. As soon as practicable thereafter, Roadstone Dublin will complete backfilling of the remaining void space either using fine sandy silt (dried) generated by washing activity elsewhere on the landholding or excess soils arising from excavation of the landfill void.

In the longer term, Roadstone Dublin will continue to place dried out silt at and around each site in order to better merge them back into the surrounding undulating pastoral landscape. At all times, the ground surface will be profiled to give a domed shape in order to facilitate surface water run-off. When restoration in each area is finally complete, the soils will be grassed.

Permanent capping of the remediation landfill and subsequent site restoration will be undertaken by an external Works Contractor. This work is expected to take no more than one to two months.

Any temporary site accommodation, infrastructure and services established for the duration of the site remediation and construction works will be decommissioned and/or removed off-site. Wherever possible, hardstanding surfaces will be broken up using a hydraulic breaker and tested to confirm the materials are acceptable for re-use in ongoing land restoration works. Any of these materials found to contain unacceptable levels of contamination will be transferred to a suitably licensed waste recovery or disposal facility.

Following completion of capping and restoration works, provision will be made for the long-term monitoring of the quality of environmental media in the immediate vicinity of the remediation landfill – soil, air, surface water and groundwater.

4.8 Contingency Arrangements

Details of contingency arrangements to be established on site during and subsequent to the proposed remediation works will be provided in a contingency plan to be included with the Waste Licence Application.

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5 ENVIRONMENTAL IMPACTS OF REMEDIATION SCHEME

The long-term environmental impact of the proposed site remediation scheme is **positive** in that it reduces or eliminates the risk of

- (i) soil and groundwater contamination and
- (ii) landfill gas generation and migration

from ongoing degradation and decomposition of buried waste at three unlined, unauthorised landfill sites across the Roadstone Dublin landholding at Blessington.

This will be achieved by removing the waste from each of the unauthorised landfill sites, segregating and re-cycling it where possible and transferring residual non-hazardous waste to a remediation landfill. There will however be a number of short-term environmental impacts associated with these activities.

The Environmental Impact Statement and Waste Licence Application will identify and assess the short and long-term impacts of the proposed remediation scheme on the natural, cultural and human environment and will provide details of mitigation measures to be implemented during the remediation works to reduce or eliminate any negative impacts.

The environmental impacts of the proposed remediation scheme will be assessed under the headings listed in bold below. An indication of some of the issues to be addressed under each heading is also provided.

(i) Human Beings

Short-term environmental nuisance during landfill construction / waste excavation and transfer.

(ii) Flora and Fauna

Implications for blue fleabane and autumn gentian located within site.

(iii) Soils and Geology

Soil erosion during excavation / earthworks;
Dust emissions during excavation / earthworks;
Residual risk of leachate leakage out of basal liner of the remediation landfill.

(iv) Surface Water

Spillage of waste or water on ground surface during waste excavation / transfer;
Run-off from existing waste into surface water;
Overflow of water from the remediation landfill during placement of waste;
Oil spillages during re-fuelling and maintenance of plant entering surface water;
Suspended solids / dust arising from increased traffic entering surface waters;
Run-off of leachate from stockpiled waste into surface water;
Accumulation and over-topping of leachate within the remediation landfill.

(v) Groundwater

Increased infiltration resulting from rainfall during excavation / removal of waste;
Contact between humans, flora and fauna; and groundwater, perched water and volatiles during removal and transfer of waste;
Increased risk of oil spillage during re-fuelling and maintenance of plant;
Infiltration of leachate from stockpiled waste into aquifer;
Leakage of leachate from the remediation landfill through the basal and side liner, infiltration through the unsaturated zone and migration within the sand and gravel aquifer;
Migration of residual contamination already present in groundwater towards wells.
Accumulation and over-topping of leachate within the remediation landfill.

(vi) Air Quality and Climate

Landfill gas emissions (methane and carbon dioxide);
Emissions of volatile organic compounds;
Health risk to personnel removing the buried waste;
Health risk to occupants of adjacent residences;
Short-term odour nuisance (hydrogen sulphide emissions);
Dust emissions from waste excavation / transfer;
Dust emissions from landfill construction / operation;
Dust emissions from site restoration and capping.

(vii) Noise and Vibration

Short-term noise emissions (waste excavation and transfer)

(viii) Landscape

Visual impact of long-term development (remediation landfill);
Relationship to existing pattern of development in area;
Amenity value of Glen Ding Wood;
Specific policy objectives or protected views in County Development Plan;
Near views (from surrounding residential development)
Distant views
Requirements for site restoration works

