

Attachment K

Remediation, Decommissioning, Restoration and Aftercare

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K.1 Cessation of Activity

K.1.1 Restoration

The backfilling/restoration at Kilmeage is to be carried out in accordance with the agreed landscaping plan submitted to Kildare Co. Council. In accordance with Condition No. 33 of P.A. Reg. Ref. 03/1773, *“as soon as is practicable following completion of the in-filling activities, the site shall be seeded with grass. Prior to seeding, topsoil shall be spread evenly over the site to a minimum depth, after firming, of 150 -200 mm. The topsoil shall be good quality, and shall comply with BS 3882: 1991. The topsoil shall not be spread in wet conditions. The topsoil shall be adequately prepared for seeding by raking or harrowing and by rolling. Seed shall be spread at a minimum rate of 30 grams per square metre”*.

The phased scheme for final restoration of the area is shown by Figures D.1.1 to D.1.4.

The lands are to be restored to forestry/agricultural use by importation and recovery of inert materials in accordance with a phased restoration scheme. It is the intention to develop them for agricultural/ forestry use. Each phase will be for a duration of about 1 to 2 years (Refer to Figures D.1.1 to D.1.4).

Designated internal haul roads will be used to direct site traffic to the current tipping area. A bulldozer will be used to appropriately grade and compact the material to the desired profile as shown by the detailed plans and sections (Refer Figures D.1.1 to D.1.6). Typically the soil will be placed in 2-3 metre lifts with fill slopes of a safe angle of repose of 1:2.

Good quality imported soil will be conserved wherever possible to provide the subsoil/top-soil capping. These topsoil's/subsoil's will be handled under dry conditions to minimise compaction. For the purpose of restoration to agricultural the restored soil profile (capping) shall comprise 150mm topsoil over 1200-1350mm of subsoil.

Progressive restoration involving grass seeding of restored areas shall be carried out on a staged basis to reduce the effects of soil erosion, windblown dust, to aid ground stabilisation and as an effective means of weed control.

Final restoration is dependent on the availability of good topsoil/subsoil and subject to suitable weather conditions.

In order to allow for continuity of operations it is necessary to have a certain overlap between phases. The final contours and topography for the site is shown by the Site Infrastructure – Final Restoration Plan Figure D.1.4 and Cross Sections D.1.5 & D.1.6.

K.1.2. Closure Plan & Environmental Liability Risk Assessment

A Closure Plan & Environmental Liability Risk Assessment has been prepared for the proposed Inert Waste Recovery Facility at Kilmeage Pit (Refer to Attachment K.1.2.1).

This report has been prepared in accordance with “*Guidance on assessing and costing environmental liabilities 2014*” (EPA 2014a).

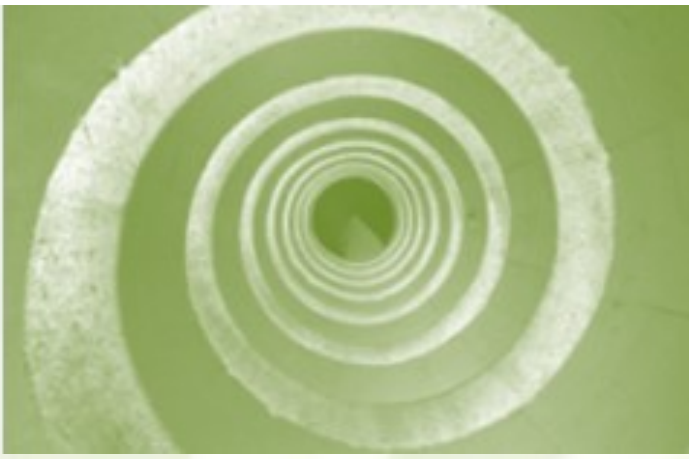
The overall purpose of closure and restoration/aftercare is to ensure that the necessary measures are taken to avoid any risk of environmental pollution and, where pollution has been caused, to return the site to a satisfactory state.

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Attachment K.1.2.1

Closure Plan & Environmental Liability Risk Assessment

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JSPE

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N&C Enterprises Ltd.
Closure Plan & Environmental Liability
Risk Assessment
the Pit,
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June 2016

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CLOSURE PLAN & ELRA

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1 INTRODUCTION

N&C Enterprises Ltd., Blackhill, Kill, Co. Kildare intends to apply to the Environmental Protection Agency for a waste licence for the operation of a waste recovery facility on lands at The Pit, Kilmeage, Naas, Co. Kildare (National Grid Reference N 7766 2319).

The overall purpose of closure and restoration/aftercare is to ensure that the necessary measures are taken to avoid any risk of environmental pollution and, where pollution has been caused, to return the site to a satisfactory state.

The following plan has been prepared by J Sheils Planning & Environmental Ltd (JSPE) on behalf of the operators N&C Enterprises Ltd. JSPE specialises in providing independent professional planning and environmental advice to the extractive and inert waste management industries. The principal, John Sheils is a qualified mining engineer, chartered minerals surveyor, with a post graduate diploma in environmental protection and professional qualifications in quarry management.

JSPE are professionally indemnified and governed by the RICS (Minerals and Waste Management Faculty) and Society of Chartered Surveyors codes of practice.

There are three steps to completing closure and restoration/aftercare plans:

- ▶ Step 1: Scoping
- ▶ Step 2: Closure
- ▶ Step 3: Restoration/aftercare



2 SCOPING

This report has been prepared in accordance with “*Guidance on assessing and costing environmental liabilities 2014*” (EPA 2014a).

Closure and **closure plan** refer to relatively short-term measures necessary to close a site satisfactorily including decommissioning and residuals management. For many sites, there will be no environmental liabilities once closure, decommissioning and residuals management are completed, and so only a closure plan is required.

Restoration/aftercare and **restoration/aftercare plan** refer to longer term measures that are necessary where environmental liabilities remain following closure, e.g. contaminated soil and groundwater, landfills, extractive waste facilities, mines, quarries and soil recovery facilities. Measures may encompass activities such as remediation, rehabilitation, reinstatement, ongoing emissions control and monitoring.

It is noted that the guidance considers that both a Closure and Restoration/After Care Management Plan (CRAMP) may be required for soil recovery facilities. However, the guidance further states that in relation to soil and groundwater contamination, where it is relatively limited and will be addressed by short-term actions such as removal for treatment off-site, this can be addressed as part of the closure plan. A restoration/aftercare plan is **required only where the measures necessary are more complex and long-term**, e.g. installation of barriers, pump and treat, monitored natural attenuation.

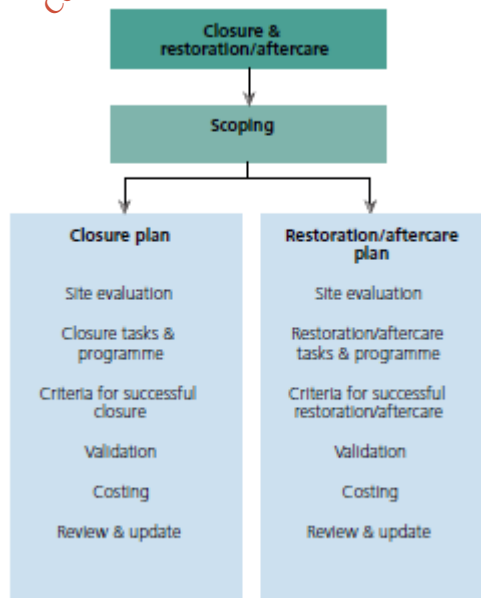


Figure 2-1 Closure and restoration/aftercare process (Source EPA 2014a)



In this case only inert soils and stone, and inert construction and demolition waste is to be accepted at the facility for recovery and phased restoration of a sand and gravel pit to a contoured landform that will be in keeping with the surrounding landscape.

Clean closure is envisaged such that all plant is safely removed for reuse or recycling, and all wastes are removed off site at the time of closure for appropriate recovery or disposal. Monitoring undertaken should demonstrate that there are no outstanding environmental issues.

There will be no on-going requirement for environmental monitoring after recovery operations have ceased.

An aftercare scheme will be implemented with the aim of bringing the restored soils (and hence land) into a condition which does not need to be treated differently from undisturbed land in the same use. The final restoration of the site will facilitate an agricultural after-use similar to that which existed prior to extraction works.

A final site inspection 6 months after site closure will be carried out to ensure that the final site restoration scheme implemented is functioning and progressing as required.

It is evident from the above description given the relatively short-term measures necessary to close the site satisfactorily, that there will be no environmental liabilities once closure, decommissioning and residuals management are completed, and so only a **closure plan** is considered necessary.

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3 THE CLOSURE PLAN

3.1 CLOSURE PLAN SUMMARY

Activity name and address

Waste recovery facility on lands at The Pit, Kilmeage, Naas, Co. Kildare

Name of the operator N& C Enterprises Ltd

Licence number To be determined

Name and address of person/organisation who prepared the plan

J Sheils Planning & Environmental Ltd, 31 Athlumney Castle, Navan, Co Meath.

Classes of activity (to be) licensed and carried out;

The principal activity is Class R 5 of the Fourth Schedule of the Waste Management Act 1996, as amended (recycling/reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials). Other activities include Class R 13 of the Fourth Schedule (Storage of waste pending any of the operations numbered R 1 to R 12 (excluding temporary storage (being preliminary storage according to the definition of 'collection' in section 5(1)), pending collection, on the site where the waste is produced)).

Risk category

To be determined

Scope

Closure Plan (incorporating aftercare requirements)

Overall closure costs

The total closure and restoration/aftercare costs have been calculated as €87,219 (not adjusted for inflation).

Details of any previous closure plans

Not Applicable

Financial provision mechanism

To be agreed with EPA following agreement on Closure Plan Costing.



Review period for the closure and restoration/aftercare plans.

The closure and aftercare requirements will be subject to annual review.

3.2 CLOSURE PLAN INTRODUCTION

The scoping exercise carried out in preparation of this Plan has determined that given the relatively short-term measures necessary to close the site satisfactorily, that there will be no environmental liabilities once closure, decommissioning and residuals management are completed, and so only a closure plan is considered necessary.

3.2.1 GENERAL DESCRIPTION OF THE ACTIVITY AND SITE

N&C Enterprises Ltd., Blackhill, Kill, Co. Kildare intends to apply to the Environmental Protection Agency for a waste licence for the operation of a waste recovery facility on lands at The Pit, Kilmeage, Naas, Co. Kildare (National Grid Reference N 7766 2319).

The current site area under the ownership of N&C is estimated at c. 6.6 hectares in total, and is depicted on Drawing B.2.1. Sand and gravel extraction has ceased on the site and the site is currently used for bagging of imported decorative stone. N&C propose to restore the lands to form a rounded hill that would tie into the ground levels of the surrounding lands.

Land use in the area to the west and southwest is largely residential, with some commercial use in close proximity to the pit. There is a row of single houses along the southern boundary of the site, and these face to the south on the local road. The land to the northeast and northwest is largely agricultural as shown by Drawing B.2.1.

The nature of the development is the importation of inert soils, stone, and recovery of inert construction and demolition waste for the continued phased restoration of a sand and gravel pit to a contoured landform that will be in keeping with the surrounding landscape. It is proposed that up to circa 345,000 tonnes per annum of inert materials, subject to market demand, will be accepted to site. The site has the benefit of existing planning permission (P.A. Reg. Ref. 03/1773 & 12/373) for the above development.

3.2.2 HISTORY OF DEVELOPMENT

Planning Permission (P.A. Reg. No. 03/1773) for Importation and placement of materials in an existing sand & gravel pit to enable restoration of the ca. 6.5 ha application site to a contoured landform that will be in keeping with the surrounding landscape, etc., at The Pit, Kilmeage, Naas, Co. Kildare was originally granted on 23/07/2004.



In accordance with the provisions of Section 42 of the Planning and Development Act, 2000 as amended by Section 28 of the Planning and Development (Amendment) Act, 2010, Kildare County Council extended the appropriate period of planning permission register reference 03/1773 by an additional 5 years. The permission will therefore expire on 28th June 2017.

This development was initially dependent on the grant of a waste management permit (WMP No. 126/2003) which was granted (25/6/2004) and under which the site operated until it subsequently expired on 24/6/2007. In the meantime, the regulatory requirement changed requiring the site to operate under an EPA licence due to tonnage acceptance restrictions within the licencing and permitting process. Due to the downturn in the economy and a major decline in the construction industry (the industry which N&C Enterprises Ltd. were most heavily dependent upon), it was not economically viable for the company to apply for an EPA licence at the time of expiration of the waste management permit due to the significantly high costs involved.

The lands have undergone partial restoration under Waste Management Permit No. 126/2003. It is estimated that c. 440,000 tonnes of inert soil and stone and construction and demolition waste was imported to site under the terms of the previous waste permit.

Notification (Art27-0217) was also sort on 15/04/2015 to the EPA to import soil and stone as a by-product under Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126/2011) to undertake restoration of the existing sand and gravel pit at Kilmeage, Naas, Co. Kildare. Following consultation with both the EPA and Kildare County Council it was decided to withdraw the above Article 27-217 notification on 9/10/15.

N&C Enterprises now wish to proceed with a Waste Management Licence Application. The current planning permission has about a year left. It is estimated that the void space remaining is c. 983,736 cubic meters. It is estimated that it will take at least 8 years to fill this void space. Therefore, in addition to the Waste Licence Application, an extension of the planning permission for the expected life of the restoration works is to be sort in the near future.

Following on from a meeting with Kildare County Council on 21st September 2015, JSPE subsequently visited the above site at Kilmeage to carry out a cursory appraisal of a section of the quarry face adjoining the eastern site boundary. It was observed that an existing near vertical face (c. 18m high) has been worked close to the property boundary. The applicants Health & Safety consultant has raised concerns with respect to the stability of the quarry face. There is also evidence that the quarry face is showing signs of erosion and some remedial works have been carried out to support the boundary by banking of material against the quarry face. It was considered that additional remedial works are required along a c. 75m section of this quarry face.



