SECTION 3 –
THE EXISTING ENVIRONMENT, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

SECTION 3.1
SUMMARY OF SCOPING OF EMISSIONS AND POTENTIAL ENVIRONMENTAL IMPACTS

CONTENTS

3.1 SUMMARY OF SCOPING OF EMISSIONS AND POTENTIAL ENVIRONMENTAL IMPACTS

3.1.1 Introduction

This section of the EIS summarises the screening and scoping process that determines and identifies those emissions and potential impacts that the continued operation of the Grannagh soil recovery and inert C&D materials recycling facility may have on the environment under a Waste Licence (EPA ref: W0260-01).

An EIS may not need be a long and exhaustive document, rather it should be a focussed and concise report that focuses on the main issues.

At a meeting between the Soil Recovery Association of Ireland (SRA) and the EPA on 12th June 2008 it was stated by Dr. Jonathan Derham of the Agency:

"*If you look at the agency guidelines on doing EIS there is very clear guidance… that the EIS should be scoped appropriately to the scale and risk activity…….you really focus your EIS and scope it according to the reasonably anticipated risks of the activity and they can be very narrow and very focused documents*…"

Therefore accordingly, this section of the EIS scopes the activity based on the reasonably anticipated risks that this low risk activity may pose on the environment and set out those areas which need to be reasonably covered in a concise and focussed manner.

3.1.2 Sources of Information for Scoping

The scoping of this EIS makes reference to the original Waste Licence Application for W0260-01 lodged with the Agency in February 2009 and to information requested and submitted to date.

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772. The EIS makes continual references to these permits and permissions as these set the conditions under which the activity continues to operate on a day to day basis pending the issuing of a Waste Licence from the Agency.

It also refers to the on-going day to day operation of the soil recovery ad C&D materials recycling facility; compliance monitoring of environmental parameters; and summaries of any complaints or incidents associated with the site (of which there are none).

It also refers to compliance with conditions of the exiting waste permit and the planning permission as a measure of assessing any potential impacts upon the environment by the continued operation of the existing recovery facility.

3.1.3 Summary of Scoping

CHI Environmental Ltd. applied for a Waste Licence (Ref: WO260-01) to the EPA on 13/2/2009 and in accordance with the relevant legislation, they continue to operate under their present Waste Permit (No. WMP 23/2007) under the authority of Kilkenny County Council until the waste licence application is decided upon by the Agency.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for recovery at the site as already permitted and authorised by the existing waste permit and planning permission.

CHI Environmental Ltd. have operated the Grannagh Facility since 2004 under waste permits issued by Kilkenny County Council with no non-conformances; no environmental incidents; no prosecutions and are regularly inspected and audited by environmental staff of Kilkenny County Council.

CHI Environmental Ltd. as an organisation pride themselves as being market leaders in the recycling and recovery of soil and stone and inert C&D Materials and in their on-going environmental performance, which to date has been and remains exemplary.

3.1.4 Emissions and Potential Impacts from the Recovery Activity

From scoping the existing recovery activity, the existing waste permit and planning permission and the content of the waste licence and in particular Sections E.1 - E.6 of the application for a Waste Licence, the potential Emissions associated with the facility have been clearly identified.

The scoping concludes that, as currently permitted, the potential emissions from the facility are noise emissions from plant onsite and traffic associated with the activity. The noise assessment survey as outlined however demonstrates (as does the compliance history of over 10 years without any complaints) that noise is not an issue with this facility upon noise sensitive receptors.

There is no surface water on-site nor surface water features, so it is groundwater that is monitored on-site. Site mitigation measures are in place on site to protect groundwater and annual monitoring occurs upgradient and downgradient from the existing recovery facility.

Potential dust produced by the recycling operation, and the unloading of material from the haulage trucks, and the subsequent movement/spreading of Soil and Stone over the area of the deposition site is discussed in relation to dust as a potential environmental nuisance rather than a site emission.

It is proposed to manage the potential environmental nuisance caused by dust by bringing a tractor with water bowser onto site during extended periods of dry weather, to sprinkle water over hardcore areas and the access road, to dampen down any dust. An existing wheel wash is in use at the site for trucks egressing the site.

SECTION 3.2:
FLORA AND FAUNA

CONTENTS

3.2 FLORA AND FAUNA

3.2.1 Introduction

This section of the EIS deals with flora and fauna (i.e. ecology of the area) and has been compiled and prepared by the following specialist:

- Mr. Freddie P.R. Symmons B.Env.Sc. MCIEEM – Senior Environmental Consultant – Kingfisher Environmental Consultants and Full Member of the Chartered Institute for Ecology and Environmental Management.

- Reference has also been made to ecological surveys and information prepared by Roger Goodwillie of Roger Goodwillie and Associates who is also a Member of the Chartered Institute for Ecology and Environmental Management. He was engaged separately to prepare an Appropriate Assessment Screening Report in June 2014 as part of the requirements for the Waste Licence application W0260-01.

The purpose of this section of the EIS is to access the flora and fauna within and surrounding the subject site and to assess the potential impacts (if any) on any designated sites for Wildlife such as NHAs, SPAs or SACs. Potential impacts on flora and fauna are identified together with appropriate mitigation measures to limit or eliminate any impact on flora and fauna.

The conclusions of the AA Screening Report prepared by Roger Goodwillie and Associates in June 2014 found that:

"The protective measures built into the design and operation of the facility will prevent this project having any significant effect on the Natura 2000 site – the Lower River Suir (Site Code 2137) – or its conservation objectives. This applies both to the on-going operation phase and final restoration. Since this is the case there is no likelihood of 'in combination' effects on the Natura site network."

3.2.2 Existing Environment

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772.

The site activities carried out under the existing Waste Permit and which are subject to the Waste Licence Application W0260-01, have been fully examined by Kilkenny County Council and assessed in relation to matters relating to flora and fauna. In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon flora and fauna or any protected wildlife sites such as NHAs, SPAs or SACs..