(ix) Cultural Heritage

Archaeological Potential around the site of the proposed remediation landfill

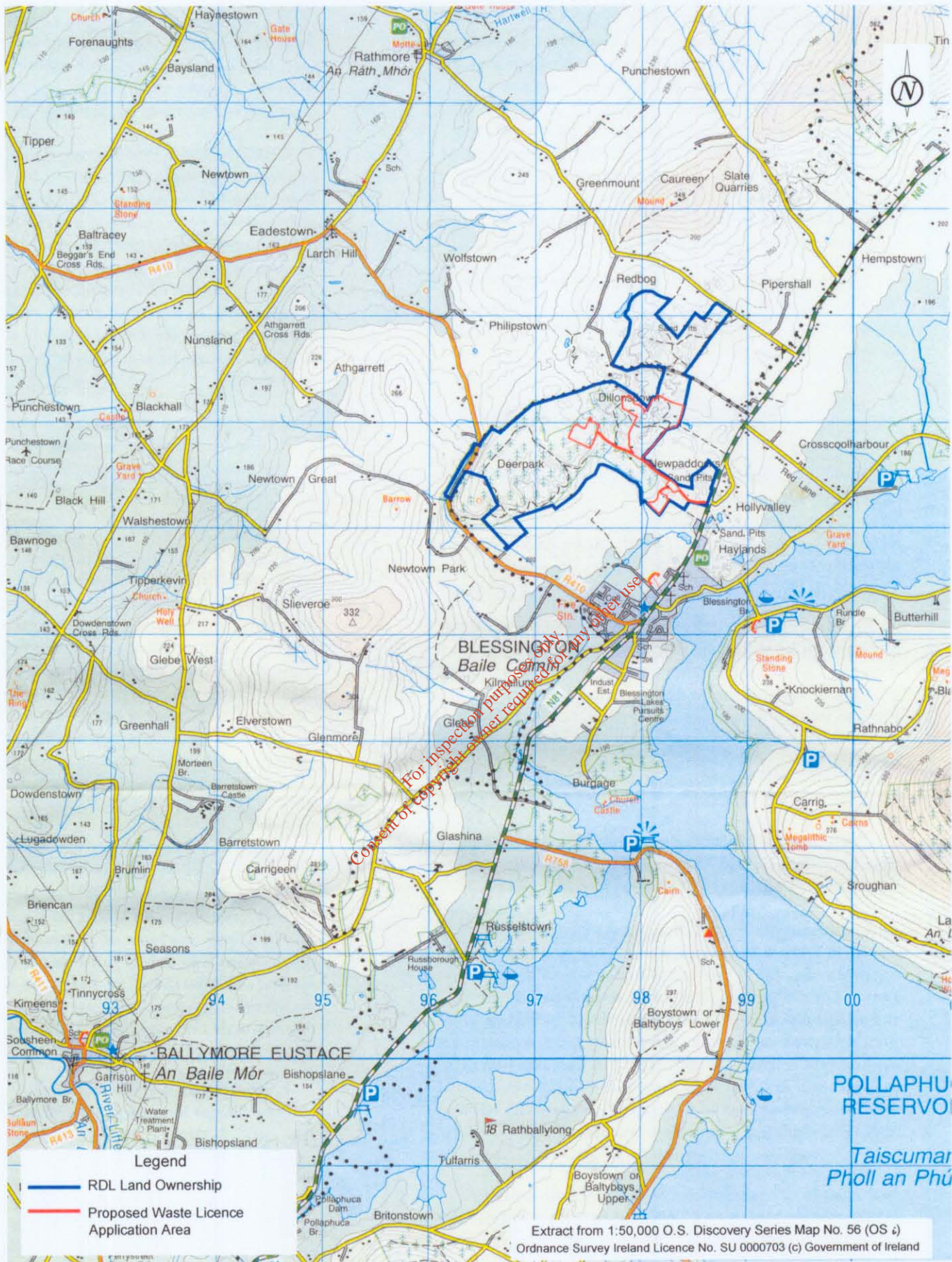
(x) Material Assets

Transport Infrastructure
Short / Long Tourism Potential of Area
Residential Amenity

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FIGURES

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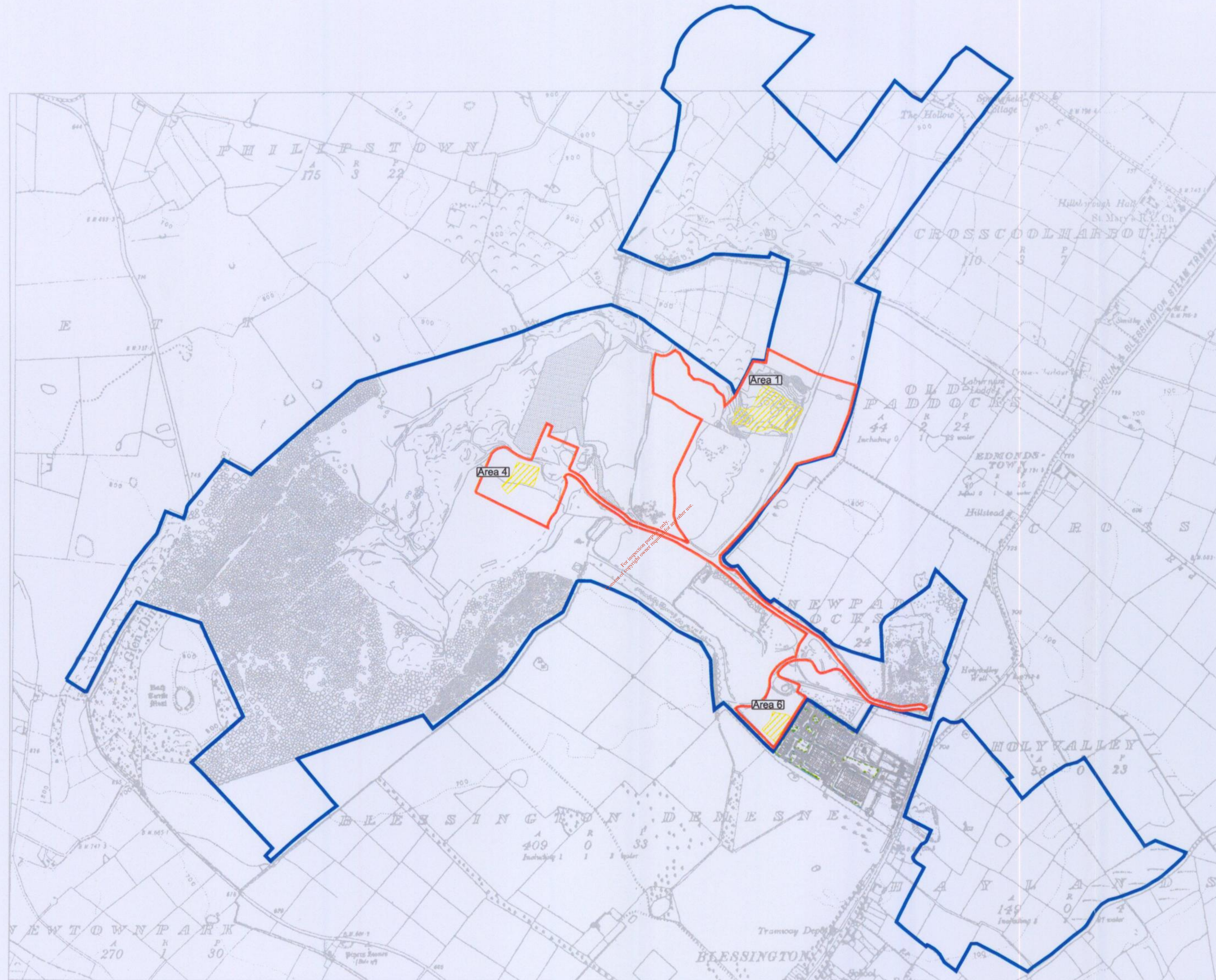


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 FORTUNESTOWN
 TALLAGHT
 DUBLIN 24



JOHN BARNETT & ASSOCIATES
 7 DUNDRUM BUSINESS PARK
 WINDY ARBOUR
 DUBLIN 14

| | | |
|------------------|--|-----------------|
| Site: | Lands at Blessington, Co. Wicklow | |
| Project: | Remediation of Unauthorised Landfill Sites | |
| Title: | Site Location | |
| Drawn: PMC | Scale: 1: 50,000 | FIGURE 1 |
| Job. No: 2901/10 | Date: Oct 2004 | |