An application for a Certificate of Registration under the Waste Management (Facility Permit and Registration) Regulations 2007, as amended was subsequently submitted on 02/02/2016 following consultation with the both the EPA and Kildare County Council for the importation of inert soil and stone to undertake necessary remediation works of the eastern quarry face. The only waste to be accepted at the facility for recovery to undertake these remedial works was to comprise inert soils and stone (EWC 17 05 04). The overall restoration of the facility will be subject to this application for a waste licence to the EPA.

Kildare County Council decided to refuse the Applicant a certificate of registration on 22/03/2016 on the basis that:

- (i) The acceptance of waste material at the facility has exceeded 100,000 tonnes and as such Article 2 of the Third Schedule on Part 2 of the Waste Management (Facility Permit and Registration) Regulations 2007, as amended, prohibits the operator from availing of Class 5 and/or Class 6 of the Waste Management (Facility Permit and Registration) Regulations 2007, as amended, as the upper limit of waste has been exceeded.

Remedial works required to support the eastern boundary by banking of engineering fill material against the quarry face are to be prioritised during phase 1 of the restoration works. As such it is considered that the EPA should prioritise the processing of the Waste Licence Application to facilitate these remedial works.

Our client is also considering importation of inert soil and stone required to carry out necessary remedial works to support the eastern boundary by banking of engineering fill material against the quarry face at the Pit, Kilmeage, Naas, Co. Kildare on the basis that it meets end of waste status under Article 28 of the European Communities (Waste Directive) Regulations, 2011, S.I. No. 126 of 2011.

Currently no regulations have been developed by the European Commission, and/or Ireland with respect to end of waste criteria for inert soil and stone being re-used for engineering purposes. Article 28(3)(a) of the Regulations allows the Agency to decide on a case-by-case basis whether certain waste has ceased to be waste in accordance with the end-of-waste conditions.

3.2.3 COMMENCEMENT

It is proposed that the operation will commence subject to grant of the waste licence for which planning permission (P.A. Reg. Ref. 03/1773 & 12/373) has already been obtained.



3.2.4 AUTHORISATION AND REVISION

It should be noted that the closure and aftercare requirements will be subject to annual review and compliance with relevant conditions attached to the Waste Licence.

3.2.5 CLASSES OF ACTIVITIES

The principal activity is Class R 5 of the Fourth Schedule of the Waste Management Act 1996, as amended (recycling/reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials). Other activities include Class R 13 of the Fourth Schedule (Storage of waste pending any of the operations numbered R 1 to R 12 (excluding temporary storage (being preliminary storage according to the definition of 'collection' in section 5(1)), pending collection, on the site where the waste is produced)).

3.2.6 CLOSURE REQUIREMENTS SPECIFIED IN THE EPA AUTHORISATION

Closure and aftercare requirements specified in any waste licence granted for the proposed development will be considered as part of the annual review.

3.2.7 REQUIREMENTS OF PLANNING PERMISSIONS/ OTHER AUTHORISATIONS

Compliance with the following conditions attached to Planning Permission P.A. Reg. Ref. 03/1773 are considered relevant with respect to the restoration and aftercare of the site at Kilmeage. A copy of the planning permission is attached (Refer to Appendix I).

Condition No. 32

“Prior to commencement of development a detailed scheme for the landscaping indicated on Drawing 12 Rev. A shall be submitted to the Planning Authority for its written agreement. The proposal shall include full details of proposed species and densities, and a timetable for the completion of the work”.

This waste licence application has been prepared in accordance with the landscaping plan submitted as part of a compliance submission to Kildare Co. Council dated 28/09/2004.

Condition No. 33

“As soon as is practicable following completion of the in-filling activities, the site shall be seeded with grass. Prior to seeding, topsoil shall be spread evenly over the site to a minimum depth, after firming, of 150 -200 mm. The topsoil shall be good quality, and shall comply with BS 3882: 1991. The topsoil shall not be spread in wet conditions. The topsoil shall be



adequately prepared for seeding by raking or harrowing and by rolling. Seed shall be spread at a minimum rate of 30 grams per square metre”.

Condition No. 35

“Within 2 months of the cessation of restoration operations on the site a topographic survey shall be carried out in order to confirm that the site has been restored in accordance with that proposed in the planning application and accompanying Environmental Impact Statement. Within one month of the survey plans and sections shall be submitted to the Planning Authority showing the final restored landform. The sections at an interval of not less than 20 metres shall show the restored landform and that proposed within the planning application and Environmental Impact Statement”.

Condition No. 36

“All existing trees and hedgerows along the boundaries of the site shall be retained and any gaps carefully replanted”.

Condition No. 37

“Prior to commencement of development the developer is to consult with the Kildare County Council Heritage Officer and mitigation measures agreed in writing with regard to the sand martins currently nesting within the existing pit. Any mitigation measures required by the Heritage Officer shall be adhered to by the developer”.

Condition No. 40

“The applicants shall lodge with the Planning Authority a cash deposit, a bond of an insurance company or other security to the value of amount to be agreed to secure the reinstatement, final restoration and making safe of the site, coupled with an agreement empowering the Planning Authority to apply such security or part thereof to the satisfactory completion of the development and restoration of the site. The form of the security and the amount shall be agreed in writing with the Planning Authority”.

Due consideration has been given to the above planning conditions with respect to preparation of the Waste Licence application and closure plan. Compliance with respect to the relevant planning conditions attached to Planning Permission P.A. Reg. Ref. 03/1773 shall be undertaken as part of the annual review.



3.3 SITE EVALUATION

3.3.1 OPERATOR PERFORMANCE

It is proposed that an EMS will be put in place in compliance with conditions attached to the Waste Licence. A key benefit of operating an EMS is to encourage a review of all processes on a site and their impact on the environment, and the assessment of how these impacts can be reduced. The operator will maintain a system of continuing improvement and strive to ensure it meets all environmental commitments and licence conditions.

Details with respect to monitoring parameters and frequency of monitoring will be addressed within the EMS, being subject to agreement with the EPA. The EMS will include proposals for noise and dust suppression, bunding of fuel/oil storage tanks, site safety measures, landscaping, monitoring of ground water quality and levels.

The EMS will include an Environmental Management Plan which will detail all of the conditions/recommendations relating to the planning permission and EIS, waste licence including prioritising and scheduling of actions to be taken. Material acceptance procedures, emergency preparedness & response, and complaints procedures will also be addressed.

The Planning Authority makes reference to two unauthorised development files relating to the site, reference UD 4781 and UD4048. The former related to a Warning Letter sent to N & C Enterprises Ltd regarding the "operation of a batching plant/facility". The latter, UD4048, relating to a Warning Letter sent to N & C Enterprises in 2005 for the "*unauthorised storage, batching and bagging of materials such as sand, gravel, pebbles etc. without the benefit of a relevant planning permission*".

Neither of these notices related to the fill operations permitted under Planning Permission P.A. Reg. No. 03/1773 & P.A. Reg. 12/373.

The Environmental Department have stated in their response of 30/7/2015 that:-

It is our understanding that notices were served in 2007 and 2012 under Section 55 of the Waste Management Act, 1996. Kildare County Council Environmental Department have stated the following with respect to these notices.

"In 2007 the permit holder was requested under Section 55 of the Waste Management Act, 1996 to remove contaminated waste including metals, plastics, wood, pallets and fines.



In 2012 N&C Enterprises Ltd were requested under Section 55 of the Waste Management Act 1996 to cease the importation of waste (as they did not have a Waste Licence from the EPA) and to remove the soil and mixed construction and demolition waste from the site.

The site operated under waste permits in the past. Inspections carried out between 2006 - 2008 had numerous non-compliances such as bringing in unauthorised wastes (reinforced concrete, fines, plastics, timber, concrete).

Kildare County Council also received complaints relating to operating outside permitted times and burning of waste”.

The Environmental Department have stated in a response to the EPA on 30/7/2015 relating to Article 27 Notification No, 217 that the section 55 notices were complied with.

3.3.1.1 SITE INVESTIGATIONS & MONITORING

A detailed geological and hydrogeological assessment has been prepared as part of the Waste Licence application (Refer to Waste Licence Application I.2.1). The following provides a summary of the site investigations including testing and monitoring of groundwater.

A site walkover survey was completed by Michael Gill of Hydro-Environmental Services on 16th November 2015. Following on from the initial walkover survey HES also completed trial pitting, groundwater well drilling, and groundwater sampling at the site as outlined below.

Site investigations included 15 no. trial pits carried out by HES on the 26th November 2015. In general, trial pit geology consisted of made ground with gravel fill. Subsoil encountered across the site was relatively consistent and comprised of soil and stones comprising brown and grey angular and rounded gravels and cobbles of limestone and sandstone in silty sand matrix, with broken blocks and bricks, and minor broken concrete and concrete pipe, with very occasional plastic, wire/metal, and timber fragments as is consistent with made ground. This fill material was imported to site for land restoration subject to Waste Management Permit No. 126/2003. The 2015 ground investigation at the site did not reveal any evidence of systemic soil contamination across the sand and gravel pit site.

2 no. groundwater monitoring wells were drilled at the site between 07th and 10th December 2015. These monitoring wells are intended to be permanent water level monitoring locations for the site. There is also one existing water well at the site (PW-01), and a spring (GW-01) that emerges on the floor of the pit.

4 no. water samples at locations PW1 (existing well), MW15-01, MW15-02, and GW1 (spring on the site) were taken by HES on the 16th December 2015. An additional sample was taken from MW15-01 on 8th March 2016.



Static groundwater level monitoring was recorded at the site in the on-site wells. Based on groundwater data levels from the 16th December 2015 groundwater flow direction at the site is in a south-easterly direction towards the River Liffey.

Groundwater data from the site indicates several parameters that are elevated above Groundwater Assessment Criteria. Many of the elevations occur on indicator parameters, e.g. EC, chloride, nitrate, ammonia, microbial pathogens, but there are also elevated concentrations of metals such as Boron (in MW15-01). There may be a combination of sources causing these elevated parameters, such as the fill material (from the permit backfilling phase), local septic tanks, or local land spreading of organic wastes.

In order to assess ongoing water quality in this area of the site it is important to continue to monitor local groundwater quality to establish seasonal trends. Sampling of well MW15-01 should be completed on a quarterly basis.

There are no significant residual impacts with respect to groundwater and/or surface water provided the appropriate mitigation measures are implemented. It is therefore considered that the siting of an inert recovery facility in this location is acceptable and that there will be no significant short term or long term impacts on groundwater and/or surface water.

3.3.2 ENVIRONMENTAL PATHWAYS AND SENSITIVITY

A detailed geological and hydrogeological assessment has been prepared as part of the Waste Licence application (Refer to Waste Licence Application I.2.1).

With respect to closure and aftercare requirements the following provides a summary of the relevant information with respect to identifying environmental pathways and sensitivity which is addressed in more detail in geological and hydrogeological assessment report.

3.3.2.1 SITE GEOLOGY & HYDROGEOLOGY

The site area is mapped as being overlain by Renzinas/Lithosols soil types (BminSW) with Grey brown Podzolics/basic brown earths (BminDW) in the wider area. Soil deposits have been removed from the site footprint by the previous site operations, but they remain on the surrounding lands.

Subsoils at the site are mapped as being Carboniferous Limestone sand and gravels (GLs). Parts of the site and the surrounding lands are mapped as made ground. The former sand and gravel pit has been heavily quarried over the course of its operation and a large void, some 15-20m deep remains.



Bedrock geology in the area of the site is mapped as underlain by the Devonian Old red Sandstones (DORS) rock unit type.

The limestone bedrock mapped at the site has an aquifer classification of LI – Locally Important Aquifer – Bedrock which is Generally Moderately Productive.

Groundwater vulnerability is mapped by the GSI as High (H). The site sits upon two Groundwater bodies (GWB) namely the Kildare (Code: IE_SE_G_077) and the Dublin (Code: IE_EA_G_008).

There are 7 no. mapped water wells in the area that are used for residential purposes in the vicinity of the proposed site.

3.3.2.2 SITE HYDROLOGY

There are no significant surface water features at or in the vicinity of the site. There is a perched pond to the east of the site, but this is a local feature and has not and will not be impacted by the proposed site development works.

The majority of the site is located in the South Eastern River Basin District (SERBD) in the Barrow catchments (Code: IE14_01) except for the southern tip of the site which is located in the Eastern River Basin District (ERBD), specifically the Liffey catchment (Code: IE19_01) (www.gsi.ie). There are no mapped streams/rivers in the vicinity of the site, however the Slate River exists ~2.4km north of the site. The Grand Canal is located ~1.76km north of the site. The Grand Canal begins at the River Liffey in Grand Canal Dock and continues through to the River Shannon with various branches, including a link to the River Barrow waterway at Athy.

In terms of local hydrology, the majority of the site lies within the Barrow Slate Surface Water Body (SWB) (Code: IE_SE_14_999), while the southern tip sits within the Liffey1_Lower_2 Surface Water Body (SWB) (Code: IE_EA_09_1870_2).

3.3.2.3 PROXIMITY TO SENSITIVE RECEPTORS, INCLUDING HUMANS

The existing sand and gravel pit is located approximately c.10.7km to the southwest of Clane, Co. Kildare, and c.2.3km southwest of the village of Robertstown along the R415; a third class road connecting Kilmeage with Kildare town runs [east-west] to the south of the site. The sand and gravel pit is just east of Kilmeage village. The Hill of Allen is located 3.0km to the southwest of the site.

The current site area under the ownership of N&C is estimated at c. 6.6 hectares in total, and is depicted on Figure B.2.1. Sand and gravel extraction has ceased on the site and the site is



currently used for bagging of imported decorative stone. N&C propose to restore the lands to form a rounded hill that would tie into the ground levels of the surrounding lands.

Land use in the area to the west and southwest is largely residential, with some commercial use in close proximity to the pit. There is a row of single houses along the southern boundary of the site, and these face to the south on the local road. The land to the northeast and northwest is largely agricultural as shown by B.2.1.