CHI Environmental Ltd. applied for a Waste Licence (Ref: WO260-01) to the EPA on 13/2/2009 and in accordance with the relevant legislation, they continue to operate under their present Waste Permit (No. WMP 23/2007) under the authority of Kilkenny County Council until the waste licence application is decided upon by the Agency.

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use. The backfilling of the existing void with inert soils and stone is deemed to constitute inert waste recovery for the purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing. The material will be brought to the tipping area and post visual inspection will be graded over the active restoration area with a bulldozer.

In addition, the site operates as an inert construction and demolition materials recycling and transfer facility whereby construction and demolition material is screened and crushed in order to produce a secondary aggregate which can be recycled, stored and re-sold as a certifiable secondary aggregate products for re-use by the construction industry. Suitable soil and stones of a size of 0 – 40 mm are re-incorporated into the restoration of the former quarry.

Since 2004, a portion of the eastern side of the quarry site has been infilled satisfactorily to date as part of this process, and is presently covered in hardstanding and this is where the C&D material recycling and stockpiling occurs.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for recovery at the site as already permitted and authorised by the existing waste permit and planning permission. The sole reason a Waste Licence was applied for, was due to the changes in the National Waste Permit legislation and the obligations which this brought.

Furthermore, the recovery activities do not entail the excavation of material from the site (say like a quarry) but rather the restoration of the exhausted rock quarry site with inert soil and stone. Therefore any direct impacts upon flora and fauna would have occurred in an historical sense during the past excavation of the quarry void which removed all surface features and the rock below. Any habitats or species present today are as a consequence of man's industrial interventions in the past and do not necessarily represent the habitats that were present at this site, which would have more than likely been agricultural pasture land

The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

It is important to note that current best practise in quarrying and in getting authorisation for quarry development, is to be able to demonstrate full restoration plans in a phased and logical

manner. This fully complies with the policies set out in the current Kilkenny County Development Plan 2014 -2020 which states in Section 6.4.2 with regards to quarries:

- Ensure that all existing workings shall be rehabilitated and that all future extraction activities will allow for the rehabilitation of pits and proper land use management.
    - The Council may require that development is phased and that each phase is rehabilitated before the next phase is developed/commenced;
    - The Council shall require applicants to submit a restoration programme with their application on the manner and timing of restoration;
    - The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

and:

- The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

A baseline ecological assessment of the site took place in 2006 by BES Consultants and again in 2014 by Roger Goodwillie and Associates. A summary of these surveys relating to the existing ecological status is outlined below.

3.2.2.1 Appropriate Assessment Screening

As part of a Waste Licence (W0260-01) that was made to the EPA in February 2009, the EPA requested further information under Article 12(2)(b)(ii) of the Waste Management (Licensing) Regulations.

CHI Environmental Ltd. was requested by the Environmental Protection Agency (EPA) to Screen for Appropriate Assessment (AA), for proposed waste management activities at Grannagh, Kilmacow, Co. Kilkenny.

In June 2014 Roger Goodwillie and Associates carried out an AA Screening Statement.

With the introduction of the Birds Directive in 1979 and the Habitats Directive in 1992 came the obligation to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SAC's) and Special Protection Areas (SPA's).

Appropriate Assessment (AA) involves a case-by-case examination of the implications of a development for the Natura 2000 site and its conservation objectives. This may be presented in the form of a Natura Impact Statement. In general terms, implicit in Article 6(3) of the Habitats Directive is an obligation to put concern for potential effects on Natura 2000 sites at the forefront of every decision made in relation to plans and projects at all stages.

Screening for Appropriate Assessment is the first stage and critical test of Appropriate Assessment and the question is asked whether the development is considered to have a significant impact on the designated Natura 2000 site. The purpose of screening is to determine, on the basis of a preliminary assessment and objective criteria, whether:

i) a plan or project is directly connected to or necessary for the management of the site, and ii) whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives.

As most projects will not be related to point (i) above, this will virtually always be irrelevant but with regards to point (ii) if the answer is no then the process is complete and full appropriate assessment is not required. Screening therefore is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the Habitats Directive.

3.2.2.1.1 Findings of Appropriate Assessment Screening

3.2.2.1.1.1 Natura 2000 Sites

In this case the nearest site to the existing Grannagh Soil and stone recovery and inert C&D materials recycling facility is the Lower River Suir cSAC (Site Code 2137), a river system of European interest for the number of rare habitats and species it supports.

The boundary of the cSAC is along the river shoreline below the road and therefore about 30m from the entrance to the quarry (see **Figure 3.2.2.1.1.1**).

The site synopsis describes the Lower River Suir as having good examples of a number of habitats listed in Annex I of the EU Habitats Directive, including the priority habitat Alluvial Forest. The site also supports populations of several Annex II animal species and a number of Red Data Book animal species. Two legally protected plants (Flora (Protection) Order, 1999) occur and there is a high bird population in places, for example the Cabragh Marshes and Coolfin.

The most important features of the site (the qualifying interests) are shown in the next section.

3.2.2.1.1.2 Conservation objectives

To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected:

[1029] Freshwater pearl mussel *Margaritifera margaritifera*
[1092] Freshwater crayfish *Austropotamobius pallipes*
[1095] Sea lamprey *Petromyzon marinus*
[1096] Brook lamprey *Lampetra planeri*
[1099] River lamprey *Lampetra fluviatilis*
[1103] Twaite shad *Alosa fallax*
[1106] Atlantic salmon *Salmo salar* (only in fresh water)
[1330] Atlantic salt meadows (*Glauco-Puccinellietalia* maritimae)
[1355] Otter *Lutra lutra*
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)
[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
[6430] Hydrophilous tall herb fringe communities of plains or at montane to alpine levels

[91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)
[91J0] *Taxus baccata* woods of the British Isles

The favourable conservation condition of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable.