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Legend

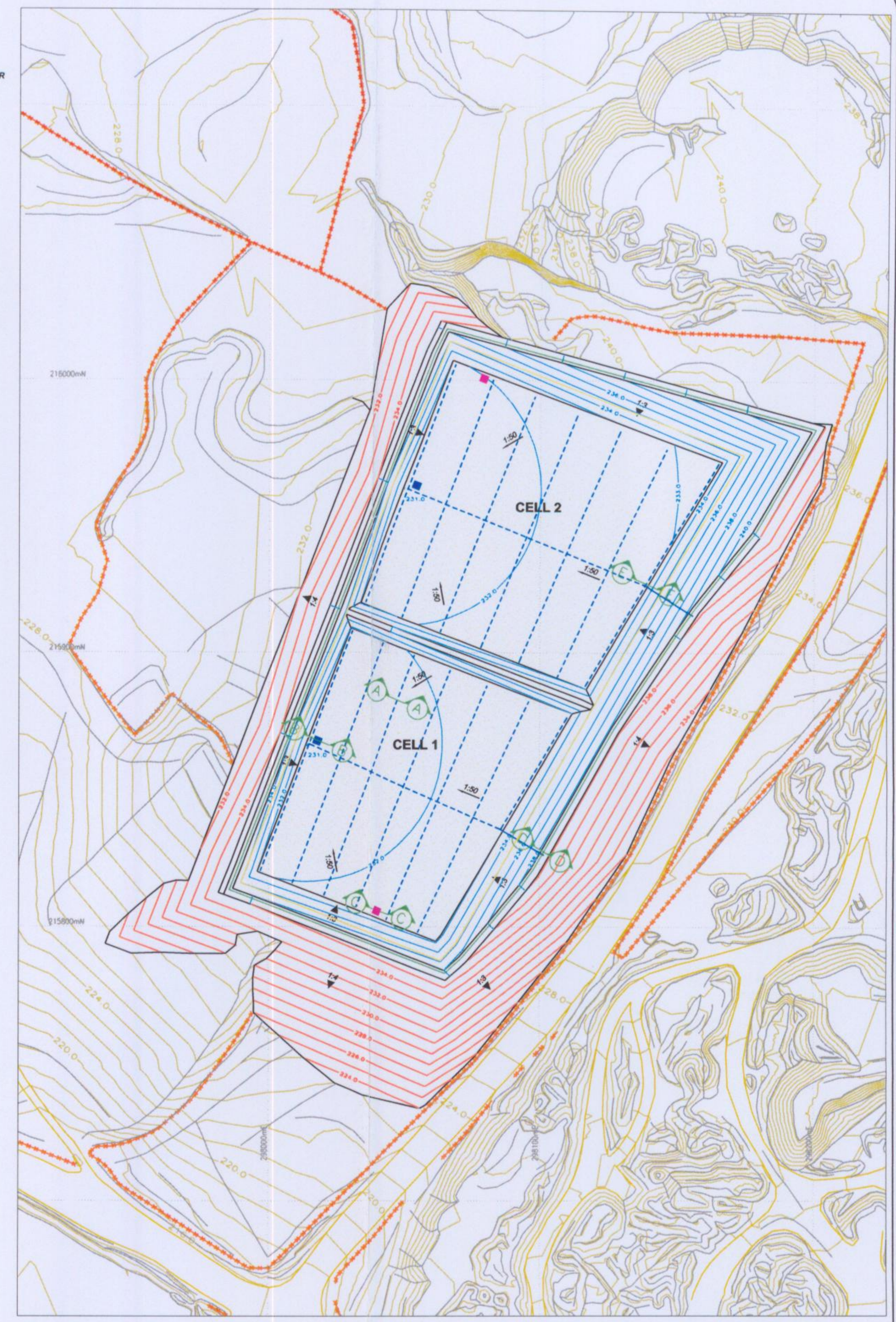