3.3.2.4 DESIGNATED SITES

There are a number of designated sites in the vicinity of the study area:

- The Grand Canal a proposed Natural Heritage Area (pNHA) (Site code: 001387) ~1.76km northeast of the site;
- The Ballynafagh Lake Special Area of Conservation (SAC) (Site code: 001387) ~3.5km north west of the site;
- Ballynafagh SAC (Site Code: 000391) and pNHA ~4.8km northwest of the site; and,
- Mouds Bog SAC (Site Code: 002331) and pNHA ~3km south of the site.

None of these designated sites are directly hydrologically/hydrogeologically linked to the proposed development site and so are not of significant relevance to this hydrogeological assessment.

Screening for Appropriate Assessment was carried out in preparation of the waste licence application (Refer to Licence Application Attachment L.1.1.).

The site does not support any of the habitats or species for which nearby SAC's are designated and therefore cannot act as a reservoir area in the event of loss. There is also no specific pathway by which ecological effects could be carried to the Natura 2000 sites. The quarry is on the eastern side of an area of hills and is in the Liffey catchment, considerably to the north of Pollardstown. The Geological and Hydrogeological Assessment report prepared for the Waste Licence application has determined that none of the designated sites are directly linked to Kilmeage by groundwater.

This means that the Natura 2000 sites themselves and their conservation objectives cannot be impacted.

On the basis of the findings of this analysis in view of best scientific knowledge, it was concluded that the activity, individually or in combination with other plans or projects is not likely to have a significant effect on the Natura 2000 network, and the conservation objectives of the sites. A Stage 2 Appropriate Assessment is therefore not required.



3.3.2.5 EMISSIONS

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

The main potential sources of emissions from an inert waste recovery facility would be from noise or dust associated with the movement, handling and placement of materials. Possible other emissions to the atmosphere would be from machinery exhaust fumes and also possible emissions to groundwater in the event of a fuel spillage. Full descriptions of possible emissions, means of abatement and treatment measures are contained in Attachments E, F and I of the Waste Licence Application.

Clean closure is envisaged such that all plant is safely removed for reuse or recycling and all wastes are removed off site at the time of closure for appropriate recovery or disposal.

There will be no on-going requirement for environmental monitoring of emissions after recovery operations have ceased. It is proposed that ground water monitoring is continued during the aftercare programme for a period up to the final site inspection.

An aftercare scheme will be implemented with the aim of bringing the restored soils (and hence land) into a condition which does not need to be treated differently from undisturbed land in the same use. The final restoration of the site will facilitate an agricultural after-use similar to that which existed prior to extraction works.

A final site inspection 6 months after site closure will be carried out to ensure that the final site restoration scheme implemented is functioning and progressing as required.

3.3.3 SITE PROCESSES AND ACTIVITIES

The nature of the development is the importation of inert soils, stone, and recovery of inert construction and demolition waste for the continued phased restoration of a sand and gravel pit to a contoured landform that will be in keeping with the surrounding landscape.

Progressive restoration involving grass seeding of restored areas shall be carried out on a staged basis to reduce the effects of soil erosion, windblown dust, to aid ground stabilisation and as an effective means of weed control. On completion of each phase of development final restoration including grading, seeding and landscaping will be carried out.

Clean construction and demolition waste will either be used on haul roads or temporarily placed in storage awaiting recovery.

No sorting of materials other than separation of rebar from concrete will be undertaken on site as all material will be sorted and segregated at source before being brought to the application



site. Rebar (reinforced steel) separated from concrete will be stored in the designated quarantine area awaiting removal off-site by a licensed scrap merchant.

The attached Site Infrastructure Plans (Refer to Figures D.1.1 to D.1.4) indicate the location of all activities and identifies all buildings and facilities at the Recovery Facility.

3.3.4 INVENTORY OF BUILDINGS, PLANT AND EQUIPMENT

Details of the site infrastructure are provided in Attachment D of the Waste Application.

Appropriately scaled drawings ($\leq A3$) have also been provided showing the location and relevant details with respect to site infrastructure (Refer to Figures D.1.1 to D.1.3).

Plant on site will comprise a bulldozer, excavator, tractor and bowser, road sweeper attachment. A loading shovel and crushing and screening plant will be utilised by the proposed C&D Recycling Facility.

There is a weighbridge on site. Trucks entering the site are typically 4 axle 9 cu.m capacity rigid bodied tippers.

The existing wheelwash facility will be maintained and continue to be operated for the duration of the development. The wheelwash was provided in compliance with condition No. 11 of planning permission P.A. Reg. Ref. No. 1773/03. All trucks are required to pass through leaving the site.

The temporary site office accommodation comprises of a large portacabin structure including canteen, washroom facilities, dispatch office and offices. This infrastructure will be removed immediately following the restoration of the pit.

Other structures on site to be utilised comprise of storage containers, stores, Aggregate storage bays (to be used for inspection/quarantine and material storage). No major vehicle servicing/repairs are carried out on site.



3.3.5 INVENTORY OF RAW MATERIALS, PRODUCTS AND WASTES INCLUDING STORAGE CAPACITIES

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

It is proposed that up to circa 345,000 tonnes per annum of inert materials, subject to market demand, will be accepted to site. The site has the benefit of existing planning permission (P.A. Reg, Ref. 03/1773 & 12/373) for the above development. This figure is based on the maximum limit of 50 truckloads per day permitted (Condition No. 38 P.A.Reg. ref. 03/1773. This is the maximum amount of material that can be imported to site.

Whilst it is difficult in the current economic climate to forecast demand due to a number of variables including availability of inert materials generated by construction activity; scale, duration and location of construction projects; it is considered that the average will be closer to 250,000 tonnes per annum.

The lands have undergone partial restoration under Waste Management Permit No. 126/2003. It is estimated that c. 440,000 tonnes of inert soil and stone and construction and demolition waste was imported to site under the terms of the previous waste permit.

It is estimated that the void space remaining is c. 983,736 cubic meters (1,967,472 tonnes).

It is estimated that c. 20,000 tonnes per annum of construction and demolition waste will be imported to site. Due to relatively small volumes it is likely that a mobile crusher/screening unit will be mobilised to site on a campaign basis and/or 3 monthly intervals. Recycled material (subject to reaching end of waste status (Article 28) will be used for internal haul roads and/or dispatched offsite.

The only raw materials used on site are diesel, hydraulic oil and engine oil which will be used to operate diesel powered plant on site. The overall fuel use will amount to about 30,000 litres/annum. The mobile double skinned (integrated bunding) fuel bowser will have a capacity of c.750 litres and will be refuelled weekly.

Details with respect to waste storage are also included in Section B.9 of the Waste Licence Application form. The following table summarises the maximum amount of waste that will be held or stored at the installation at any one time.



Table 3-1 Waste Storage

Location of waste	Tonnes	Disposal route and/or technique	Notes, rationale, clarifications
Quarantine areas	10	Deleterious material removed offsite by approved waste collection contractor for recovery and/or disposal at approved facility	Any small quantities of timber, plastic, paper and steel will be separated for recovery and/or disposal offsite.
Inspection areas	Not Applicable	Inspection Area clear at end of working day.	Inert Soil & Stone and recovery of C&D Waste only. Deleterious material will either be rejected or placed in quarantine area. Untreated C&D material placed in appropriate storage area following inspection.
Storage areas (untreated waste)	5,000	C&D material removed offsite by approved waste collection contractor for recovery and/or disposal at approved facility	Tonnage is equivalent to 3 months supply of imported C&D waste. Due to relatively small volumes it is likely that a mobile crusher/screening unit will be mobilised to site on a campaign basis and/or 3 monthly intervals.
Storage areas (treated waste)	2,000	Recovered C&D Material reaching Article 28 Requirements for a product to be used on site for closure works	Unit Cost assumes handling and placement of recovered C&D Product as part of closure works.

3.4 CLOSURE TASKS AND PROGRAMMES

This section details the plant, structures, equipment and other materials which require consideration as part of the closure process.

Clean closure is envisaged such that all plant is safely removed for reuse or recycling and all wastes are removed off site at the time of closure for appropriate recovery or disposal.

Redundant structures, plant equipment and stockpiles will be removed from site on cessation of recovery activity. Machinery and buildings will either be utilised by N&C on other sites, or be sold as working machinery or scrap. In the case of machinery to be scrapped all contaminants will be removed, drained or flushed from all plant, tanks and pipelines. All residues containing fuels, oils and other contaminants will be removed off site for recovery or disposal.

A mobile double skinned (integrated bunding) fuel bowser will be used to refuel mobile plant on site. The bowser will be provided with a Spill tray and spill kit. The fuel bowser will be kept within an existing surfaced aggregate bay with surface runoff from the hard standing directed to a silt trap with discharge to ground via a Class I Full retention separator. No waste oil products are stored on site. Waste oils will be disposed of by a licensed waste contractor and removed off site. All oil barrels and lubricants will be stored on spill pallets/ spill trays.



As such no special measures are considered necessary with respect to closure in relation to fuel and oil products.

The hard standing areas shall be broken up and the material recovered. The site access will be retained as agricultural access to the restored lands.

Whilst clean closure is envisaged and the site will be restored in a progressive manner consideration has been given to the need to complete the final restoration and aftercare of the area comprising the site office, wheelwash, and Construction and Demolition waste recovery area which covers an area of c. 1.3 ha. In practice this area will be progressively restored and the C&D recycling area will be decommissioned prior to completion of backfill operations; however, for the purposes of closure planning adequate provision has been included in the costings (Refer to Section 3.7 below).

It is expected that it will take up to six months to undertake the closure process and a further six months for Aftercare.

Table 3-2 Closure, Restoration and Aftercare Programme

Activity	Closure Period						Aftercare Period					
	1	2	3	4	5	6	1	2	3	4	5	6
Completion of Backfill												
Environmental Validation Audit												
Recovery/disposal of residual waste												
Removal of hard standings & site infrastructure												
Decommissioning of P&M												
Noise & Dust Monitoring												
Groundwater Monitoring												
Trial Pitting/ EPA inspection												
Final contouring, grading, cultivation, grass seeding												
Inspection and enhancement of hedgerows if necessary												
Application of Fertiliser, weed control as necessary,												
Remediation of any localised areas of soil compaction and ponding of surface water as, and if, required												
Surrender of Licence												

Notes: 1. Periods shown are shown in Months



3.5 CRITERIA FOR SUCCESSFUL CLOSURE

Successful clean closure will be expected to be achieved when it can be demonstrated that there are no remaining environmental liabilities at the site. In practice this will require demonstration that the following criteria have been met:

- All plant safely decontaminated using standard procedures and authorised contractors.
- All Wastes handled, temporarily stored and disposed or recovered in a manner which complies with regulatory requirements.
- All relevant records relating to waste and materials movement and transfer or disposal will be retained throughout the closure process.
- It is proposed that on completion of backfilling for the remaining area (c. 1.3 ha) that a site inspection will be carried out. It is proposed that a number of trial pits will be opened to confirm the nature of the placed materials. All soils encountered will be described in accordance with the British Standards Institution Code of Practice for Site Investigations (BS 5930, 1999) which gives a geotechnical classification of the materials encountered, in particular bulk density, structure and textural characteristics. Bulk samples will be collected and retained for analysis from both topsoil and subsoil in each pit, should it be required. A log summary including photographic record of the trial pits will be kept. The results of the survey will be made available to the EPA. The EPA will also be invited to visit the site as part of the site inspection. The purpose of the inspection is to ensure that there is no soil or groundwater contamination at the site.
- The Environmental Management System shall remain in place and will continue to be actively implemented during the closure period.

3.6 CLOSURE PLAN VALIDATION

An Environmental Validation Audit of the site will be carried out following the announcement of closure and prior to actual decommissioning and closure operations taking place. The audit will devise an accurate inventory of all plant, equipment and wastes on the site. This inventory will be used as a benchmark against which successful decommissioning will be assessed.

It is proposed that the Environmental Validation Audit will be undertaken by JSPE and/or other independent Auditor to be agreed with EPA prior to the validation commencing.



The scope of the validation audit will be agreed in advance with the EPA and following approval, the chosen independent auditor will complete the validation audit. The completed validation audit report will be submitted to the EPA for approval.

The Environmental Management System including environmental monitoring (Groundwater only) shall remain in place and will continue to be actively implemented during the closure period.

The licence holder shall carry out such tests, investigation or submit certification, as requested by EPA in accordance with the waste licence to confirm that there is no risk to the environment.

As such a two stage site inspection/investigation programme has been proposed with respect to closure (Refer to Table 3.2 above). As outlined above the results of the surveys will be made available to the EPA. The EPA will also be invited to visit the site as part of the site inspections.

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3.7 CLOSURE PLAN COSTING

Whilst clean closure is envisaged and the site will be restored in a progressive manner consideration has been given to the need to complete the final restoration and aftercare of the area comprising the site office, wheelwash, and Construction and Demolition waste recovery area which covers an area of c. 1.3 ha. In practice this area will be progressively restored and the C&D recycling area will be decommissioned prior to completion of backfill operations; however, for the purposes of closure planning adequate provision has been included in the costings and this scenario is considered to represent a worst case scenario in the event of cessation resulting from abandonment of the activity.

The following Table 3-3 provides details with respect to the cost of restoration of the site.