The favourable conservation condition of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

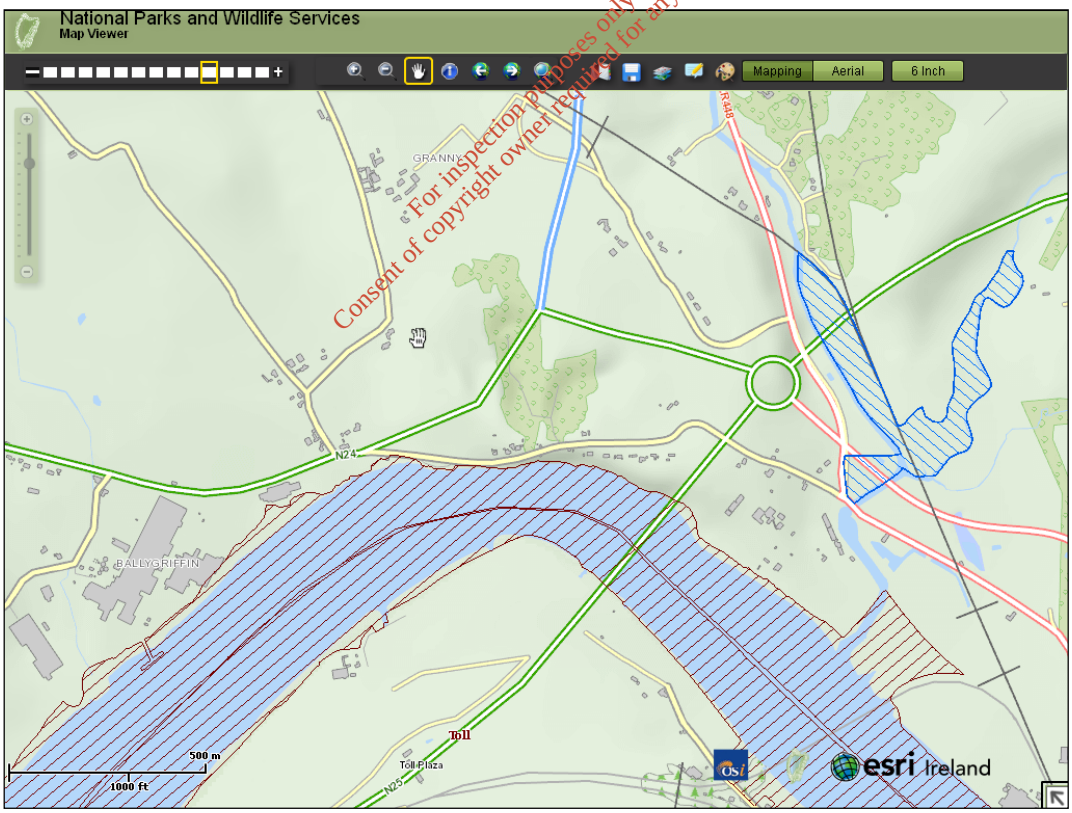


Figure 3.2.2.1.1.1: Location of Grannagh Facility (arrowed) in relation to Lower River Suir cSAC (hatched). Blue hatching is a pNHA.

3.2.2.1.1.3 Potential Impacts

The Grannagh Facility site does not contain any of the habitats or species that are the special interests of the cSAC and therefore it cannot act as a reservoir to replenish the Natura 2000 site in the event of loss.

The only possible impact would be through site drainage reaching the estuary in significant quantities and carrying some kind of detrimental matter. The organisms that occur in the nearest section of river are sea lamprey, river lamprey, the Atlantic salmon, Twaite shad and otter. The fish migrate through the estuary to breed upstream while the otter is resident, feeding on many species of fish and on frogs.

There are no surface water features on site nor are there any surface water discharges from the site. All rainwater percolates down into the groundwater which is many metres below ground level and does not appear at all in the base of the quarry. Any water leaving the site does so through groundwater and if it were to form any kind of recharge to the River Suir, which is highly unlikely, it would be subject to significant dilution before it reaches the estuary.

The inert nature of the soil material accepted at the facility and the strict waste acceptance criteria ensure soil and stone materials and inert C&D materials accepted at the site do not contain any potential contaminants to groundwater. Notwithstanding this, in accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells (GW1 and GW2) have been installed on-site by CHI Environmental to monitor groundwater quality upgradient and downgradient of the existing facility. The results of groundwater monitoring for 2012 and 2013 demonstrates that the site recovery and recycling activities are having no significant negative impact upon groundwater quality.

The soil recovery and the C&D materials recycling facility has been up and running for the past ca. 10 years without any complaints or enforcement issues relating to water or water pollution or impacts upon groundwater as proven by Local Authority records and site audits. Furthermore, the compliance monitoring is all up to date and is all compliant with the permit requirements and planning permission. All in all, it is considered that CHI Environmental Ltd. operate an extremely well run and well-monitored permitted soil recovery and C&D materials recycling facility.

From a groundwater protection perspective, the restoration of the former Grannagh rock quarry using suitable inert soil and stones over the site will provide an additional protective soil cover which will have a positive impact upon the protection of groundwater in the area. Furthermore, the extent of dilution by the tidal and river water will prevent any significant impact on the estuary ecosystem.

3.2.2.1.1.4 Conclusion of AA Screening

The protective measures built into the design and operation of the facility will prevent this project having any significant effect on the Natura 2000 site – the Lower River Suir (Site Code 2137) – or its conservation objectives. This applies both to the on-going operation phase and final restoration. Since this is the case there is no likelihood of 'in combination' effects on the Natura site network. Therefore the site can be screened out of further stages of Appropriate Assessment.

3.2.2.2 Flora and Fauna and Habitat Survey of Grannagh Facility

3.2.2.2.1 Introduction & Methodology

The purpose of this section is to assess the ecological effects of the development and to describe the mitigation measures that have or will be undertaken.