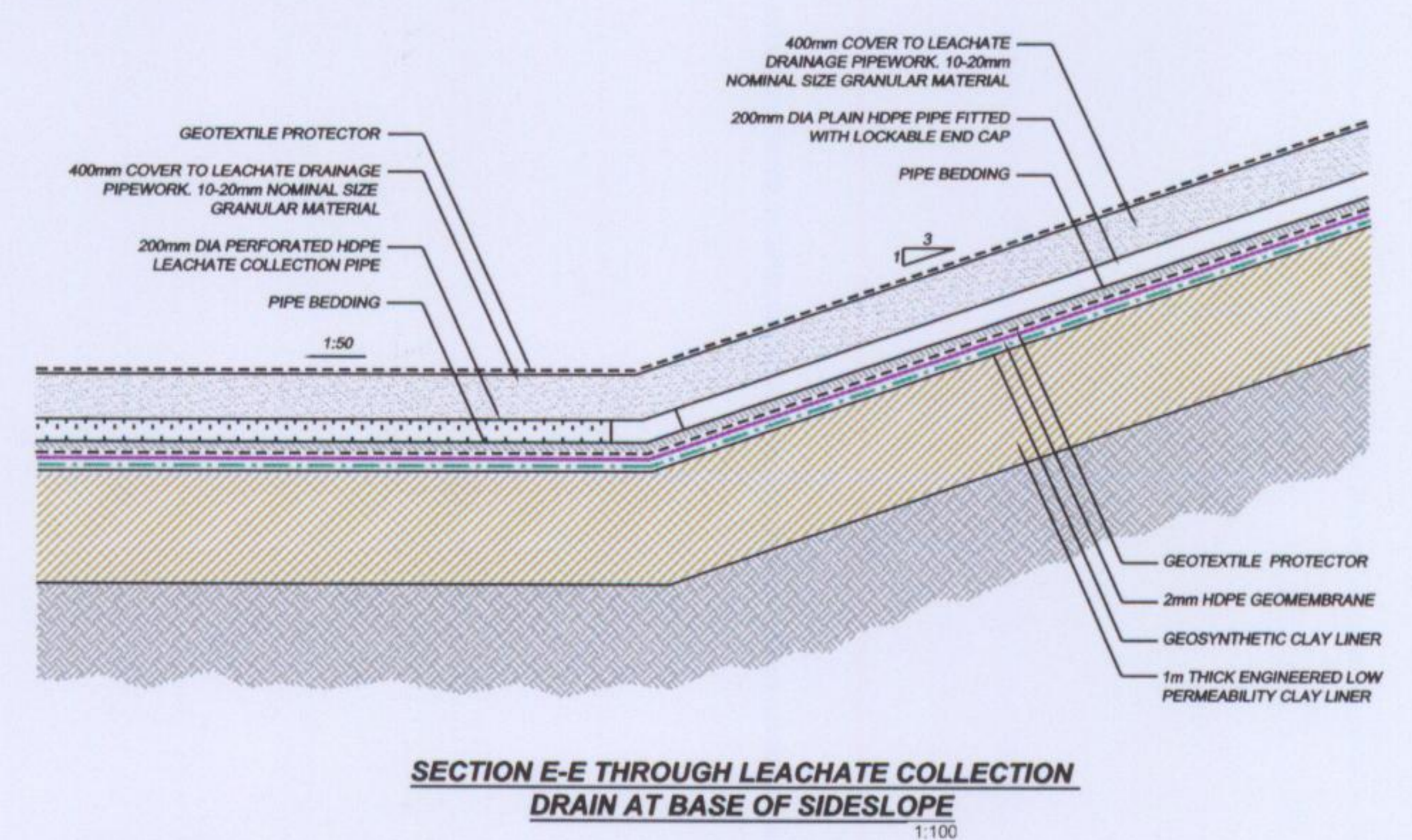
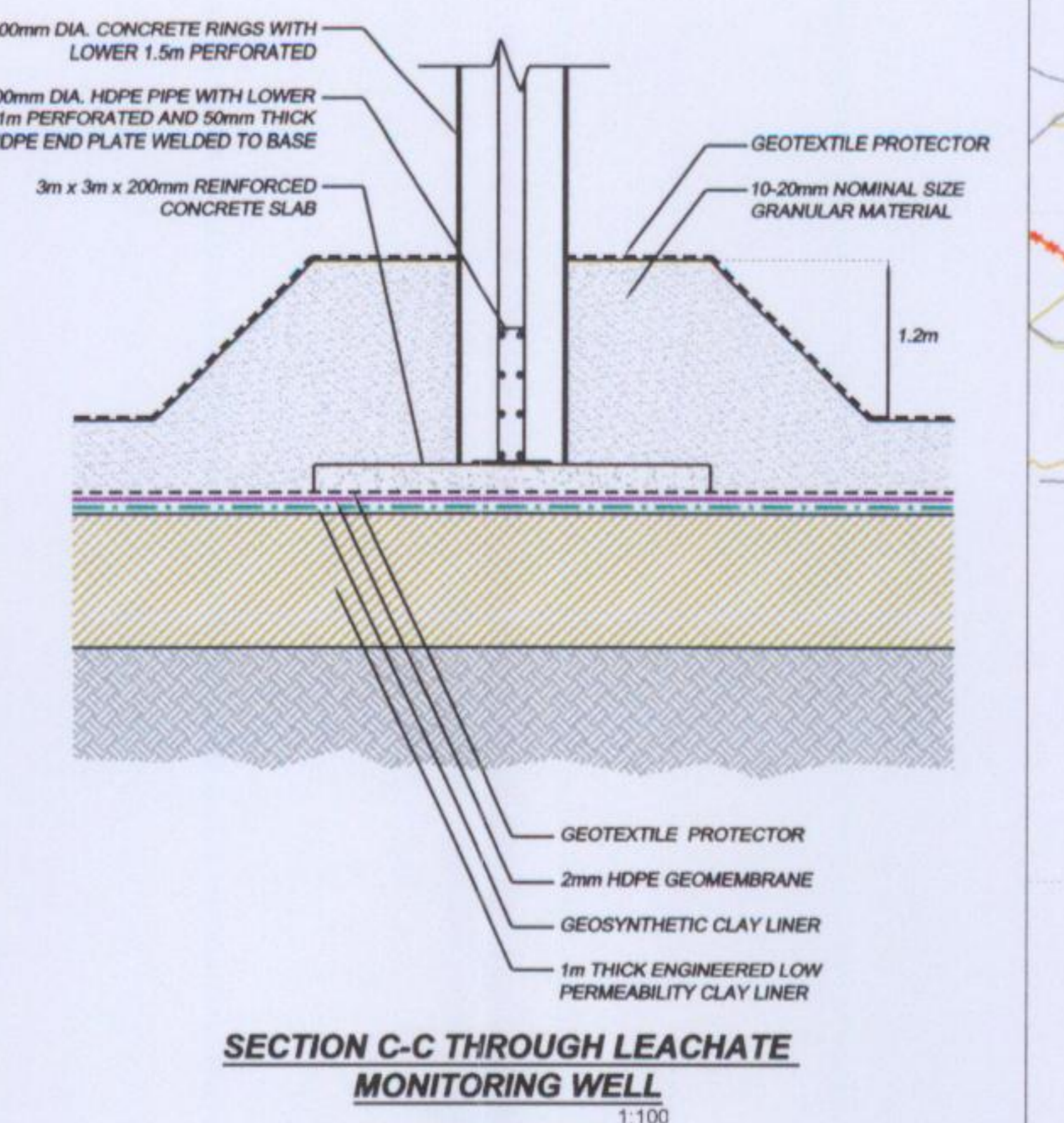
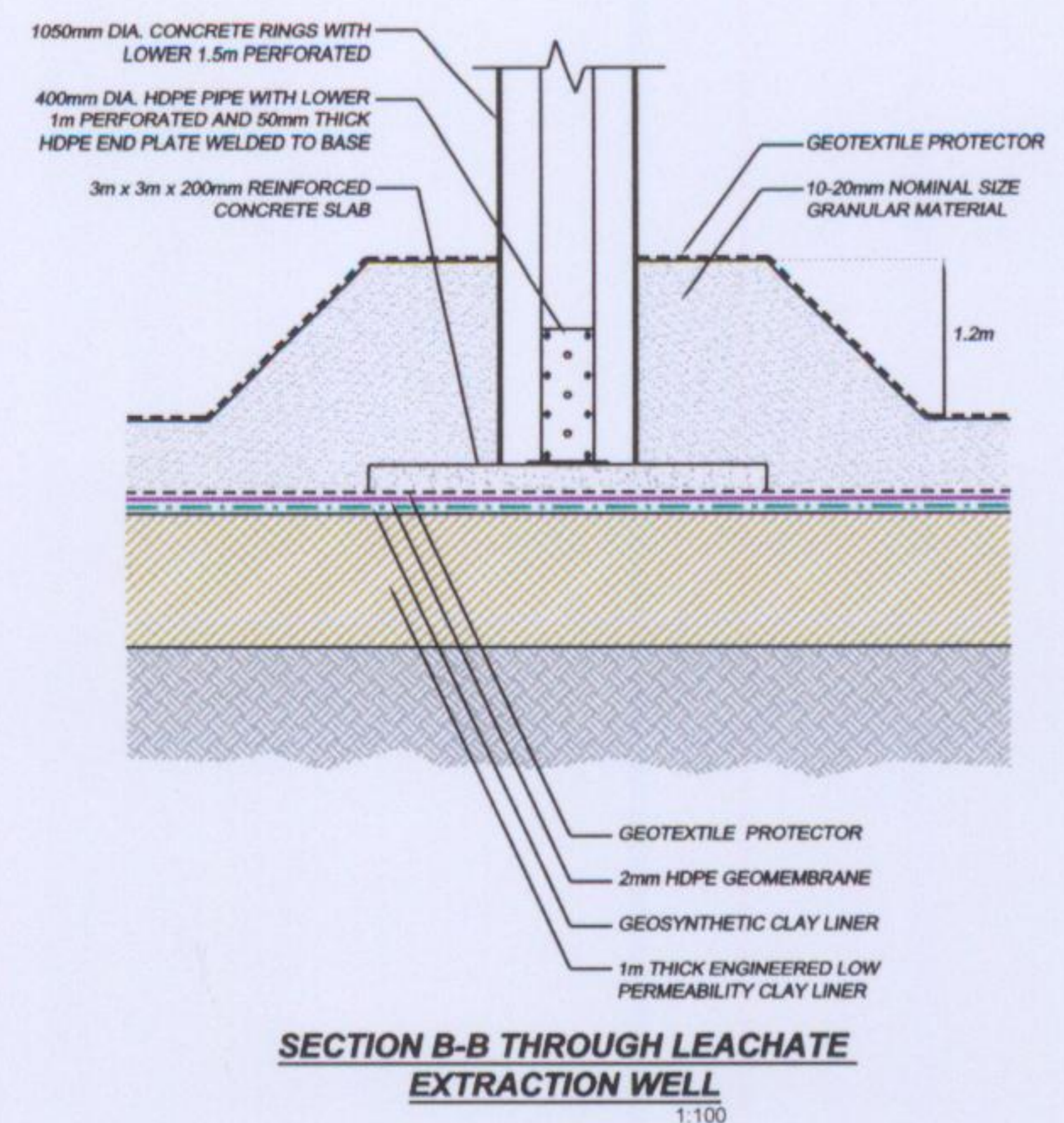