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Table 3-3 Estimate of Closure Plan Costs

Task/Description	Quantity	Unit	Rate	Cost €	Source (See Notes)
Restoration of C&D Recovery Area					
Place & Grade topsoil (0.3m depth)	3,900	m ³	€1.00	3,900	JSPE
Landscaping/Seeding/Planting (Contractor)	5	days	500	2500	EPA 2014a
Decontamination					
<i>Not considered necessary due to inert nature of waste materials. No fuel or oil storage tanks on site</i>				0	
Plant & Machinery/ Prefabricated Office					
<i>To be sold/used on other Sites by N&C Enterprises</i>				0	
Waste Disposal/Recovery					
Hard standing areas/concrete to be recovered for use				0	
Facility Security & House keeping					
<i>Operative to be on site one day per week during 6 month aftercare period</i>	24	days	150	3600	N&C
Management & Utility Costs					
Management (Site Supervisor) – 50% time allocation	6	Months	2000	12000	EPA 2014a
General Administration (2 days per month)	12	days	300	3600	EPA 2014a
1 General operative	6	Months	3300	19800	N&C
Insurance	1	Unit	5000	5000	N&C
Power (six months)	6250	kWh	0.16	1000	EPA 2014a
Fuel (six months)	15000	litre	0.48	7200	N&C
Environmental Monitoring					
<i>Ground water monitoring of three monitoring wells for aftercare period (2 rounds)</i>	6	sample	150	900	EPA 2014a
<i>Report Prepared by Environmental Consultant</i>	1	day	750	750	JSPE
Environmental Validation Audit					
<i>To be carried out following the announcement of closure and prior to actual decommissioning and closure operations taking place.</i>	1	unit	5000	5000	EPA 2014b
Site Inspections					
Trial Pit programme on completion of backfilling for the remaining area (c. 1.3 ha)	6	Unit	90	540	EPA 2014a
Environmental Consultant (including Reporting)	3	day	750	2250	JSPE
Final Inspection of site (6 months after completion of landscaping)	2	day	750	1500	JSPE
Surrender of Licence					
Fee for Surrender of a waste licence	1	unit	6000	6000	WML Reg.s
Consultancy Costs	5	day	750	3750	JSPE
Subtotal				79290	
<i>Contingency (10%)</i>				7929	
Total				87219	



3.8 CLOSURE PLAN REVIEW AND UPDATE

The Closure Plan will be reviewed and updated annually as part of the Annual Environmental Report submission to the EPA.

The updated and reviewed Closure Plan will take account of any site or process changes, technology changes and costing changes.

3.9 RESTORATION & AFTERCARE

Following on from the scoping exercise (Refer to Section 2 above) it was determined given the relatively short-term measures necessary to close the site satisfactorily, that there will be no environmental liabilities once closure, decommissioning and residuals management are completed, and so only **a closure plan** is considered necessary.

However, an aftercare scheme will be implemented with the aim of bringing the restored soils (and hence land) into a condition which does not need to be treated differently from undisturbed land in the same use. The final restoration of the site will facilitate an agricultural after-use similar to that which existed prior to extraction works.

A final site inspection 6 months after site closure will be carried out to ensure that the final site restoration scheme implemented is functioning and progressing as required.

Details (including costings) with respect to final restoration, aftercare and site inspection have been addressed as part of the closure plan above.

3.10 FUTURE PROOFING COSTS

3.10.1 CONTINGENCY

The contingency is a specific provision for unplanned or unforeseeable items (e.g. mobilisation issues due to weather conditions, changes due to incomplete design information, changes in regulatory requirements) and provides an additional level of confidence in relation to the costing.

The closure requirements and costs for this activity are well defined, relatively straightforward and not subject to a large number of unknowns. In that context, a contingency of 10% is considered appropriate and is provided to allow for unplanned or unforeseeable items (Refer to Table 3.3 above).



As the activity moves towards closure and restoration/aftercare, the level of uncertainty should decrease, particularly as sections of the site are progressively restored. As a result, the level of contingency necessary may also decrease.

3.10.2 COST PROFILE

The lands are to be restored to forestry/agricultural use by importation and recovery of inert materials in accordance with a phased restoration scheme. It is the intention to develop them for agricultural/ forestry use. Each phase will be for a duration of about 1 to 2 years (Refer to Figures D.1.1 to D.1.4).

Progressive restoration involving grass seeding of restored areas shall be carried out on a staged basis to reduce the effects of soil erosion, windblown dust, to aid ground stabilisation and as an effective means of weed control. On completion of each phase of development final restoration including grading, seeding and landscaping will be carried out.

Whilst clean closure is envisaged and the site will be restored in a progressive manner consideration has been given to the need to complete the final restoration and aftercare of the area comprising the site office, wheelwash, and Construction and Demolition waste recovery area which covers an area of c. 1.3 ha. In practice this area will be progressively restored and the C&D recycling area will be decommissioned prior to completion of backfill operations; however, for the purposes of closure planning adequate provision has been included in the costings and this scenario is considered to represent a worst case scenario in the event of cessation resulting from abandonment of the activity.

On this basis it is considered that any financial provision required with respect to closure, restoration and aftercare should be based on the closure costs as detailed (Refer to Table 3.3 above).

3.10.3 INFLATION/DISCOUNTING

It is proposed to use the Appropriate Wholesale Price Index [Capital Goods, Building & Construction (i.e. Materials & Wages) Index], as published by the Central Statistics Office, for the year since last calculation/revision.



3.10.4 REVIEWING AND UPDATING COSTS

Closure and restoration/aftercare costs will be reviewed annually and any proposed amendments thereto notified to the EPA for agreement. It is proposed to adopt the following formula when updating costings:

$$\text{Revised Cost} = (\text{Existing Cost} \times \text{WPI}) + \text{CiCC}$$

where:

WPI = Appropriate Wholesale Price Index [Capital Goods, Building & Construction (i.e. Materials & Wages) Index], as published by the Central Statistics Office, for the year since last calculation/revision.

CiCC = Change in compliance costs as a result of change in site conditions, law, regulations, regulatory authority charges or other significant changes.

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3.11 FINANCIAL PROVISION

The document *Guidance on Financial Provision for Environmental Liabilities, Environmental Protection Agency (EPA) 2015* sets out broad guidance in relation to how the Environmental Protection Agency (EPA) anticipates it will approach financial provisions.

Financial provisions are, in broad terms, required to cover environmental liabilities that may occur during the operating life of a licensed facility or that may arise from or following the closure of a licensed facility.

The EPA's preference is for the use of established and low risk financial instruments, which are in line with the principles of being secure, sufficient and available when required. The type of financial instrument(s) accepted by the EPA will depend on the nature of the risk being covered.

The following forms of financial instrument are, in principle, acceptable to the EPA:

Figure 3-1 Forms of Financial Instruments acceptable to EPA

Secured fund	<ul style="list-style-type: none"> • A secured fund with a first ranking fixed charge in favour of the EPA is suitable financial provision for all liabilities.
On demand performance bond	<ul style="list-style-type: none"> • Perpetual and on-demand performance bonds are suitable financial provision for all liabilities. This is provided that the failure, on expiry, to renew or replace the bond with alternative financial provision is a drawdown event.
Parent company guarantee	<ul style="list-style-type: none"> • A parent company guarantee is suitable financial provision for most liabilities. It is not suitable to cover inevitable closure costs.
Charge on property	<ul style="list-style-type: none"> • A first ranking fixed charge on property in favour of the EPA is suitable financial provision for all liabilities. However, only a certain percentage of the property's value may be used towards the satisfaction of the licensee's financial provision obligations.
Insurance	<ul style="list-style-type: none"> • Environmental impairment liability insurance is suitable financial provision for potential liability from incidents arising on sites. This is provided the policy wording is acceptable to the EPA.

N & C Enterprises Ltd will make the necessary financial provision to cover the closure and restoration/ aftercare requirements (€87,219). N&C Enterprises are considering either putting in place a secure fund, and/or on demand performance bond. The form and value of the financial provision will be subject to agreement with the EPA following grant of the Licence.



4 INCIDENTS

4.1 INTRODUCTION

Environmental liability risk assessment (ELRA) considers the risk of incidents occurring that could result in liabilities materialising, e.g. fire, fuel spillages. Proactive environmental risk management can both increase compliance and significantly reduce the potential for an incident. The result is a lower risk profile for an activity and a potentially lower cost in making financial provision. The two key objectives of the ELRA process are:

- to identify and quantify environmental liabilities focusing on unplanned, but possible and plausible events occurring during the operational phase; and
- to provide a mechanism to encourage continuous environmental improvement through the management of potential environmental risk

The ELRA approach is a standard risk assessment that involves the assessment of the likelihood of occurrence of an event in combination with the consequences of that event. This is followed by the costing of the plausible worst case scenario for the purposes of informing the level of financial provision (cover) necessary.

The ELRA procedure is illustrated by the following Figure 4.1.

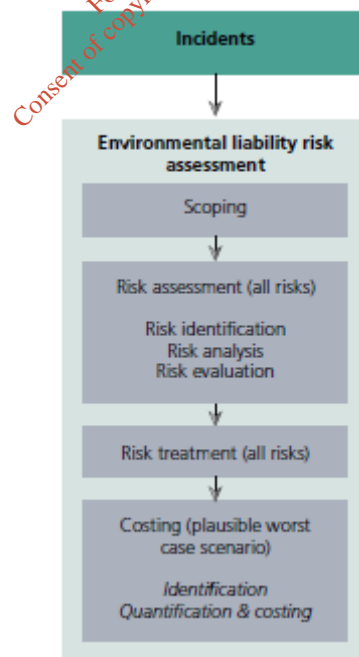


Figure 4-1 Environmental liability risk assessment process (Source EPA 2014a)



4.2 SCOPING

The purpose of ELRA is to identify and cost risks to the environment (surface water, groundwater, atmosphere, land, flora, fauna and human health).

In this case only inert soils and stone, and inert construction and demolition waste is to be accepted at the facility for recovery and phased restoration of a sand and gravel pit to a contoured landform that will be in keeping with the surrounding landscape.

The lands have undergone partial restoration under Waste Management Permit No. 126/2003. It is estimated that c. 440,000 tonnes of inert soil and stone and construction and demolition waste was imported to site under the terms of the previous waste permit.

The main potential sources of emissions from an inert waste recovery facility would be from noise or dust associated with the movement, handling and placement of materials. Possible other emissions to the atmosphere would be from machinery exhaust fumes and also possible emissions to groundwater in the event of a fuel spillage.

Clean closure is envisaged such that all plant is safely removed for reuse or recycling and all wastes are removed off site at the time of closure for appropriate recovery or disposal. Monitoring undertaken should demonstrate that there are no outstanding environmental issues.

There will be no on-going requirement for environmental monitoring of emissions after recovery operations have ceased. It is proposed that ground water monitoring is continued during the aftercare programme for a period up to the final site inspection.

An aftercare scheme will be implemented with the aim of bringing the restored soils (and hence land) into a condition which does not need to be treated differently from undisturbed land in the same use. The final restoration of the site will facilitate an agricultural after-use similar to that which existed prior to extraction works.

A final site inspection 6 months after site closure will be carried out to ensure that the final site restoration scheme implemented is functioning and progressing as required.

It is evident from the above description given the relatively short-term measures necessary to close the site satisfactorily, that there will be no environmental liabilities once closure, decommissioning and residuals management are completed.

It is considered that the site activity will require the ELRA to address liabilities from past and present activities.



4.3 RISK ASSESSMENT

4.3.1 RISK IDENTIFICATION

Key information required for the risk identification process on the site operation, performance and sensitivity has been provided in Section 3.2 & 3.3 of this report.

During the risk identification, all the processes on site were identified and the risks associated with each process were listed. The risk identification process was carried out by an experienced environmental consultant with over 25 years' experience in the extractive and inert waste management industries, consultation with the appointed hydrogeological consultants and the proposed facility manager. All potential causes of failure of the processes and the effect/impact on the environment were identified. All plausible risks identified are listed in Table 4.1.

Table 4-1 Plausible risk identified for the activity

Risk ID	Process	Potential Risk
1	Fuel Storage	Leakage of fuel during refuelling
2		Accidental spillage of fuels and lubricants by construction plant placing the inert fill and other operational procedures
3	Suspended Solids	Increase in suspended solids and potential for contaminated runoff entering groundwater during development of the site
4	Backfilling	Impermeable barrier to groundwater flow
5		Reduction in recharge to aquifer
6		Disruption of local spring flow
7	Waste Water Treatment	Uncontrolled release of sewage
8	Waste Management Practices	Rogue load of contaminated material
9	Fugitive Dust Emissions	Dust generation associated with placement of materials and/or recovery operations during prolonged periods of dry weather
10	Noise Emissions	Excessive noise emissions due to poor operational practice and implementation of abatement
11	Traffic	Excessive speed can result in increases in noise, dust emissions



4.3.2 RISK ANALYSIS

The risks above were assessed against likelihood and consequence as per Tables 4.2 and 4.3; the results are presented in Table 4.4.

Table 4-2 Risk classification table - likelihood (EPA 2014a)

Rating	Likelihood	
	Category	Description
1	Very Low	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring
3	Medium	Medium chance of hazard occurring
4	High	High chance of hazard occurring
5	Very High	Very high chance of hazard occurring

Table 4-3 Risk classification table - consequence (EPA 2014a)

Rating	Consequence	
	Category	Description
1	Trivial	No impact or negligible change to the environment
2	Minor	Minor impact/localised or nuisance
3	Moderate	Moderate impact to environment
4	Major	Severe impact to environment
5	Massive	Massive impact to a large area, irreversible in medium term