It is based on a site visit in June 2014 and a study of existing aerial photographs. The field investigation followed the methodology of the Heritage Council Guidelines (Smith *et al* 2011) though mapping was not digitised in the field. Habitats are classified as in Fossitt (2000). Signs of mammals and birds were searched for at all times.

3.2.2.2.2 Habitats and Flora

The two sections of the Grannagh Facility differ considerably in their level of use and therefore in their vegetation and habitats. This is shown in the site habitat map as **Figure 3.2.2.2.2.1**. The eastern part of the site has been largely infilled and consists of hardstanding areas for the C&D materials recycling activity. This area is closely associated with the disturbed ground, most closely approaching the habitat type active quarries and mines (ED4 in Fossitt 2000) with stockpiles of recycled stone, recycled concrete and recycled soil with little or no plant life. Around the edges and along paths associated with this area is the habitat type: recolonising bare ground (ED3) which contains a mixture of wild plants and garden species usually derived from old walls. These include: Butterfly bush *Buddleja davidii*, ivy-leaved toadflax *Cymbalaria muralis*, shining cranesbill *Geranium lucidum* and snapdragon *Antirrhinum majus.* Also present are:

Reseda luteola	dyer's rocket
Rumex obtusifolius	broad-leaved dock
Brassica rapa	wild turnip
Barbarea vulgaris	common wintercress
Verbascum thapsus	mullein
Tripleurospermum inodorum	scentless mayweed
Cirsium vulgare	spear thistle
Valerianella locusta	lamb's lettuce
Vicia sativa	early vetch

Within the eastern side of the site are also strips of mature hawthorn *Crataegus monogyna* and other shrubs and towards the southern end there are some small patches of pre-existing rocky ground. Calcareous grassland here contains some red fescue *Festuca rubra*, marjoram *Origanum vulgare*, field woodrush *Luzula campestris*, lady's bedstraw *Galium verum* and rest harrow *Ononis repens*.

The restoration of the quarry with inert soil and stones is now extending into the western part of the former quarry site, but otherwise it has been left to natural succession since being abandoned historically as an exhausted limestone quarry. Modern day best practise it to restore and reclaim quarried areas as one progresses, but this was not the thinking back in the past 200 years, where the only goal was the extraction of the valuable rock resource.