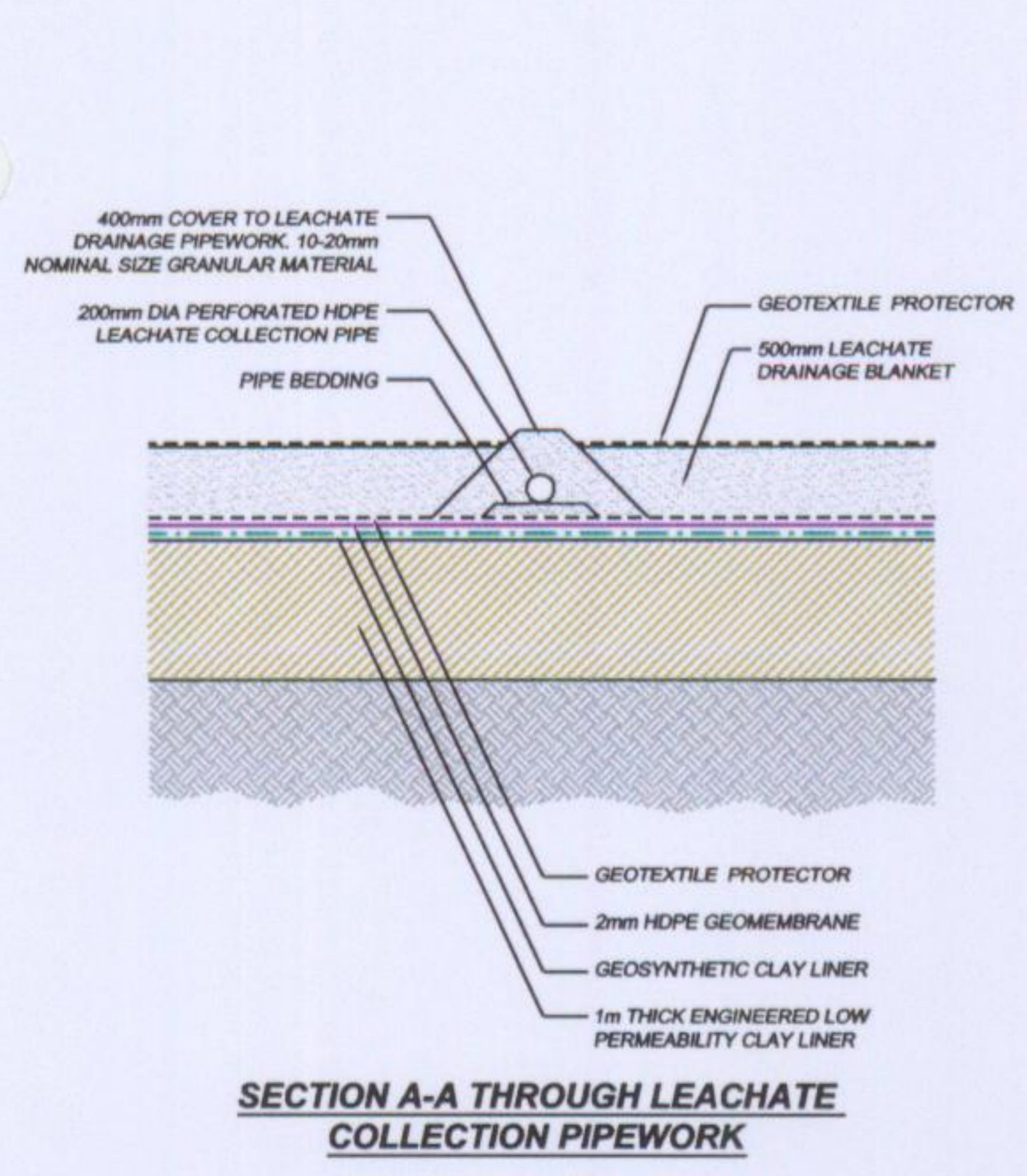
- Land Ownership (c. 267ha)
- Application Area (c. 27.6ha)
- Unauthorised Landfill Sites