Table 4-4 Risk Analysis

Risk ID	Process	Potential Risk	Environmental effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
1	Fuel Storage	Leakage of fuel during refuelling	Contamination of soil and groundwater due to release of hydrocarbons	3	Limited storage volume. Hazardous and persistent material.	2	Mobile double skinned (integrated bunding) fuel bowser to be provided. Hard standing with drainage to Class I Full Retention Separator	6
2		Accidental spillage of fuels and lubricants by construction plant placing the inert fill and other operational procedures	Contamination of soil and groundwater due to release of hydrocarbons	3	Limited storage volume. Hazardous and persistent material.	2	Hard standing with drainage to Class I Full Retention Separator. All oil barrels and lubricants will be stored on spill pallets/ spill trays. Spill kits will be maintained on site and the Company will put in place an emergency response procedure for hydrocarbon spills and appropriate training of site staff in its implementation.	6
3	Suspended Solids	Increase in suspended solids and potential for contaminated runoff entering groundwater during development of the site	Contamination of groundwater due to release of hydrocarbons	2	Potential for infiltrating rainfall to mobilise fines in loose backfilled materials and carry them toward the groundwater body	2	Without mitigation the probability of occurrence of an increase in suspended solids and potential for contaminated runoff entering groundwater during operation of the facility is 'low' to 'medium'	4
4	Backfilling	Impermeable barrier to groundwater flow	Localised impairment of groundwater infiltration	2	Infilling the void on the pit floor with low permeability inert fill	2	The groundwater table is below the proposed fill zone, therefore it is not envisaged that the infilling with inert soil material will influence the regional groundwater flow towards the River Liffey in any way. There may be some local alteration to how recharge occurs at the site, but in terms of the overall impacts on the groundwater system this is likely to be negligible.	4
5		Reduction in recharge to aquifer	Localised impairment of recharge to aquifer	2	Infilling the void on the pit floor with low permeability inert fill	2	Without mitigation, or consideration of operational procedures, infilling the void on the pit floor with low permeability inert fill material has the potential to create a low permeability zone or zones and therefore impair recharge/infiltration.	4
6		Disruption of local spring flow	Local Disruption of groundwater flow	2	Disruption of local spring flow that occurs on pit floor	3	Without mitigation, or consideration of operational procedures, infilling the void on the pit floor with low permeability inert fill material has the potential to alter the local spring flow that occurs on the floor of the pit.	6
7	Waste Water Treatment	Uncontrolled release of sewage	Contamination of Groundwater	2	Failure to empty holding tank on routine basis	1	Low. The holding tank is periodically emptied and disposed of offsite by a licensed waste disposal contractor to an appropriate disposal facility.	2
8	Waste Management Practices	Rogue load of contaminated material	Contamination of soil and groundwater	3	Material to be delivered in individual loads and therefore any contaminated loads would be of small quantities with minor localised impacts	3	The likelihood of occurrence is medium without adequate inspection, acceptance and quarantine procedures being put in place	9
9	Fugitive Dust Emissions	Dust generation associated with placement of materials and/or recovery operations during prolonged periods of dry weather	uncontrolled dust emission to air with potential for localised nuisance at nearest receptors	2	Localised, intermittent nuisance for nearby sensitive receptors	3	Medium chance of occurring particularly in the absence of mitigation measures.	6
10	Noise Emissions	Excessive noise emissions due to poor operational practice and implementation of abatement	Nuisance at noise sensitive receptors	2	Localised, intermittent nuisance for nearby noise sensitive receptors	3	Medium chance of occurring particularly during phases when restoration works are being carried out on southern and western boundaries. Need to ensure mitigation measures are implemented and due consideration is given to Careful consideration is given to timing and duration of restoration works adjoining these boundaries.	6
11	Traffic	Excessive speed can result in increases in noise, dust emissions	Nuisance at sensitive receptors due noise and dust associated with traffic	2	Localised, short duration nuisance for nearby receptors	2	Low likelihood of occurrence due to existing traffic control measures including automatic barrier, surfaced access road, wheelwash, speed limit signs	4



4.3.3 RISK EVALUATION

The purpose of risk evaluation is to assist in making decisions, using the outcomes of the risk analysis, identifying and prioritising the risks for risk treatment. Each of the risks is ranked to assist in the prioritisation of treatment (Refer to Table 4.5).

Table 4-5 Risk evaluation

Risk ID	Process	Potential Risk	Consequence Rating	Likelihood Rating	Risk Score (Consequence x Likelihood)
8	Waste Management Practices	Rogue load of contaminated material	3	3	9
1	Fuel Storage	Leakage of fuel during refuelling	3	2	6
2		Accidental spillage of fuels and lubricants by construction plant placing the inert fill and other operational procedures	3	2	6
6	Backfilling	Disruption of local spring flow	2	3	6
9	Fugitive Dust Emissions	Dust generation associated with placement of materials and/or recovery operations during prolonged periods of dry weather	2	3	6
10	Noise Emissions	Excessive noise emissions due to poor operational practice and implementation of abatement	2	3	6
3	Suspended Solids	Increase in suspended solids and potential for contaminated runoff entering groundwater during development of the site	2	2	4
4	Backfilling	Impermeable barrier to groundwater flow	2	2	4
5	Backfilling	Reduction in recharge to aquifer	2	2	4
11	Traffic	Excessive speed can result in increases in noise, dust emissions	2	2	4
7	Waste Water Treatment	Uncontrolled release of sewage	2	1	2



The following risk matrix has been developed to allow the risks to be easily displayed and prioritised (Refer to Table 4.6). The consequence and likelihood ratings are used in the matrix with the level of consequence forming the x-axis and the likelihood forming the y-axis. The matrix is colour coded to provide a broad indication of the critical nature of each risk. The matrix provides a visual tool for regular risk reviews since the success of mitigation can be easily identified.

The risk matrix indicates that there are no risks in the red zone requiring priority treatment. There is one risk in the amber zone requiring treatment through mitigation or management action. All other risks are located in the green zone, indicating the need for continuing awareness and monitoring on a regular basis. However, assessment of the green zone risks has indicated that a number of these risks can be reduced through the implementation of mitigation measures. These risk treatment measures will be adopted where considered cost-effective to further reduce the risks.

Table 4-6 Risk matrix

Likelihood	V. High	5					
	High	4					
	Medium	3		6,9,10	8		
	Low	2		3,4,5,11	1,2		
	V. Low	1		7			
			1	2	3	4	5
			Trivial	Minor	Moderate	Major	Massive
			Consequence				

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4.4 RISK TREATMENT

The output of the risk treatment process is the development of a statement of measures to be taken to minimise the environmental risk of the activity. The statement of measures is presented in Table 4.7, where a set of appropriate and achievable mitigation measures are assigned to each risk, with a risk owner responsibility for the ongoing management of the risk and a timeframe for implementation of the risk mitigation measure.

Monitoring and review of the risk assessment process will be carried out to verify continuous improvement in the risk profile of the operation. This ongoing review will also facilitate the inclusion of new risks and the updating of existing risks based on implemented risk treatment.

At a minimum the ELRA process will be conducted every three years in line with the licence requirements, but reviews will be carried out on a more regular basis in the event of major infrastructural changes on site or in light of incident investigation. All aspects of the ELRA management process will be recorded and traceable to ensure transparency in the decision-making process.

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Table 4-7 Statement of Measures

Risk ID	Process	Potential Risk	Risk Score	Mitigation Measures to be taken	Outcome	Action	Date of Completion	Owner/ Contact Person
8	Waste Management Practices	Rogue load of contaminated material	9	Put in place delivery, inspection & acceptance procedures. Designate quarantine area with drainage to Class I Full retention separator	Reduced potential for importation of contaminated material	Prepare SOP and ensure staff are trained.	On Commencement	Facility Manager
1	Fuel Storage	Leakage of fuel during refuelling	6	Mobile double skinned (integrated bunding) fuel bowser to be provided. Hard standing with drainage to Class I Full Retention Separator	Reduced potential for spillage during refuelling operations	Purchase Fuel Bowser & Construct Retention separator	On Commencement	Facility Manager
2		Accidental spillage of fuels and lubricants by construction plant placing the inert fill	6	Hard standing with drainage to Class I Full Retention Separator. All oil barrels and lubricants will be stored on spill pallets/ spill trays. Spill kits will be maintained on site and the Company will put in place an emergency response procedure for hydrocarbon spills and appropriate training of site staff in its implementation.	Reduced potential for contamination of soils and groundwater	Provide Spill pallets/spill trays and spill kits. Train staff on Emergency response procedures	On Commencement	Facility Manager
6	Backfilling	Disruption of local spring flow	6	A French drain will be placed with a land drain core, between the spring and the northern recharge area. The drain will be covered with terram, and covered with at least 2m of natural site won sand and gravel. The fill material will be placed over this drain and site won subsoil cover.	This will maintain the flow path and prevent backing up of the groundwater flow	Excavate and backfill stone drain	6 months	Facility Manager
9	Fugitive Dust Emissions	Dust generation associated with placement of materials and/or recovery operations during prolonged periods of dry weather	6	<ul style="list-style-type: none"> • During dry weather the haul roads and stockpiles will be sprayed with water to dampen any likely dust blows. • Consideration will be given to location of mobile plant so as to ensure that any principle dust sources cannot adversely affect sensitive off-site locations. • Static and mobile wet dust suppression systems will be located at strategic points in the process if required. • Drop heights will be kept to a minimum by using short conveyors and maintaining stocks under the head drum load out points. • The site access road between the site entrance and wheel wash has been provided with an asphalt surface. • Imported clean construction and demolition waste (concrete and brick) will be used to construct internal haul roads as required. • A wheel wash facility has been installed on site and all vehicles are required to pass through the wheel wash on exiting the site. • A sprinkler system has been installed on the site access road and is in operation during periods of dry weather. • Main site haulage routes within the site shall be maintained with a good temporary surface, as is the case at present. • All internal roadways will be adequately drained, to prevent ponding. • A tractor with a road sweeper attachment will be provided to ensure that the site entrance and adjoining public roadway is regularly cleaned. • Suitable vegetation is to be provided on restored areas at the earliest opportunity. 	These measures are considered sufficient to ensure that dust emissions will remain below recognised thresholds for this type of development.	Periodic review of dust mitigation measures	3 months	Facility Manager
10	Noise Emissions	Excessive noise emissions due to poor operational practice and implementation of abatement	6	<ul style="list-style-type: none"> • The provision of temporary peripheral screen banks to screen site activities from outside views as necessary. • General site activity will be within the existing pit and below the level of the nearest residences. • The use of designated haul roads to ensure that site traffic is removed from nearest noise sensitive receptors. • Regular maintenance of all plant and machinery • All machinery used will be CE certified for compliance with EU noise control limits. • Other further noise-reducing modifications for any machinery will be fitted wherever practical • Internal haul road gradients will be kept as low as possible to reduce engine / brake noise from heavy vehicles. • All plant and machinery is switched off when not in use. 	These measures are considered sufficient to ensure that noise emissions will remain below recognised thresholds for this type of development.	Periodic review of Noise mitigation measures	3 months	Facility Manager
3	Suspended Solids	Increase in suspended solids and potential for contaminated runoff entering groundwater during development of the site	4	During backfilling of the pit, all temporary surfaces will be graded to facilitate over-ground run-off of surface water, thereby minimising the volume of rainfall percolating through the backfilled material. This will further reduce any residual risks of any potential contaminants leaching into the soil and bedrock (or groundwater).	These measures together with phased restoration are considered adequate to reduce the potential for contaminate runoff entering groundwater	Facility Manager to inspect working areas weekly and prioritise progressive restoration	Ongoing	Facility Manager
4	Backfilling	Impermeable barrier to groundwater flow	4	The groundwater table is below the proposed fill zone, therefore It is not envisaged that the infilling with inert soil material will influence the regional groundwater flow towards the River Liffey in any way.	No impact or negligible change to the environment	None Required	Not Applicable	Facility Manager
5	Backfilling	Reduction in recharge to aquifer	4	There may be some local alteration to how recharge occurs at the site, but in terms of the overall impacts on the groundwater system this is likely to be negligible	No impact or negligible change to the environment	None Required	Not Applicable	Facility Manager
11	Traffic	Excessive speed can result in increases in noise, dust emissions	4	Existing traffic control measures including automatic barrier, surfaced access road, wheel wash, speed limit signs to be maintained	Reduced potential for air and noise emissions	Periodic review of traffic control measures	Annually	Facility Manager
7	Waste Water Treatment	Uncontrolled release of sewage	2	The holding tank is periodically emptied and disposed of offsite by a licensed waste disposal contractor to an appropriate disposal facility.	Reduce potential for contamination of groundwater	Review maintenance contract periodically	Annually	Facility Manager



4.5 COSTING

This section details the approach for calculating the level of financial provision (cover) required in relation to the risks identified by the ELRA process. The methodology for costing the level of financial provision necessary is based on costing the plausible worst case scenario.

4.5.1 IDENTIFICATION OF THE PLAUSIBLE WORST CASE SCENARIO

The plausible worst case scenario refers to the plausible event that poses the maximum environmental liability, i.e. consequence, during the period to be covered by the financial provision.

The plausible worst case scenario may be represented by the risk with the highest consequence rating. In that case, this risk should be the basis for financial provision and should be quantified and costed as detailed below.

The risk matrix (Refer to Table 4.6 above) indicates that there are no risks in the red zone requiring priority treatment. There is one risk (Risk ID 8) in the amber zone requiring treatment through mitigation or management action. As such the plausible worst case scenario is taken to be the risk associated with the importation of a rogue load of contaminated material.

4.5.2 QUANTIFICATION AND COSTING

The plausible worst case scenario (Risk ID 8) has been quantified and costed in Table 4.8.

The plausible worst case scenario is predicted to involve:

- Importation of rogue loads (typically 20 tonne loads)
- The maximum limit in accordance with planning is 50 truckloads per day of inert materials.
- For the purpose of a waste case scenario we will assume that due to unforeseen circumstances there has been a breakdown in delivery, inspection and acceptance procedures for a working day resulting in up to 10 loads of non-hazardous material (suitable for disposal to Inert landfill) being placed in the backfill area.
- In addition to removal and/or quarantine pending removal of this material the following remedial measures have also be considered.
 - Site visit/site investigation by Environmental Consultant to ensure that all contaminated materials have been removed.
 - Testing of material.



Table 4-8 Quantification and costing of plausible worst case scenario

Task	Description	Quantity (No.)	Measurement Unit	Unit Rate €	Cost €	Source of Unit Rates (See Notes)
Response to Risk ID 8: Importation of Rogue Loads	Site Investigation					
	Environmental Consultant (Including Reporting)	3	day	750	2250	1
	Trial Pits	4	Unit	90	360	2
	Remediation					
	Excavation of soils	100	m ³	1.5	150	2
	Waste Disposal/Recovery					
	Disposal of Non-hazardous soils (Gate Fee)	200	tonne	20	4000	2
	Transport of Solid non-hazardous (20 tonne loads, tonne assuming 100 km each-way trip)	200	tonne	15	3000	2
	Waste sampling and analysis					
	Waste sampling and analysis (WAC suite as per tables 2.1.2 and 2.1.2.2 of Council Decision 2003/33/EC). Costs could be much higher if additional analysis is required.	4	sample	400	1600	2
	Subtotal				11360	
	Contingency (10%)				1136	
Total				12496		

Notes 1. Costs provided By JSPE Ltd Planning & Environmental Consultants

2. Costs based on EPA Guidance on assessing and costing environmental liabilities - Unit cost rates for verification (EPA 2014)

Whilst due consideration has been given to the quantification and costing of the above plausible worst case scenario; the operator proposes to put in place comprehensive delivery, inspection and acceptance procedures and management systems to ensure that such an eventuality will not arise.