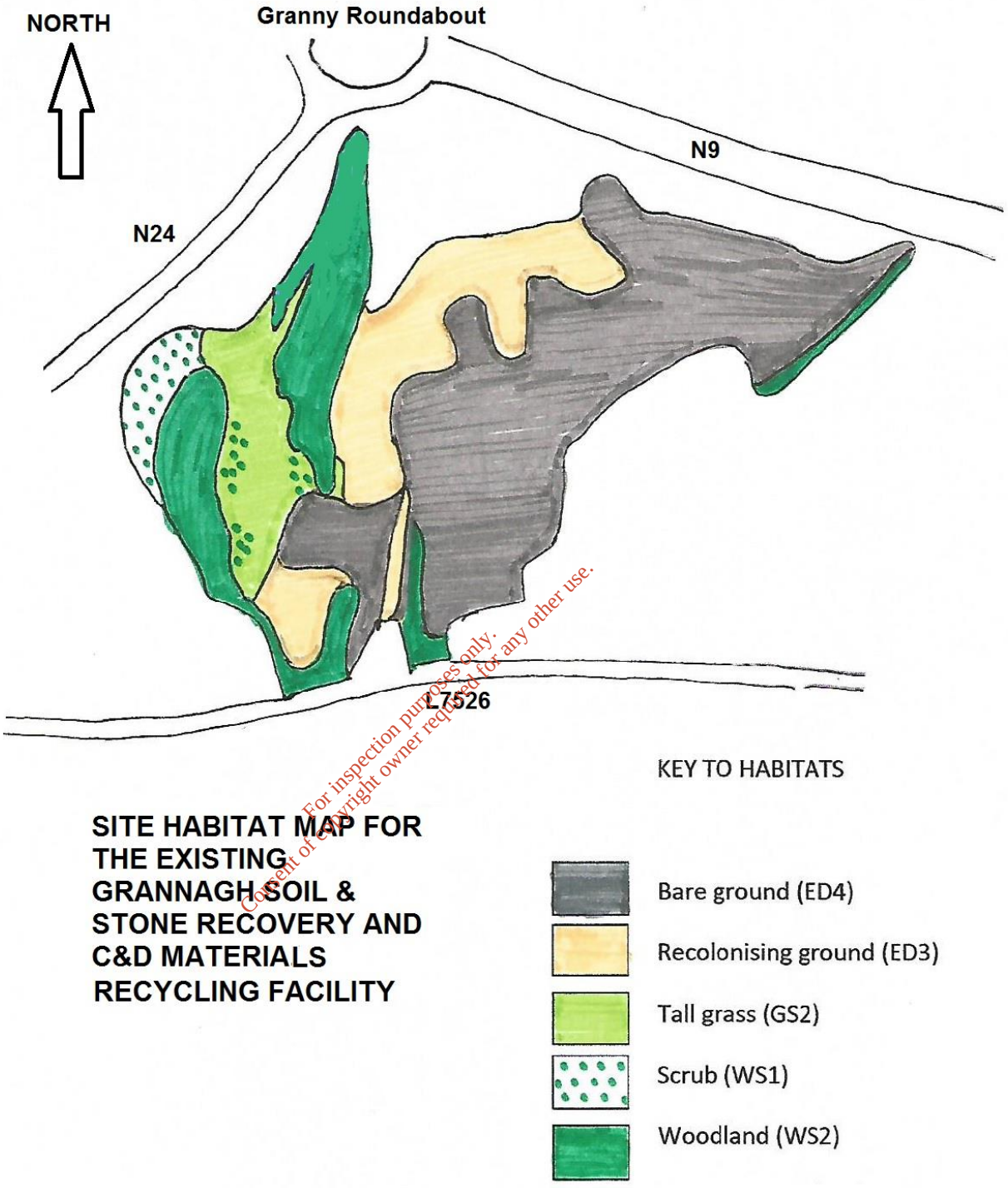


Figure 3.2.2.2.2.1: Site Habitat Map for the Existing Grannagh Facility

On the base of the southern part of the restoration site, there is still some tussocky grass which forms habitat type: dry meadows and grassy verges GS2, which is grazed now only by rabbits. Cocksfoot *Dactylis glomerata*, scutch *Elytrigia repens* and sweet vernal grass *Anthoxanthum odoratum* are the main grasses and share the ground with creeping thistle *Cirsium arvense*, fragrant agrimony *Agrimonia procera*, hogweed *Heracleum sphondylium* and great willowherb *Epilobium hirsutum*. Low thickets of bramble *Rubus fruticosus*, gorse *Ulex europaeus* and hawthorn line the edges leading into taller bushes and trees on the sloping walls of the quarry. The common Ash *Fraxinus excelsior* is the main tree species, though there is some scattered willow *Salix cinerea* and, at the southern end, the invasive sycamore *Acer pseudoplatanus*.

Ground level drops towards the N24 embankment, leading to a low point which since the construction of the Granny Roundabout and the new N24, has caused some rain water to collect in response to road drainage during extreme rainfall events. This area is predominantly dry and will be reinstated with the site restoration work. Any rainwater which does collect in this area percolates into ground to groundwater. In this area is a suite of grassland species including:

Potentilla anserina	silverweed
Carex flacca	glaucous sedge
Centaurea nigra	knapweed
Lotus corniculatus	birdsfoot trefoil
Ranunculus repens	creeping buttercup
Anthoxanthum odoratum	sweet vernal grass
Veronica chamaedrys	germander speedwell
Dipsacus fullonum	teasel

The embankments of the N24 are grassed and have a small number of gorse bushes, which again have no particular conservation value. The land falls again into the northern part of the western quarry where there is an expanse of subsoil related to the road building. This area is relatively damp, again caused by the road construction works and contains the following species:

Calliergonella cuspidata	moss
Prunella vulgaris	self-heal
Veronica serpyllifolia	thyme-leaved speedwell
Leucanthemum vulgare	dog daisy
Medicago lupulina	black medick
Centaurium erythraea	centaury
Epilobium parviflorum	hoary willowherb
Linum catharticum	fairy flax
Pulicaria dysenterica	fleabane
Blackstonia perfoliata	yellow wort

To the west of the quarry restoration area, the original quarry vegetation re-appears with limestone grassland and taller species in amongst a scrub of hawthorn and blackthorn *Prunus spinosa*. Rose-bay *Chamerion angustifolium*, great willowherb *Epilobium hirsutum* and square-stemmed St John's wort *Hypericum tetrapterum* are conspicuous, together with:

Teucrium scorodonia	wood sage
Brachypodium sylvaticum	false brome
Vicia cracca	tufted vetch
Polygala vulgaris	common milkwort
Plantago lanceolata	ribwort plantain
Hypericum perforatum	perforate St John's wort

The western part of the Grannagh Soil Recovery Facility is notable for its common habitat of scrub and woodland which covers the sides of the southern section but fills much of the excavations north of the N24. Formed of commonly occurring species such as hawthorn, blackthorn, bramble, gorse, field rose *Rosa arvensis* and a little privet *Ligustrum vulgare*, it also contains some young ash which reach medium size against the old quarry walls. In the most shaded places ivy *Hedera helix*, shield fern *Polystichum setiferum*, hartstongue *Asplenium scolopendrium*, wood dock *Rumex sanguineus* and celandine *Ranunculus ficaria* are widespread but there are also a few more woodland species, including:

Primula vulgaris	primrose
Veronica chamaedrys	germander speedwell
Glechoma hederacea	ground ivy
Potentilla sterilis	barren strawberry
Fragaria vesca	wild strawberry
Brachypodium sylvaticum	false brome
Arum maculatum	lords-and-ladies
Moehringia trinervia	three-veined sandwort
Veronica montana	wood speedwell
Viola riviniana	common violet
Listera ovata	twayblade

The lowest point of the former limestone quarry excavation is damp but never flooded. This is purely due to the presence of rainwater slowly percolating to groundwater. It is marked only by a little hard rush *Juncus inflexus*, marsh thistle *Cirsium palustre* and lady's smock *Cardamine pratensis*, a single grey willow *Salix cinerea* and some nettle *Urtica dioica*.

Occasional paths and open places also occur because of rabbit grazing. Here grow additional species such as glaucous sedge *Carex flacca*, daisy *Bellis perennis* and common mouse-ear *Cerastium fontanum* and there is the suggestion of infrequent disturbance from species like coltsfoot *Tussilago farfara*, yellow wort *Blackstonia perfoliata* and common centaury *Centaurium erythraea*. A feature of the edges of scrub is water figwort *Scrophularia auriculata*, creeping thistle *Cirsium arvense*, field rose *Rosa arvensis* and common gorse *Ulex europaeus*.

3.2.2.2.3 Fauna

Rabbits are the most frequent mammal and occur throughout the area, most numerously in the western section of the Grannagh Facility. There was no evidence of badger and only occasional fox droppings. Other species to be expected are stoat, wood mouse and hedgehog. The habitat is also suitable as feeding grounds for bats but the lack of old buildings (for roosting) and the barrier of the new roads makes it unlikely to bats. None were found by a bat survey in 2001 carried out in association with the new N24 road.

The birds seen were hooded crow, swallow, blackbird, song thrush, robin, dunnock, wren, blackcap, chiffchaff, goldfinch and chaffinch. Most of these (except the swallow) would nest on site but there were no colonies of rooks etc.