Ordnance Survey Ireland Licence No. SU 0000703 (c) Government of Ireland

| Rev. | Date | By | Description |
|------|--------|---------|-------------|
| 0 | Dec 03 | SMD/PMC | |

| | |
|------------------|--|
| Site: | Lands at Blessington, Co. Wicklow |
| Project: | Remediation of Unauthorised Landfill Sites |
| Title: | Application Area/Applicants Land Holding |
| Drawn: PMC | Scale: 1:12,500 |
| Job. No: 2901/10 | Date: Oct 2004 |

FIGURE 2



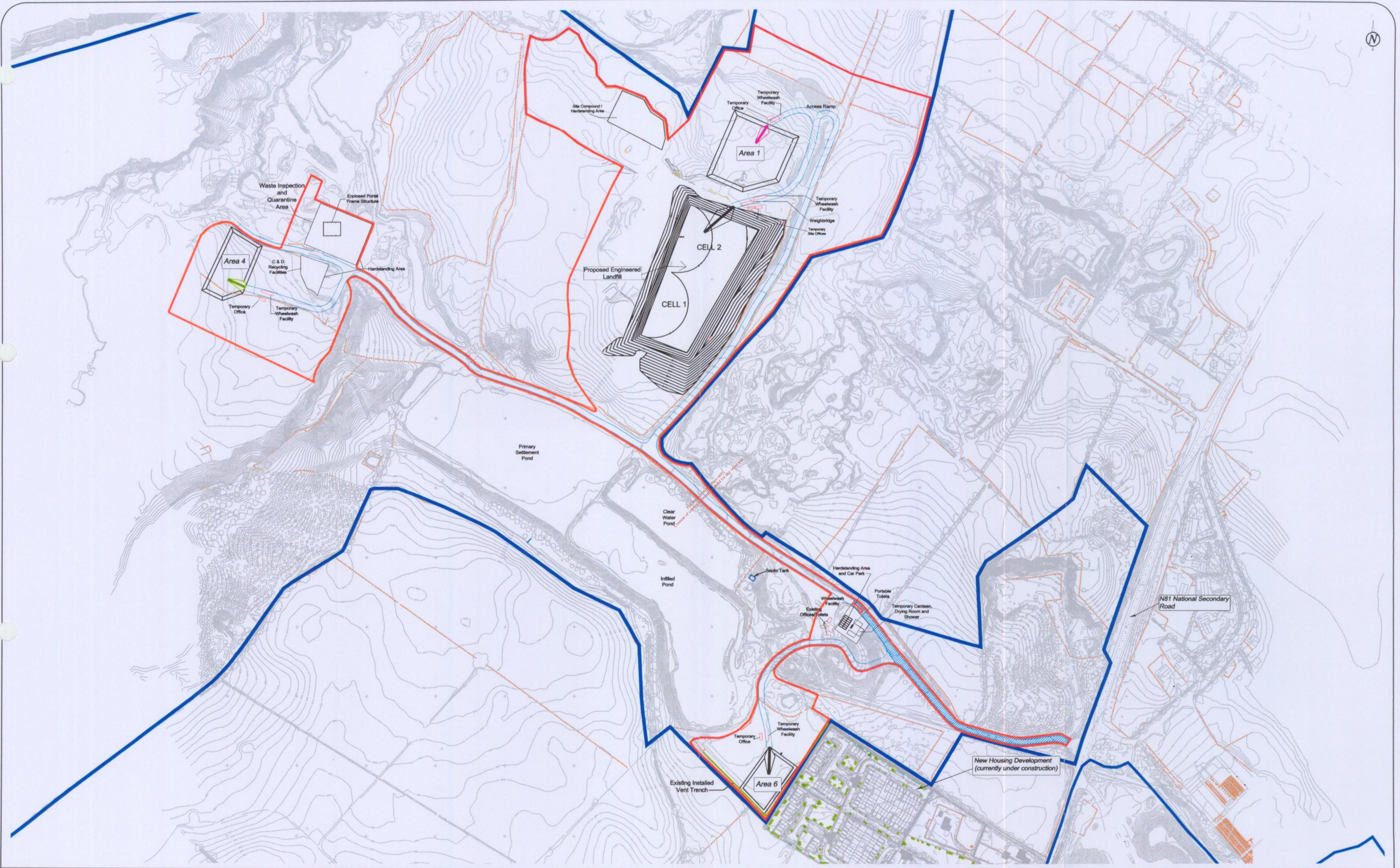
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- 237.0 — EXISTING GROUND CONTOURS
- 238.0 — FORMATION CONTOURS
- 236.0 — TOP OF CLAY LINER CONTOURS
- GEOMEMBRANE ANCHOR TRENCH
- EXTENT OF LEACHATE DRAINAGE BLANKET
- 200mm DIAMETER PERFORATED HDPE LEACHATE COLLECTION PIPEWORK
- 200mm DIAMETER PLAIN HDPE LEACHATE EXTRACTION PIPEWORK
- LEACHATE EXTRACTION WELL LOCATION
- LEACHATE MONITORING WELL LOCATION

| Rev. | Date | By | Description |
|------|----------|-----|---------------------|
| 2 | April 04 | PM | Contour Correction |
| 1 | Dec 03 | PM | Cell Layout Revised |
| 0 | Jul 03 | SMD | Cell Layout Revised |

| | | | |
|-----------------|---|-----------------|--|
| Site: | Lands at Blessington, Co. Wicklow | | |
| Project: | Remediation of Unauthorised Landfill Sites | | |
| Title: | Remediation Landfill : Proposed Engineering Details | | |
| Drawn: PM | Scale: 1:2000 | FIGURE 3 | |
| Job No: 2901/09 | Date: Oct 04 | | |