4.6 OUTCOMES AND NEXT STEPS

Implementation of the results of the ELRA will be reported to the EPA annually through a statement of measures. The ELRA will be reviewed as necessary to reflect any significant changes on site, and in any case every three years.

The financial provision has been based on the plausible worst case scenario as detailed above. This is the maximum liability that may be incurred and as such, financial provision is calculated as **€12,497** based on this event.

Environmental Impairment Liability (EIL) Insurance is, in principle, an acceptable financial instrument for potential liabilities from incidents. EIL Insurance must cover “*the full costs of responding and remedial measures if an incident occurs at a licenced facility*”. (EPA 2016).

N&C Enterprises has in place Pollution Liability insurance for €6,500,000. It is proposed that this policy will be reviewed to ensure that the cover for the licenced facility/activity (to the amount determined by ELRA) will be ring-fenced from the cover for the other elements of the business (e.g. other sites or off-site transport activities). The cover for environmental response



and remedial measures (to the amount determined by ELRA) will be ring-fenced from the cover for other liabilities (while still extending to clean-up of the Licensee's property and third party property).

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REFERENCES

1. Guidance on assessing and costing environmental liabilities, Environmental Protection Agency (EPA) 2014a
2. Guidance on assessing and costing environmental liabilities - Unit cost rates for verification, Environmental Protection Agency (EPA) 2014b
3. Guidance on assessing and costing environmental liabilities - Frequently asked questions, Environmental Protection Agency (EPA) 2014c
4. Guidance on Financial Provision for Environmental Liabilities, Environmental Protection Agency (EPA) 2015
5. Guidance on financial provision for environmental liabilities - Additional guidance on environmental impairment liability insurance, Environmental Protection Agency (EPA) 2016

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APPENDICES

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Appendix I

Copy of Planning Permission P.A. Reg. Ref. 03/1773

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Date: 23/07/2004

Pl Ref.: 03/1773

N & C Enterprises Ltd
Environment & Resource Mgmt Ltd.
3 Tara Court
Dublin Rd.
Naas
Co. Kildare

PLANNING REGISTER NUMBER: 03/1773
APPLICATION RECEIPT DATE: 04/09/2003

PERMISSION sought for importation and placement of materials in an existing sand & gravel pit to enable restoration of the ca. 6.5 ha. application site to a contoured landform that will be in keeping with the surrounding landscape & etc. at The Pigeonage Naas

In pursuance of the powers conferred upon them by the Planning and Development Acts 1963 - 2000, Kildare County Council have by order granted PERMISSION to the above named, for the above development subject to the 41 conditions set out in the Schedule attached.

Date: 23/07/2004

Signed: _____
Senior Executive Officer Planning &
Public Safety
Kildare County Council

NOTE: The permission herein granted shall, on the expiration of the period of 5 years beginning on the date of the granting of permission, cease to have effect as regards:

- (1) In case the development to which the permission relates is not commenced during the period, the entire development, and
- (2) In case such development is so commenced, so much thereof as is not completed within that period.

It should be noted that outline permission will cease to have effect after a period of 3 years and also that such permission is subject to the subsequent grant of permission consequent on the grant of outline permission by the Planning Authority and that, until such permission has been obtained to detailed plans of the development proposed, the development is NOT AUTHORISED.

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RE:/ Planning Permission is sought for a development at 'The Pit', Kilmeague, Naas, Co. Kildare. The development will be the importation and placement of materials in an existing sand and gravel pit to enable restoration of the ca.6.5ha application site to a contoured landform that will be in keeping with the surrounding landscape. The development will include boundary landscaping and ancillary site roads. The site will be assessed from the L-7081-1, An Environmental Impact Statement will be submitted to the planning authority with the planning application – N. & C. Enterprises Ltd – Planning Ref: 1773/03

Schedule 1:

Considerations

Having regard to the mitigation measures outlined in the Environmental Impact Statement and the other drawings and particulars submitted with this planning application, having regard to the Kildare Development Plan 1999 and other relevant requirements, and the fact that permission is sought for a temporary period only it is considered that subject to compliance with the conditions listed in Schedule 2 the development would be in accordance with the proper planning and development of the area.

Schedule 2:

Conditions

1. The development shall be carried out in accordance with the plans and particulars submitted to the Planning Authority on the 4th September 2003 and all mitigation measures outlined in the accompanying Environmental Impact Statement, as amended by the further information received by the Planning Authority on the 25th November 2003 as clarified by the information received on the 7th April 2004 except where altered or amended by conditions in this permission.

Reason: To ensure that the development shall be in accordance with the permission and that effective control be maintained.

2. This permission is for a temporary period only and shall expire upon the cessation of in-filling operations and not later than the 28th June 2012, unless before that date a further permission is made.

Reason: In the interests of proper planning and development.

3. Prior to commencement of the development, a waste permit shall be obtained from the Local Authority, in accordance with the Waste Management (Permit) Regulations 1998.

Reason: In the interest of public health

4. Material used for in-filling shall be in accordance with that set out in the waste permit when granted by Kildare County Council

Reason: In the interests of public health

5. The on-site operations associated with the proposed development shall be carried out only between 08.00 hours and 18.00 hours on Mondays to Fridays inclusive and 08.00 hours to 14.00 hours on Saturdays. No operations shall be carried out on Sundays or Bank Holidays.

REASON: In order to protect the amenities of the area and in the interests of proper planning and development.

6. Car parking space shall be provided for all vehicles associated with the running of the business, staff cars, trucks etc on a durable permanent macadam surface within the curtilage of the site. Each car space shall be marked in 2.5*5.0 metre bays in 100mm wide white lines with a durable permanent material. Circulation aisles shall be 6m wide.

Reason: In the interest of traffic safety.

7. Car parking shall be monitored and in the event of the Planning Authority deciding that a shortfall in car parking spaces exists, the developer shall provide such extra car parking as the Planning Authority may specify at an approved location adjacent to the site or within the curtilage of the site.

Reason: In the interest of traffic safety and to ensure that adequate car parking facilities are provided on site.

8. Before development is commenced the developer to arrange for the payment to Kildare County Council of contribution of €100,000 towards expenditure which the Council has or may incur in respect of the provision of road improvements services which facilitate the proposed development.

Reason: The provision of such services in the area facilitate the proposed development and it is considered reasonable that the developer should contribute to the cost of providing same.

9. Before development is commenced the developer to arrange for the payment to Kildare County Council of contribution of €24,000 towards expenditure which the Council has or may incur in respect of the provision of footpath and public lighting which facilitate the proposed development.

Reason: The provision of such services in the area facilitate the proposed development and it is considered reasonable that the developer should contribute to the cost of providing same.

10. The developer shall provide a concrete apron, minimum 200mm thick to the general shape shown on Drawing No. E1516/D attached but extending from the road edge to the access gates of the development.

Reason: In the interests of traffic safety.

11. The developer shall ensure that the wheels of all vehicles transporting all materials to or from the site shall, prior to the exit of such vehicles onto the public road be washed in an approved wheel washing facility.

Reason: In the interests of traffic safety and the amenities of the area.

12. The developer shall ensure that all public roadways in the vicinity of the site are swept clear of all loose material daily, and that all loose material is removed from the road verges.

Reason: In the interests of traffic safety and the amenities of the area.

13. Public lighting shall be provided throughout the site to the standards laid down by the E.S.B. and to the satisfaction of the Planning Authority.

Reason: In the interest of traffic safety.

14. Surface water shall be collected and road gullies shall be provided in accordance with Section 3.19 of the Recommendations for Site Development Works for Housing Areas by the Department of the Environment & Local Government. All gullies shall be fitted with suitable locking type covers or gratings.

Reason: In the interest of proper drainage and traffic safety.

15. Existing land and roadside drainage shall not be impaired and new entrance shall be designed and shaped to ensure the uninterrupted flow of existing roadside drainage.

Reason: To prevent interference with existing roadside drainage in the interest of proper development.

16. The developer shall keep a record of traffic movements in and out of the site. This record should contain details of all traffic movements (including origin and destination of vehicles, registration and type of vehicle) over the previous six months and should be available on site for inspection by the Planning Authority during working hours.

Reason: To assess the impact of the development on the existing road network and to ensure that levels of generated traffic are in accordance with the applicants submission.

17. The developer shall ensure that no vehicles which exceed the maximum legal axle weight shall use the public road.

Reason: To ensure that the road system serving the development is protected, in the interests of proper planning and development of the area.

18. Prior to the commencement of the development, the developer shall agree with the Planning Authority the traffic routes for both laden and unladen haulage trucks and shall install suitable signage at all junctions directing which roads are to be used and which roads are prohibited.

Reason: In the interest of traffic safety and road capacity.

19. Upon completion of the development, the developer shall provide a footpath from the public road at the entrance to the site to a point within the site to be agreed between the developer and the Planning Authority.

Reason: To ensure proper planning and development of the area.

20. The applicants shall take adequate precautions to prevent undue noise, fumes, dust, grit, untidiness, or other nuisance during the course of the works which would result in significant impairment of, or significant interference with the amenities of the environment beyond the site boundary.

REASON: In the interest of the protection of the amenities of the area and proper planning and development.

21. Before the acceptance of material commences, the floor of the pit shall be levelled and a 1m thick barrier of compacted silt/clay shall be installed. Another 1m layer of compacted silt / clay shall be placed over the surface of the restoration prior to top-soiling of the restored area. The restoration and design of the capping layer shall be based on the EPA landfill restoration manual.

REASON: In the interests of the protection of groundwater and the proper planning and development of the area.

22. All waste activities on the site shall be carried out in such a manner so as not to have an adverse effect on the drainage of adjacent lands, on watercourses, on field drains or any other drainage system including the public roadway.

REASON: In the interests of proper planning and development.

23. The noise level attributable to all on-site operations between the hours of 08:00-18:00 Monday to Friday inclusive (excluding bank holidays) and 08:00-14:00 Saturdays, from the development shall not exceed 55 dBA Leq(15min) , at any point along the boundary of the development site.

REASON: In the interests of proper planning and development, residential amenity and to prevent noise pollution.

24. In dry weather appropriate measures shall be taken to reduce/ eliminate airborne dust nuisance. The operator shall ensure that activities on the site shall be carried out in a manner such that emissions do not result in significant impairment of, or significant interference with the environment beyond the site boundary.

The total dust emission arising from the on-site operations associated with the proposed development shall not exceed 130 milligrams per square meter per day, averaged over a continuous period of 30 days, when measured as deposition of insoluble particulate matter at any position along the boundary of the site. No stripping of topsoil or overburden shall be carried out in periods of dry weather.

REASON: In the interests of proper planning and development and residential amenity.

25. A programme for regular monitoring and sampling of groundwater on the site is to be agreed with the Planning Authority in writing prior to commencement of development.

REASON: To ensure that groundwater resources are protected.

26. An emergency hydrocarbon spill kit shall be maintained on site at all times.

REASON: To ensure that groundwater resources are protected.

27. All hydrocarbons/ chemicals shall be stored in tanks bunded to hold 110% of the volume of the tank (whether mobile or fixed).

REASON: To ensure that groundwater resources are protected.

28. All water contaminated with hydrocarbons including storm water from bunded or refuelling areas shall be discharged via grit traps and oil interceptor to a soakaway area.

REASON: To ensure that groundwater resources are protected.

29. Discharge from the wheelwash shall be directed into an oil interceptor via a silt trap. Disposal methods for silt/ sludge shall be agreed with the Planning Authority in writing prior to commencement of development.

REASON: To ensure that groundwater resources are protected.

30. All areas on site over which loading and unloading of hydrocarbons takes place or where maintenance of vehicles takes place or where there is any risk of spillage shall be paved with an impermeable surface such as concrete and drainage channels shall be provided. All joints shall be sealed using a proprietary water bar or approved sealing joint. Drainage from these areas shall be through an oil interceptor.

REASON: To ensure that groundwater resources are protected.

31. A maintenance agreement for the proposed portaloo toilets shall be entered into with the supplier of the system.

REASON: To ensure that groundwater resources are protected.

32. Prior to commencement of development a detailed scheme for the landscaping indicated on Drawing 12 Rev. A shall be submitted to the Planning Authority for its written agreement. The proposal shall include full details of proposed species and densities, and a timetable for the completion of the work.

REASON: In the interests of visual amenity and to screen the development within an appropriate period of time.

33. As soon as is practicable following completion of the in-filling activities, the site shall be seeded with grass.

Prior to seeding, topsoil shall be spread evenly over the site to a minimum depth, after firming, of 150 – 200 mm. The topsoil shall be good quality, and shall comply with BS 3882 : 1991. The topsoil shall not be spread in wet conditions. The topsoil shall be adequately prepared for seeding by raking or harrowing and by rolling. Seed shall be spread at a minimum rate of 30 grams per square metre.

REASON: In the interests of proper planning and development

34. Where development ancillary to the in-filling operations (such as service roadways etc) is to take place on previously undeveloped land the Heritage Section of the Department of the Environment, Heritage and Local Government shall be consulted prior to commencement of works.

REASON: To ensure the continued preservation (either in situ or by record), of places, caves, sites, features or other objects of archaeological interest

35. Within 2 months of the cessation of restoration operations on the site a topographic survey shall be carried out in order to confirm that the site has been restored in accordance with that proposed in the planning application and accompanying Environmental Impact Statement. Within one month of the survey plans and sections shall be submitted to the Planning Authority showing the final restored landform. The sections at an interval of not less than 20 metres shall show the restored landform and that proposed within the planning application and Environmental Impact Statement.

REASON: In the interests of proper planning and development.

36. All existing trees and hedgerows along the boundaries of the site shall be retained and any gaps carefully replanted.

REASON: To protect the visual amenities of the area.

37. Prior to commencement of development the developer is to consult with the Kildare County Council Heritage Officer and mitigation measures agreed in writing with regard to the sand martins currently nesting within the existing pit. Any mitigation measures required by the Heritage Officer shall be adhered to by the developer.