The insect life is closely related to the vegetation and includes speckled wood and common blue butterflies, the latter using birdsfoot trefoil as a foodplant. Three species of bumble bee were also seen – *Bombus hortorum*, *B.pascuorum* and *B.lapidarius.*

3.2.2.2.4 Evaluation of Conservation Value

The site shows many of the typical common habitats likely to be found within an abandoned limestone rock quarry and none of the habitats present or the species are considered to be of significant local or national importance. Furthermore the habitats and flora found within the active parts of the Grannagh facility are exactly what one would expect to see associated with disturbed ground and active working areas. The fauna is again typical of this type of landscape and habitats.

There are no rare or protected species present (cf. McGrath 2006, Green 2008, Preston *et al* 2002) but several plant species are local in distribution (twayblade *Listera ovata*, and fragrant agrimony *Agrimonia procera*).

A few of the plants are of local occurrence in south Kilkenny (Preston *et al* 2002) because of the prevalence of acid rocks but none could be considered rare. The abundance of fragrant agrimony *Agrimonia procera* is a feature of the rough grassland. This may be a recent phenomenon (it was not mentioned in 2006 by BES) but the species is relatively common in Waterford (Green 2008).

The bird species are generally common (cf Balmer *et al* 2013) as are the other aspects of the fauna (cf Nash *et al* 2012).

3.2.3 Potential Environmental Impacts

If one were considering this existing soil recovery facility as a new "Greenfield" site with no previous authorisations; ecological assessments; or consideration of potential impacts upon flora and fauna and ecology, then one could suggest that the reclamation of the site could have the potential to impact upon the naturally occurring habitats and species of flora and fauna.

However a thorough assessment of the site has found that the site does not contain any rare or protected habitats and many of the habitats and species present are mainly due to the past intervention of man through past quarrying and in the present day restoration activities.

The conclusions of the AA Screening Report prepared by Roger Goodwillie and Associates in June 2014 found that:

"The protective measures built into the design and operation of the facility will prevent this project having any significant effect on the Natura 2000 site – the Lower River Suir (Site Code 2137) – or its conservation objectives. This applies both to the on-going

operation phase and final restoration. Since this is the case there is no likelihood of 'in combination' effects on the Natura site network."

Any habitats or species present today are as a consequence of man's industrial interventions in the past and do not necessarily represent the habitats that were present at this site, which would have more than likely been agricultural pasture land prior to quarrying.

The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

All boundary treelines and hedgerows will remain intact and will be augmented where necessary so that the linear habitats on-site remain unaffected by the restoration works and the C&D recycling activity. In fact the presence of the mature treelines and hedgerows provides an ideal natural visual barrier into the site and also provides a buffer to potential dust and noise emissions from the site.

It is important to note that current best practise in quarrying and in getting authorisation for quarry development, is to be able to demonstrate full restoration plans in a phased and logical manner. This fully complies with the policies set out in the current Kilkenny County Development Plan 2014 -2020 which states in Section 6.4.2 with regards to quarries:

- Ensure that all existing workings shall be rehabilitated and that all future extraction activities will allow for the rehabilitation of pits and proper land use management.
    - The Council may require that development is phased and that each phase is rehabilitated before the next phase is developed/commenced;
    - The Council shall require applicants to submit a restoration programme with their application on the manner and timing of restoration;
    - The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

and:

- The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

The site activities carried out under the existing Waste Permit and which are subject to the Waste Licence Application W0260-01, have been fully examined by Kilkenny County Council and assessed in relation to matters relating to flora and fauna. In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon flora and fauna or any protected wildlife sites such as NHAs, SPAs or SACs.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for

recovery at the site as already permitted and authorised by the existing waste permit and planning permission. The sole reason a Waste Licence was applied for, was due to the changes in the National Waste Permit legislation and the obligations which this brought.

3.2.4 Mitigation Measures

Given that the AA screening report and the site ecological survey have concluded that the continued operation of the existing Grannagh facility will not have any significant impacts upon flora and fauna and any rare or protected habitats, or on any protected designated sites for nature, no further specific mitigation measures are required or are proposed.

That said common sense should prevail in ensuring that any wildlife present on site is respected and that best practice is adopted in terms of any habitat disturbance during the bird nesting season.

Monitoring of groundwater and dust emissions will continue to demonstrate that the activity is having no negative impact upon the environment and so that compliance with the Waste Licence standards when issued can be maintained.

Actions to ensure dust abatement include spraying of haul roads in dry weather and their general. In addition re-vegetation of grassland species will be carried out on completed restoration sections on an on-going basis.

Final site restoration will include the removal of all machinery and structures and the levelling of the site contours to facilitate the establishment of grassland and grazing animals.

Attention will be given to the possible occurrence of Japanese knotweed or any other invasive alien species and these will be controlled at an early stage. They do not seem to be present at the site.

SECTION 3.3:
WATER

CONTENTS

3.3 WATER

3.3.1 Introduction

This section of the EIS deals with water and has been compiled and prepared by the following specialist:

- Mr. Freddie P.R. Symmons B.Env.Sc. MIEEM – Senior Environmental Consultant – Kingfisher Environmental Consultants

The purpose of this section of the EIS is to access the water environment within and surrounding the subject site.

There are no surface water features (i.e. streams) within the former quarry site and no discharges to surface water features or surface water links to the River Suir. This is well established as the site has undergone a full assessment in the granting of planning permission and in the issuing of two waste permits by Kilkenny County Council.

Groundwater and the protection of groundwater is covered comprehensively within Section 3.6 of this EIS.

Potential impacts (if any) on waters are identified together with appropriate mitigation measures to limit or eliminate any impact on the receiving water environment.

3.3.2 Existing Environment

There are no surface water features (i.e. streams) within the former quarry site and no discharges to surface water features or surface water links to the River Suir. This is well established as the site has undergone a full assessment in the granting of planning permission and in the issuing of two waste permits by Kilkenny County Council.