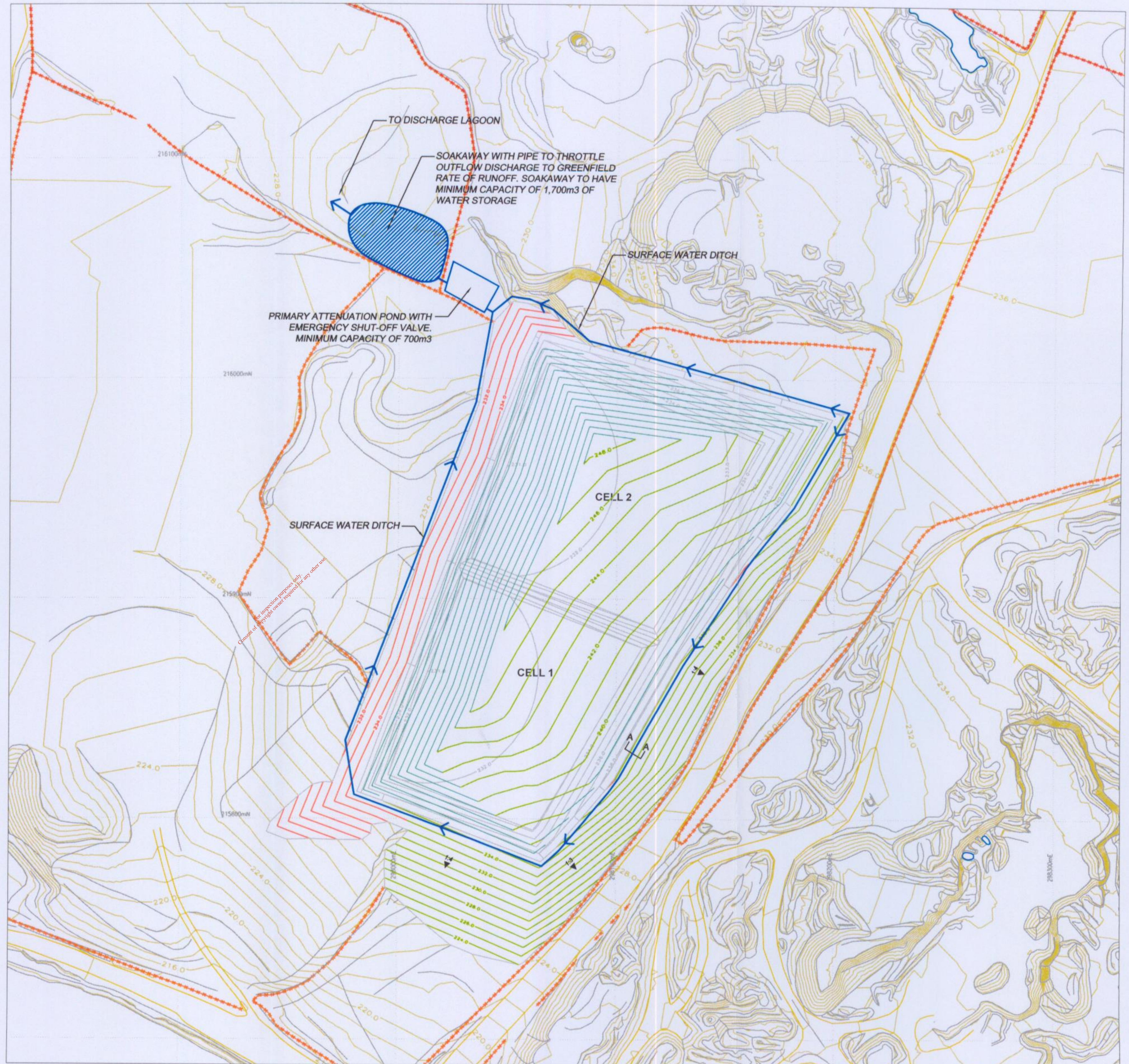
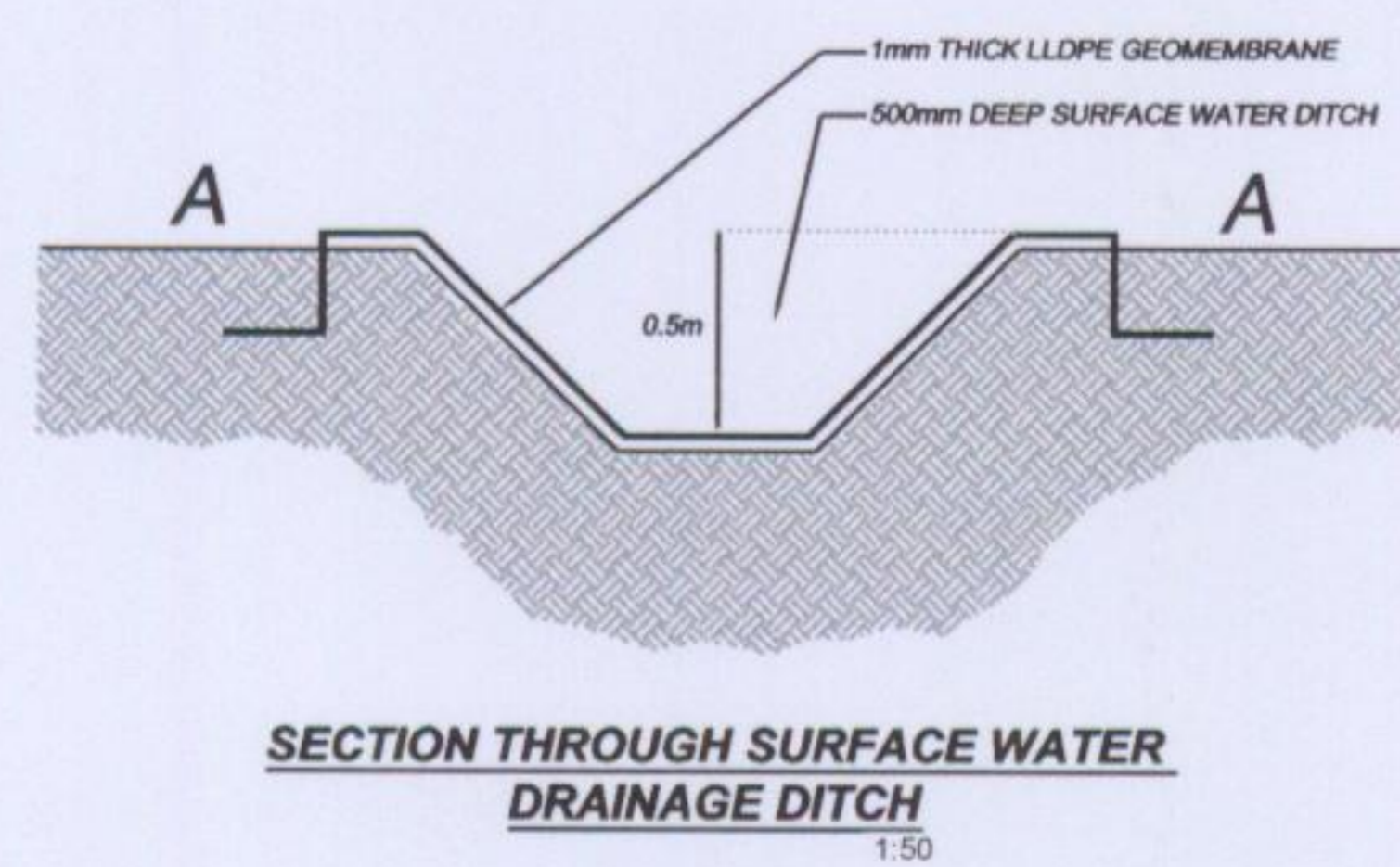
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SLR
 Roadstone Landholding Boundary
 Waste Licence Application Area

| Rev. | Date | By | Description |
|------|--------|----|-------------|
| 0 | Dec 03 | PM | |