REASON: In the interests of nature conservation and the proper planning and development of the area.

38. The quantity of material accepted into the site shall be limited to 50 truck loads per day.

REASON: In the interests of protection of amenities and the proper planning and development of the area.

39. Prior to commencement of development the developer shall provide proposals for the written agreement of the Planning Authority for the provision of landscaping and access pathway to the site in order to reintegrate the site with the village.

REASON: In order that the site is reintegrated with the village upon cessation of restoration operations and in the interests of proper planning and development.

40. The applicants shall lodge with the Planning Authority a cash deposit, a bond of an insurance company or other security to the value of amount to be agreed to secure the reinstatement, final restoration and making safe of the site, coupled with an agreement empowering the Planning Authority to apply such security or part thereof to the satisfactory completion of the development and restoration of the site. The form of the security and the amount shall be agreed in writing with the Planning Authority.

REASON: To safeguard the amenities of the area.

41. Before any development commences the applicant shall submit an Agreement in accordance with Section 47 of the Planning and Development Act 2000 transferring the ownership to Kildare County Council of the lands outlined in green as shown on Drawing 20 Rev. A submitted to the Planning Authority on the 7th April 2004 as agreed in letter submitted to the Planning Authority on the same date.

REASON: In the interests of the proper planning and development of the area.

23rd July 2004

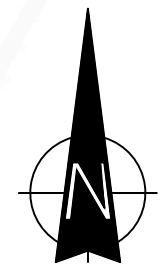
Senior Executive Officer

Drawings

No.	Details	Scale	Size
B.2.1	Site Plan – Existing	1:2,500	A3
D.1.1	Site Infrastructure - Phase 1	1:2,000	A3
D.1.2	Site Infrastructure – Phase 2	1:2,000	A3
D.1.3	Site Infrastructure - Phase 3	1:2,000	A3
D.1.4	Site Infrastructure – Final Restoration	1:2,000	A3

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Legend

- Applicants Ownership (c.6.6 ha)
- Waste Licence Application Area (c. 6.6 ha)
(Planning Permission Area (Ref. 03/1773 &12/373))
- Pit Area
- Scrubland
- Agricultural Land
- Residential Property (within 250m)
- Buildings/Structures
- Concrete Hardstanding
- Contours (mAOD)
- + 114.1 Spot Levels (mAOD)
- + 99.1 Water Levels (mAOD)
(Top of Casing)
- Tree
- D1 Dust Monitoring Points
- N1 Noise Monitoring Points
- Groundwater Monitoring Points & Wells
- Asphalt Surface
- Grass Track
- Ponds
- Aggregate Storage
- Traffic In
- Traffic Out
- Fence
- Gate
- Sprinkler
- Hedgerow

- NOTES:**
1. All Dimensions in metres (m)
 2. Elevation Levels - metres Above Ordnance Datum (mAOD)
 3. For Planning Purposes Only. Do not scale for setting out.
 4. Survey derived from point-cloud survey (06/11/15)

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OSi Map Series:
1:2500
3445-C
REVISION DATE = 14-Feb-2014
SURVEY DATE = 01-Jul-1996
3445-D
REVISION DATE = 14-Feb-2014
SURVEY DATE = 02-Jan-1996
3506-A
REVISION DATE = 27-Mar-2015
SURVEY DATE = 02-Jan-1996

Scale 1:2,500

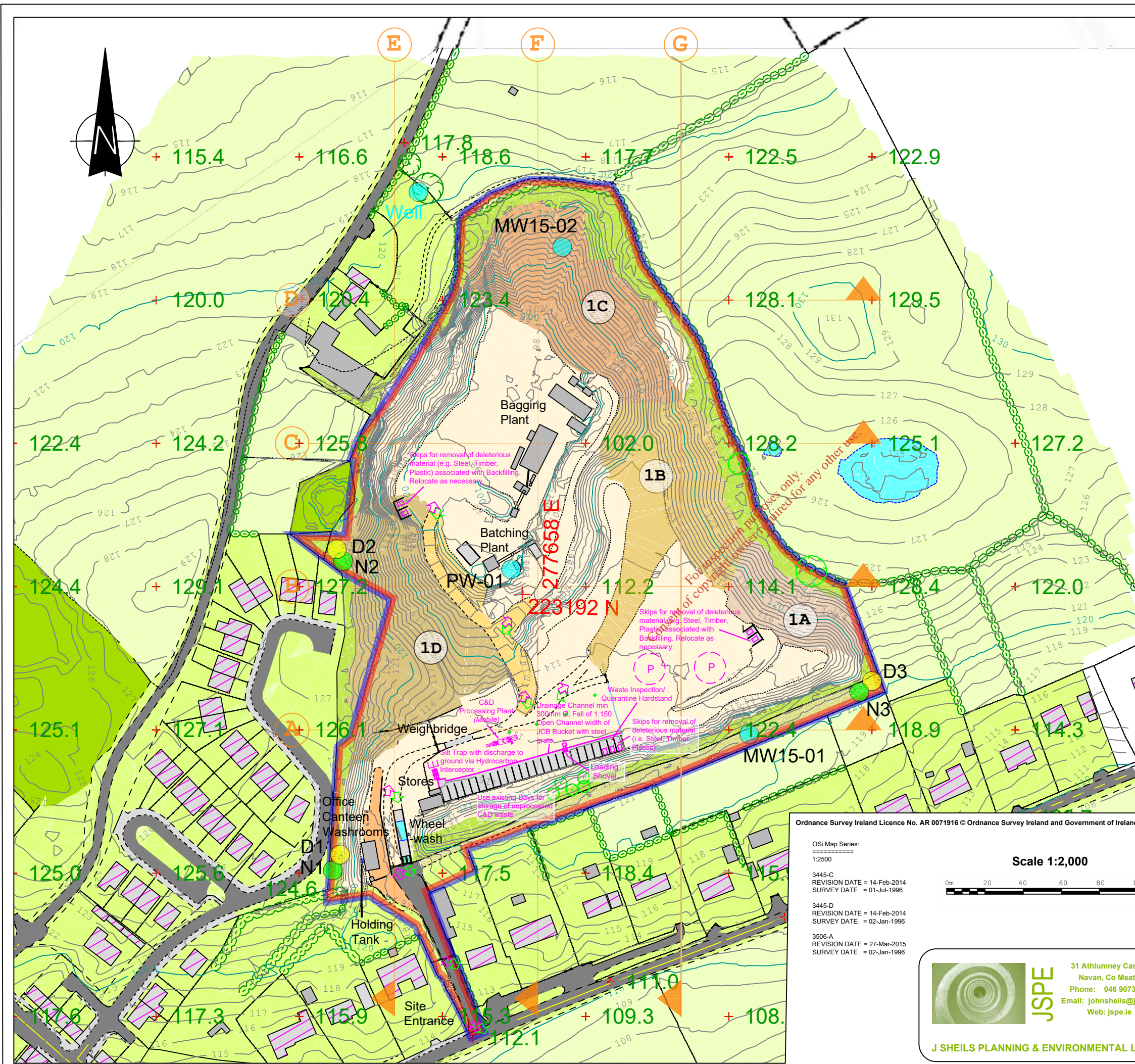


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J SHEILS PLANNING & ENVIRONMENTAL LTD

CLIENT	N&C Enterprises Ltd		
DRAWING	Site Plan - Existing		
LOCATION	Killmeage, Naas, Co. Kildare.		

Drawn by John Sheils	Scale 1: 2500		
Checked by John Sheils	Job No. JSPE 236		
Date 19/05/16	Figure No. B.2.1	Rev. 0	



Legend

- Applicants Ownership (c.6.6 ha)
- Waste Licence Application Area (c. 6.6 ha) (Planning Permission Area (Ref. 03/1773 &12/373))
- Pit Area
- Scrubland
- Agricultural Land
- Residential Property (within 250m)
- Buildings/Structures
- Concrete Hardstanding
- Contours (mAOD)
- Spot Levels (mAOD)
- Tree
- D1 Dust Monitoring Points
- N1 Noise Monitoring Points
- Groundwater Monitoring Points & Wells
- Cross Sections (Refer to Drawings D.1.5 & D.1.6)
- Backfill Phasing
- Asphalt Surface
- Grass Track
- Traffic In
- Traffic Out
- Fence
- Gate
- Sprinkler
- Hedgerow
- Processed C&D Stockpiles. Relocate as necessary.

- NOTES:**
- All Dimensions in metres (m)
 - Elevation Levels - metres Above Ordnance Datum (mAOD)
 - For Planning Purposes Only. Do not scale for setting out.
 - Survey derived from point-cloud survey (06/11/15)
 - Waste Management Infrastructure to be provided shown in purple

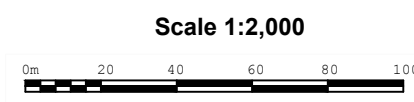
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REVISION DATE = 14-Feb-2014
SURVEY DATE = 02-Jan-1996

3506-A
REVISION DATE = 27-Mar-2015
SURVEY DATE = 02-Jan-1996

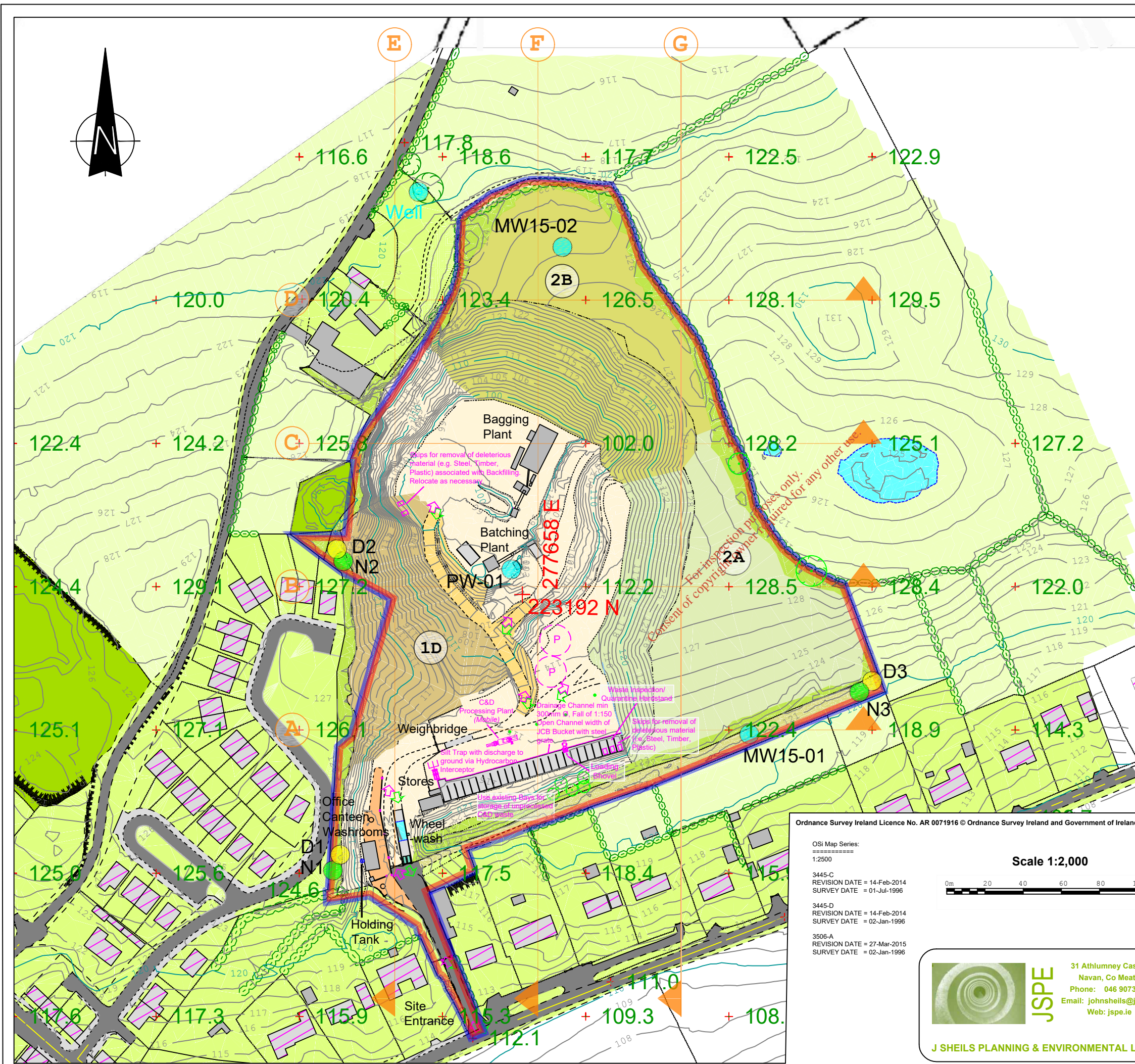


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J SHEILS PLANNING & ENVIRONMENTAL LTD

CLIENT	N&C Enterprises Ltd	
DRAWING	Site Infrastructure - Phase 1	
LOCATION	Killmeage, Naas, Co. Kildare.	

Drawn by John Sheils	Scale 1: 2000
Checked by John Sheils	Job No. JSPE 236
Date 19/05/16	Figure No. D.1.1 Rev. 0



Legend

- Applicants Ownership (c.6.6 ha)
- Waste Licence Application Area (c. 6.6 ha) (Planning Permission Area (Ref. 03/1773 &12/373))
- Pit Area
- Scrubland
- Agricultural Land
- Residential Property (within 250m)
- Buildings/Structures
- Concrete Hardstanding
- Contours (mAOD)
- Spot Levels (mAOD)
- Tree
- D1 Dust Monitoring Points
- N1 Noise Monitoring Points
- GW/MW Groundwater Monitoring Points & Wells
- Cross Sections (Refer to Drawings D.1.5 & D.1.6)
- Backfill Phasing
- Asphalt Surface
- Grass Track
- Traffic In
- Traffic Out
- Fence
- Gate
- Sprinkler
- Hedgerow
- Processed C&D Stockpiles. Relocate as necessary.