With the exception of the sealed concrete slab at the waste quarantine area, it is not intended to provide any site drainage infrastructure to collect and remove surface water runoff at the application site.

During the infilling and restoration of the quarry site, surface water will be allowed to run over the existing ground surface to percolate through the deep soils to groundwater. At no time during the restoration works will surface water run-off be directed to watercourses or ponds beyond the site boundary.

The waste quarantine area, will be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and bunded to a design storm volume. Any surface water running over the surface of the concrete slab will be directed toward an underground collection tank with double skin protection located on the western side of the hardstanding area. Surface water will only be collected in the buried tanks when suspect waste consignments are stored at the quarantine facility.

At all other times, surface water run-off from the impervious concrete slabs will be diverted and allowed to percolate directly through the soils to the underlying groundwater table.

Any wastewater collected in the underground tank will be emptied by licensed waste collectors and transferred to a collection tanker for disposal off-site at an approved waste water treatment facility.

With regards to Groundwater, which is comprehensively covered in Section 3.6 of this EIS, the following is a summary of the "water" regime as it relates to Groundwater:

- **Groundwater Protection Zone Rating**: The groundwater protection zone rating for the area of the site is **LI/E**.

- **Source Protection Areas**: There are no source protection areas either at or near to the existing Grannagh Recovery site as shown on GSI maps as shown in Section 3.6.

- **Karst Features**: There is only one karst feature in the general locality and this is identified on the GSI maps as a spring in limestone located ca. 500 metres west of the site in Waulsortian rocks within the townland of Granny as shown in Section 3.6. This spring is far removed from the site and there will be no impact upon this spring by the quarry restoration activities.

- **Wells/Water Supply:** The soil recovery facility and C&D materials recycling facility, does not have existing or proposed extraction wells from Groundwater. No groundwater wells were identified in close proximity to the site supplying water for domestic or animal needs as shown in Section 3.6. All potable water requirements come from an existing mains supply to the site office and staff cabin.

- **Groundwater Response Matrix**: For inert soil and stone recovery facilities there is no groundwater response matrix unlike for Municipal Solid Waste (MSW) Landfills. The response for a MSW landfill (which this site most certainly is not) would be $R2^2$ – meaning acceptable in principle, subject to certain conditions.

- **Groundwater Monitoring Wells**: In accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells have been installed on-site by CHI Environmental to monitor groundwater quality upgradient and downgradient of the existing facility. The results of groundwater monitoring for 2012 and 2014 are presented section 3.6 of the EIS.

  Condition 11 stated: "*Within one month of the date of grant of this permission, the Developer shall arrange for the installation of 2 groundwater monitoring boreholes-one to be located up-gradient and one down-.gradient. Analysis of the samples shall be carried out for COD, PH, Temperature, Total Ammonia (expressed as N), Nitrate (expressed as NO_2), Total Phosphorous (expressed as p), Total Hydrocarbons to include mineral oils, Total Organic Content (TOC), Potassium (as K), Chloride (as Cl) and Sulphate as ($S0_4$). Monitoring shall be carried out annually and results shall be submitted to the Planning Authority*".

3.3.3 Potential Impacts

The former quarry site at Grannagh has been used for the authorised land restoration using inert soil and stone material for the consequential benefit to agriculture since 2004. A small portion of the quarry site has been infilled satisfactorily to date as part of this process, and is presently covered in hardstanding and is where the C&D material recycling and stockpiling occurs.

The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

From a groundwater protection perspective, the spreading of suitable soil and stones over the site will provide many additional metres of protective soil cover which will have a positive impact upon the protection of groundwater in the area. The lands adjacent to the Grannagh facility are principally used for productive pasture land for the grazing of livestock.

The inert nature of the soil material accepted at the facility and the strict waste acceptance criteria ensure soil and stone materials and inert C&D materials accepted at the site do not contain any potential contaminants to groundwater. Notwithstanding this, in accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells were installed on-site by CHI Environmental in 2012 to monitor groundwater quality upgradient (GW1) and downgradient (GW2) of the existing facility.

The groundwater monitoring wells could not be installed earlier due to the pending completion of the new N25 which bisects the Grannagh Quarry site and CHI Environmental Ltd. had to wait until all land issues associated with the construction works had been resolved with Kilkenny County Council.

The analysis results of groundwater monitoring for 2012 and 2013 are presented in Section 3,.6 of the EIS and are compared against the groundwater quality threshold limits (where available) set in the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010).

The results show that the quality of groundwater is generally excellent with only one slight exceedance for ammonical nitrogen in the downgradient borehole GW2 in 2012, which in 2013 was back to the normal background levels therefore suggesting a natural phenomenon. In 2013, sulphate in GW2 showed slight elevated levels and monitoring results for 2014 will determine whether this is also a temporary natural occurrence. Overall the results demonstrate that the site recovery and recycling activities are having no significant negative impact upon groundwater quality at the Grannagh Facility.

It is important to stress that the Grannagh Facility has been in operation since 2004, and has since that time been granted two waste permits from Kilkenny County Council and has also been granted full planning permission by Kilkenny County Council. Therefore the site has operated under strict and rigid controls and conditions to protect groundwater and waters in general. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning waters or groundwater quality or contamination.

The soil recovery and the C&D materials recycling facility as presently permitted, does not have any existing or proposed Emissions to Groundwater any and does not propose to have Emissions to Groundwater through the application for a Waste Licence.

Existing toilet facilities are located in the staff changing room and effluent is directed to a concrete holding tank which is emptied as required by an approved Waste Contractor. It is envisaged that this arrangement will continue for the duration of the site restoration works. There are no discharges of sewage to ground and therefore no potential impact upon soils or groundwater will occur.

Any wastewater collected in the underground tank will be emptied by licensed waste collectors and transferred to a collection tanker for disposal off-site at an approved waste water treatment facility.

No groundwater wells have been identified in close proximity to the site supplying water for domestic and animal needs.