Site: Lands at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Site Infrastructure Layout
 Drawn: PM
 Job. No: 2901/09
 Scale: 1:5000
 Date: Oct 04
FIGURE 4



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- 237.0 — EXISTING GROUND CONTOURS
- 235.0 — FORMATION CONTOURS
- 236.0 — TOP OF CLAY LINER CONTOURS
- 236.0 — TEMPORARY WASTE FACE CONTOURS
- 246.0 — FINAL RESTORATION CONTOURS
- SURFACE WATER DITCH

| Rev. | Date | By | Description |
|------|----------|-----|---------------------|
| 2 | April 04 | PM | Contour Correction |
| 1 | Dec 03 | PM | Cell Layout Revised |
| 0 | Jul 03 | SMD | Cell Layout Revised |

| | | | |
|------------------|--|-----------------|--|
| Site: | Lands at Blessington, Co. Wicklow | | |
| Project: | Remediation of Unauthorised Landfill Sites | | |
| Title: | Remediation Landfill : Surface Water Management Scheme | | |
| Drawn: PM | Scale: 1:2000 | FIGURE 5 | |
| Job. No: 2901/09 | Date: oct 04 | | |



Roadstone Dublin Ltd.

Fortunestown
Tallaght
Dublin 24

Tel: (+353 1) 404 1200
Fax: (+353 1) 404 1321
web: www.roadstone.ie
email: info@roadstone.ie

November 4 2004

**Roadstone Dublin Ltd. ("Roadstone Dublin")
Remediation of Unauthorised Landfill Sites at Blessington, Co. Wicklow**

Dear Resident,

As you may be aware, Roadstone Dublin intends to apply to the Environmental Protection Agency for a remediation Waste Licence to deal with unauthorised waste deposits on its lands at Blessington.

The total amount of unauthorised Domestic Commercial and Industrial (DCI) waste buried at the site is estimated by both Roadstone Dublin and Wicklow County Council to be approximately 50,000 tonnes. In addition, an estimated 60,000 tonnes of largely inert construction and demolition (C&D) waste was also identified. The predominant source of the DCI waste was businesses located in the surrounding West Wicklow / East Kildare area. No significant amount of waste originated outside this area.

Roadstone Dublin is deeply upset that the dumping took place. The Company is now addressing its responsibility in cleaning up the site.

Following detailed investigations and technical assessments of unauthorised waste deposits on Roadstone Dublin lands at Blessington, Co. Wicklow, the Company, under the direction of, and in consultation with, the relevant technical and regulatory authorities has investigated all possible remediation measures.

As part of the regulatory process, a Section 55 Notice under the Waste Management Act, has been issued by Wicklow County Council requiring Roadstone Dublin to apply to the Environmental Protection Agency for a remediation Waste Licence to deal with unauthorised waste deposits on its lands at Blessington.

The principal elements of Roadstone Dublin's proposed remediation scheme are:

- The removal of the waste from the three areas in which it has been deposited,
- On-site segregation and recycling where possible
- Removal of any hazardous waste found to off-site licensed facilities
- Deposition of the remaining non-hazardous material in a fully engineered and monitored remediation landfill on Roadstone Dublin's lands.

The Waste Licence will be used to deal with the unauthorised material already on site only. There is no intention to operate a commercial or public landfill site now or in the future and the remediation landfill will be permanently capped on completion of the works.

The design and construction of the remediation landfill will comply with the Environmental Protection Agency's guidelines for such facilities.

Rigorous standards have been set by the relevant authorities to ensure that the waste is dealt with in an appropriate manner. Roadstone Dublin is following all guidelines and legal requirements to ensure that the local environment is fully protected.

Roadstone Dublin wishes to assure all concerned parties that it will follow internationally recognised best practice throughout the remediation process and has retained expert international consultants to advise on this.

To date comprehensive monitoring, sampling and environmental controls have shown that there has been no impact on the local water supply. Roadstone Dublin will continue to operate this monitoring regime to ensure the ongoing protection of the local environment, water supply and air quality.

Roadstone Dublin is aware that in recent days, concern has been expressed by residents of the Woodleigh Estate about the potential migration and accumulation of landfill gas (principally methane and carbon dioxide) generated by the decomposition of DCI waste at one of the unauthorised landfill sites on our land, immediately west of and beyond the estate.

In response to these concerns, Roadstone Dublin wishes to advise that

- (i) A detailed Environmental Risk Assessment has been carried out for this site in accordance with a notice issued by Wicklow County Council under Section 55 of the Waste Management Act 1996. The Environmental Risk Assessment prepared by Mouchel Parkman, a leading international environmental consultancy, assessed the potential risk to humans from landfill gas and was independently reviewed by Wicklow County Council and the Environmental Protection Agency. The Environmental Risk Assessment indicates that there is no risk to human health for the residents of the Woodleigh Estate, from landfill gas generated by decomposition of DCI waste. On a purely precautionary basis, it recommended that a number of measures be taken to ensure the continued safety of residents. These have been implemented in full and are outlined below :

- (a) A perimeter vent trench was installed as a precautionary measure along the site boundary, between the waste body and the Woodleigh Estate, in November and December 2003. The purpose of this trench is to intercept and disperse to atmosphere any landfill gas which may be migrating laterally toward the housing estate.
- (b) 8 venting boreholes were also installed in the waste body as a precautionary measure in December 2003 and January 2004. The purpose of these boreholes is to encourage upward migration and dispersion (as opposed to lateral migration) of any landfill gas generated by the decomposition of DCI waste.
- (ii) Ongoing monitoring of landfill gas emissions at venting boreholes in the waste body indicates that the volume of landfill gas currently being generated is low and declining, and significantly less than that generated by conventional municipal landfills.

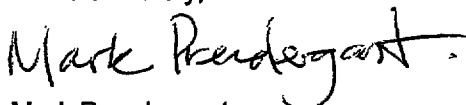
The proposed remediation scheme will permanently eliminate the risk to the environment arising from the buried DCI waste, by removing it to an engineered remediation landfill.

Full details of the proposed remediation scheme will be provided in the Waste Licence Application and the accompanying Environmental Impact Statement to be submitted to the Environmental Protection Agency in the coming weeks, on completion of the public consultation process.

Should you require more details about the proposed remediation scheme, a copy of the consultation document can be obtained by sending a postal request to

Roadstone Dublin Ltd.
P.O.Box 9948
Dublin 24

Yours sincerely,



Mark Prendergast
Pits & Quarries
Roadstone Dublin Ltd.