- NOTES:**
- All Dimensions in metres (m)
 - Elevation Levels - metres Above Ordnance Datum (mAOD)
 - For Planning Purposes Only. Do not scale for setting out.
 - Survey derived from point-cloud survey (06/11/15)
 - Waste Management Infrastructure to be provided shown in purple

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3506-A
REVISION DATE = 27-Mar-2015
SURVEY DATE = 02-Jan-1996

Scale 1:2,000

0m 20 40 60 80 100

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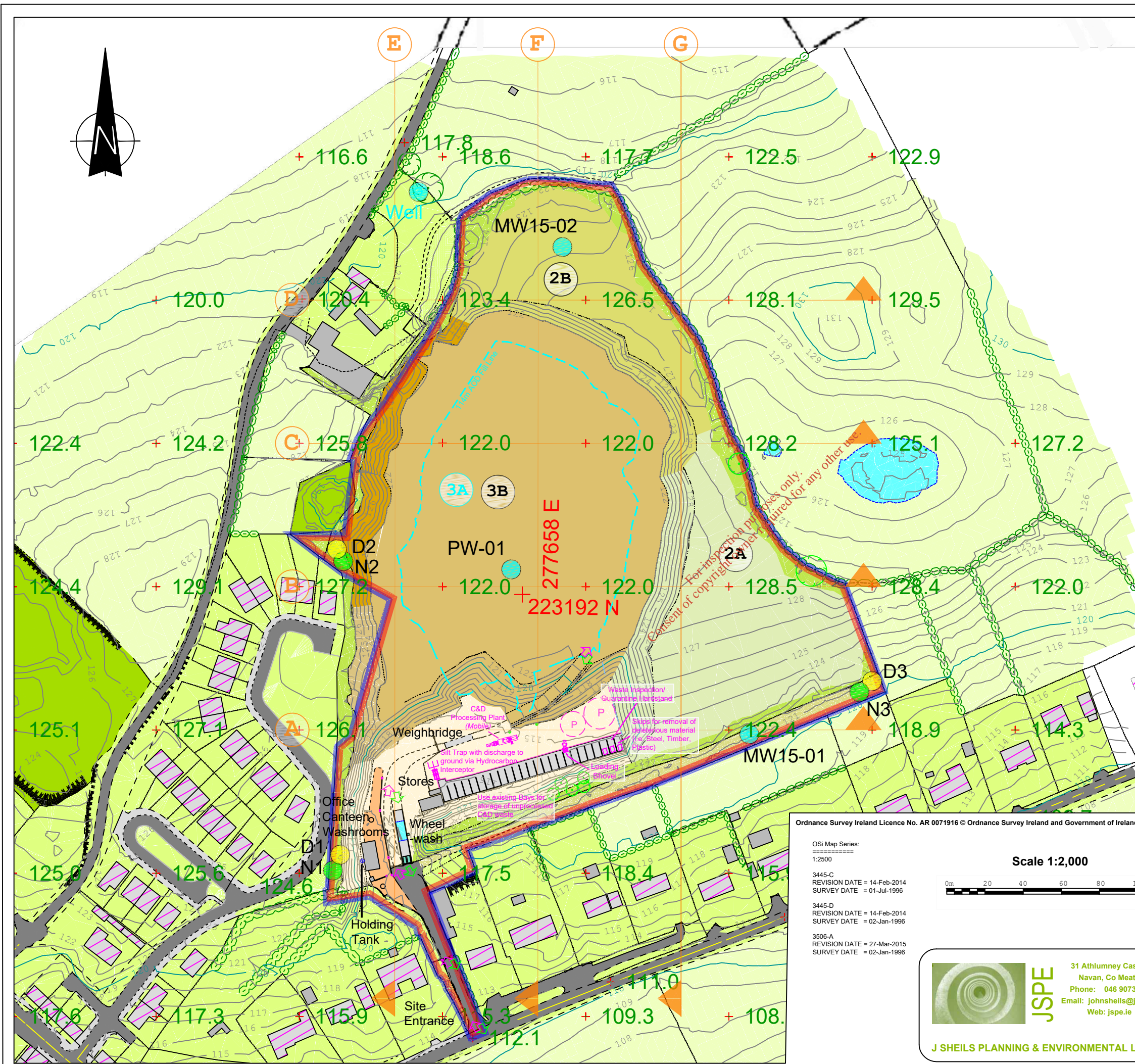
J SHEILS PLANNING & ENVIRONMENTAL LTD

CLIENT
N&C Enterprises Ltd

DRAWING
Site Infrastructure - Phase 2

LOCATION
**Killmeage,
Naas, Co. Kildare.**

Drawn by John Sheils	Scale 1: 2000
Checked by John Sheils	Job No. JSPE 236
Date 19/05/16	Figure No. D.1.2 Rev. 0



Legend

	Applicants Ownership (c.6.6 ha)		Waste Licence Application Area (c. 6.6 ha) (Planning Permission Area (Ref. 03/1773 &12/373))
	Pit Area		Asphalt Surface
	Scrubland		Grass Track
	Agricultural Land		Residential Property (within 250m)
	Buildings/Structures		Traffic In
	Concrete Hardstanding		Traffic Out
	Contours (mAOD)		Fence
	Spot Levels (mAOD)		Gate
	Tree		Sprinkler
	Dust Monitoring Points		Hedgerow
	Noise Monitoring Points		
	Groundwater Monitoring Points & Wells		
	Cross Sections (Refer to Drawings D.1.5 & D.1.6)		
	Backfill Phasing		Processed C&D Stockpiles. Relocate as necessary.
	Phase 3A 114mAOD Fill Line		

- NOTES:**
- All Dimensions in metres (m)
 - Elevation Levels - metres Above Ordnance Datum (mAOD)
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 - Survey derived from point-cloud survey (06/11/15)
 - Waste Management Infrastructure to be provided shown in purple

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SURVEY DATE = 02-Jan-1996

3506-A
REVISION DATE = 27-Mar-2015
SURVEY DATE = 02-Jan-1996

Scale 1:2,000

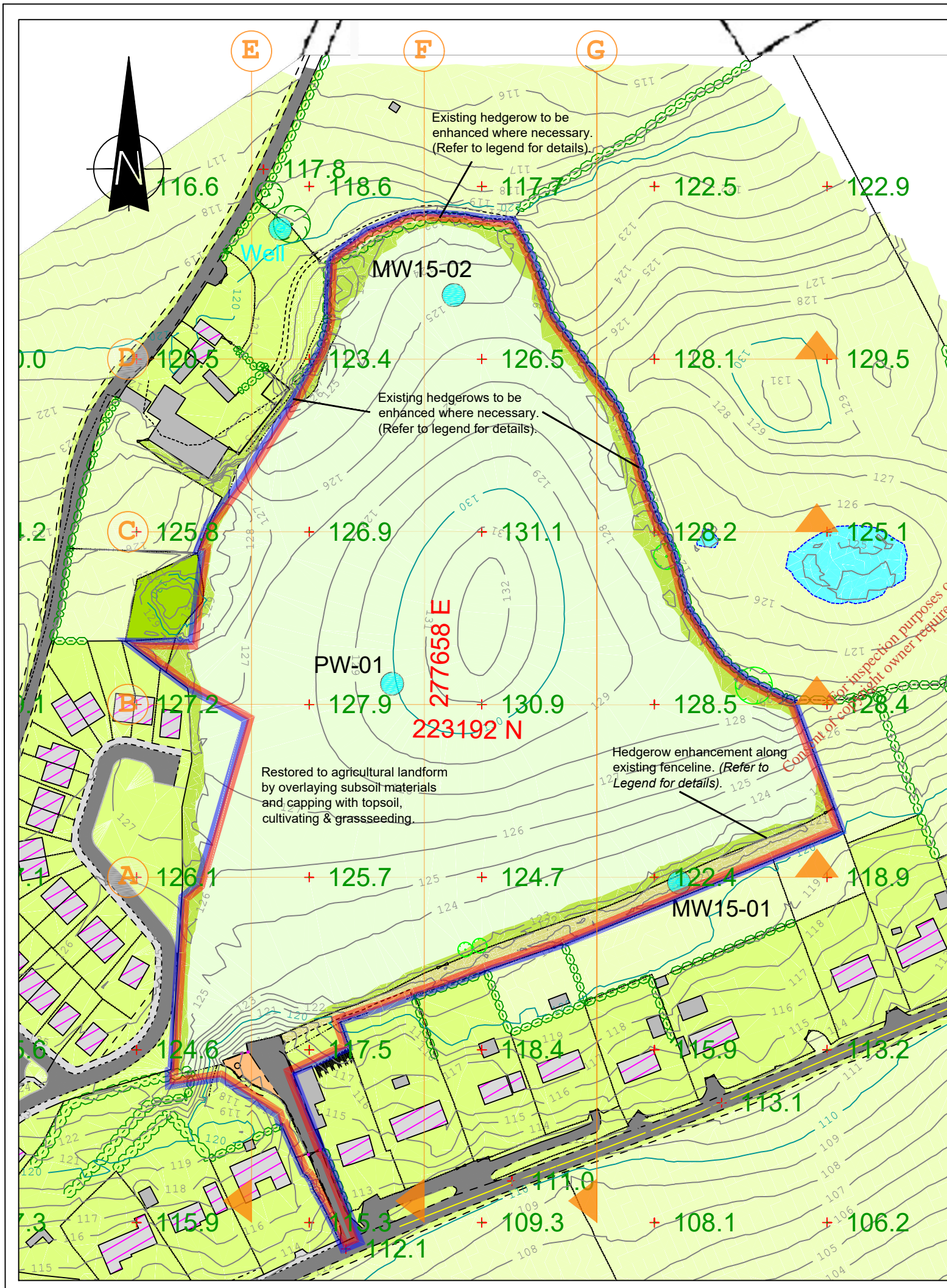
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J SHEILS PLANNING & ENVIRONMENTAL LTD

CLIENT	N&C Enterprises Ltd	
DRAWING	Site Infrastructure - Phase 3	
LOCATION	Killmeage, Naas, Co. Kildare.	

Drawn by John Sheils	Scale 1: 2000
Checked by John Sheils	Job No. JSPE 236
Date 19/05/16	Figure No. D.1.3 Rev. 0



Legend

- Applicants Ownership (c.6.6 ha)
- Waste Licence Application Area (c. 6.6 ha) (Planning Permission Area (Ref. 03/1773 & 12/373))
- Scrubland
- Agricultural Land
- Residential Property (within 250m)
- Land Access
- Grass Track
- Buildings/Structures
- Contours (mAOD)
- Spot Levels (mAOD)
- Tree
- Groundwater Monitoring Points & Wells
- Fence
- Gate
- Hedgerow
- Cross Sections (Refer to Drawings D.1.5 & D.1.6)

Grass Areas:

Grazing Lands

Use Heavy land / Heavy graze mix as supplied by Drummonds Ltd. This is a general purpose mix particularly suited to heavy and reclaimed soils. Varieties are specially chosen to reduce poaching and to withstand high moisture levels.

12.25kgs per acre:

Ingredients per 12.25kgs:

- 3.00kgs Portstewart, Late diploid perennial ryegrass
- 2.95kgs Gilford, late diploid perennial ryegrass
- 2.50kgs Speiga, intermediate diploid perennial ryegrass
- 2.30kgs Dolphin, late tetraploid perennial ryegrass
- 1.50kgs Pelleted Alice white clover

HEDGEROW ENHANCEMENT

- 7% - Ash *Fraxinus Excelsior*
- 7% - Beech *Fagus Sylvatica*
- 30% - Hawthorn *Crataegus Monogyna*
- 30% - Blackthorn *Prunus Spinosa*
- 10% - Dog Rose *Rosa Canina*
- 5% - Honeysuckle *Lonicera Dericlymenium*
- 11% - Mixture of Others

Note: Hedgerows will be planted at c. 500mm intervals.

RESTORATION

The reinstatement provides for agricultural use combined with localised opportunities for establishment of native species. The final land use of the site is proposed as agriculture and habitat creation for wildlife benefit.

The boundaries of the site are securely fenced with stock-proof fencing and hedgerows. The existing boundary fences and hedgerows will be maintained in a stock proof state of repair as part of the future agricultural land use.

The site is to be restored in a progressive manner. The final landform will be contoured as far as is practical to blend in with the existing environment. Topsoil material will then be placed on the restored areas as the final vegetation layer to a depth of c.300mm and the areas re-vegetated as quickly as possible to avoid erosion by air and water.

The lands will be sowed with a suitable grass mix for grazing lands. Grass is generally sown in the spring or in late summer, early autumn. Livestock should also be managed to minimise poaching of the land during wet weather. Weed and pest control may also be necessary from time to time.

The ground preparation and reseeding will be carried out to achieve the re-instatement of good agricultural grassland (GA1 Fossitt Code).

The landowner will be responsible for aftercare management of the lands including application of fertiliser as necessary, remediation of any localised areas of soil compaction and ponding of surface water as, and if, required.

Preparation:

The site is to be left in a good condition for the landscaping works.

Topsoil

- Topsoil shall be placed in areas that require topsoil to attain finished levels for grass and planted areas. It should be properly graded and levelled.
- The topsoil shall be free of subsoil, stones exceeding 50mm in diameter.
- It shall be free from rubbish, chemicals, pollutants or other injurious matter.
- It shall be free from or obnoxious weeds, couch grass, roots or top growth of trees and shrubs.
- Any compacted soil should be loosened after the top soiling operation and the area protected from further compaction.

Once soil is spread leave area fallow for 6 - 8 weeks to allow weeds to emerge. Prior to planting, spray areas with 'Roundup' to Manufacturers instructions. Leave the ground fallow for the period of time recommended by the Manufacturer. Avoid contaminating ponds and water courses with weed killer.

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J SHEILS PLANNING & ENVIRONMENTAL LTD

NOTES:

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4. Survey derived from point-cloud survey (06/11/15)

CLIENT	N&C Enterprises Ltd	
DRAWING	Final Restoration	
LOCATION	Killmeage, Naas, Co. Kildare.	

Drawn by	John Sheils	Scale	1: 2000
Checked by	John Sheils	Job No.	JSPE 236
Date	19/05/16	Figure No.	D.1.4
		Rev.	0