Given that the materials to be deposited are non-leachate forming and given the mitigation measures proposed with regards to waste acceptance, the impact of groundwater contamination on waters in particular groundwater in the area during operation and upon completion of the project will be negligible.

It is not proposed to store any fuel on site and it is not intended to provide bunded fuel storage tanks at the application site. A fuel tanker will visit the site, when required and fill the onsite plant. Refuelling for mobile plant takes place on the concrete hardstanding area of the quarantine area, and booms and spill kits are kept adjacent to this. Static tracked plant such as screeners etc. are refuelled directly at their location with the use of mobile spill trays.

A small bunded tank for waste oils will be provided on the concrete slab at the waste quarantine area. This tank will be emptied at intervals by a licensed waste contractor and disposed off-site at a suitably licensed waste facility.

No re-fuelling of HGV trucks will take place on site. Oil and lubricant changes for wheeled or tracked plant will be undertaken on-site at the existing concrete hardstanding area at the quarantine area.

Plant maintained on site principally comprises mechanical excavators and/or bulldozers, mobile screening and crushing plant. Both tracked and wheeled plant will be serviced as necessary at their location on the hardstanding area or, if necessary, on the concrete slab at the waste quarantine area

The inert nature of the soil material accepted at the facility and the strict waste acceptance criteria ensure soil and stone materials and inert C&D materials accepted at the site do not contain any potential contaminants to groundwater. Notwithstanding this, in accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells have been installed on-site by CHI Environmental to monitor groundwater quality upgradient and downgradient of the existing facility. The results of groundwater monitoring for 2012 and 2013 demonstrates that the site recovery and recycling activities are having no significant negative impact upon waters and in particular groundwater quality.

The soil recovery and the C&D materials recycling facility has been up and running for the past ca. 10 years without any complaints or enforcement issues relating to water or water pollution or impacts upon groundwater as proven by Local Authority records and site audits. Furthermore, the compliance monitoring is all up to date and is all compliant with the permit requirements and planning permission. All in all, it is considered that CHI Environmental Ltd. operate an extremely well run and well-monitored permitted soil recovery and C&D materials recycling facility.

3.3.4 Mitigation Measures

With regards to ensuring that there are no significant impacts upon waters and in particular groundwater, the following mitigation measures will ensure that the continued operation of the The soil recovery and the C&D materials recycling facility at Grannagh will not impact upon groundwater:

- The plant machinery is refuelled using a Mobile Fuel Bowser. No fuel is stored on the site. This eliminates the risk of potential fuel leakages from storage tanks and prevents any environmental impact on groundwater.

- Spill kits are provided, in the unlikely event of a spillage, that the spillage is confined to the immediate area.

- As part of the Environmental Management System on site, Emergency Response Procedures have been put in place to deal with emergencies.

- In the unlikely event of a larger fuel spillage, either from the site plant or refuelling tanker, the emergency procedures listed below will be followed:

In the event of a larger fuel spillage, either from the site plant or refuelling tanker, the emergency procedures listed below will be followed:

In the event of a threat to groundwater the following is to be implemented:

• Inform the EPA and Kilkenny County Council.
• Contain any spillage as far as possible using the spill kits and booms
• Detect source and carry out necessary remedial works;
• Monitor situation hourly until threat is removed.

In the event of a threat to outside the site:

• Detect source;
• Inform the EPA and Kilkenny County Council;
• Monitor extent of contamination;
• Inform public if risk is posed;
• Take appropriate action to alleviate situation.

In the event of a threat to outside the site:

• Detect source;
• Inform the EPA;
• Monitor extent of contamination;
• Inform public if risk is posed;
• Take appropriate action to alleviate situation.

- No chemicals (e.g. Insecticides, Herbicides, Rat Poisons, Cleaning Agents, Water Treatment Chemicals, Cooling Water/Boiling Water Additives, Laboratory Chemicals, etc.) are required or accepted at the facility and there is no change in this regard in the application for a Waste Licence.

- The only Waste Arising at the facility are those materials moved to/stored in the Waste Quarantine Area (e.g. wood, plastics, metals, paper) and wastes from the facility portacabin (office and staff accommodation). The amounts of these materials generated on the basis of experience in operating the existing facility to date are very low. Waste acceptance letters are in place for acceptance of these waste streams by the appropriate waste recovery/disposal facilities.

- The wastes from the Quarantine skips are removed by authorised Waste Collection Permit Holders for disposal or recovery to authorised waste facilities.

- All wastes in the site office/staff accommodation are divided into 'Recyclable Waste' and 'Landfill Waste' and appropriately disposed of/recovered.

- Full records are maintained in the site office of all wastes leaving he site and these form part of the Annual Environmental Report (AER).

- All machinery will be regularly serviced and checked to ensure there are no leakages of fuel or hydraulic liquids. All routine servicing of plant and equipment will, insofar as possible be undertaken off-site. Emergency repairs to plant and equipment will ensure that drip trays and oil catcher tanks are employed to collect hydraulic or oil lubricant liquid.

- Each load of soil / waste that arrives at the facility will be checked in at the weighbridge. Information on the conveyance note will be cross-checked against the electronic records held on the database. If the information provided conforms to the information on the database, the driver will be asked to proceed to the designated waste reception area. Personnel operating within the waste reception area will be advised of any need to carry out a more rigorous inspection of the deposited wastes.

- Any load that is deemed unauthorised or unsuitable waste [based on visual/olfactory evidence] will be loaded back on to the delivery vehicle and the driver instructed to leave the facility. All deliveries from the source site will be suspended until inquiries are completed and appropriate measures put in place to prevent a re-occurrence.

- Should materials be identified that are potentially hazardous / unauthorized / unsuitable following a satisfactory initial inspection, they will be transferred to a designated quarantine area until they can be disposed of at an appropriately licensed facility in accordance with the relevant conditions of the Waste Permit.

- With regards specifically to loads of inert soil and stone, the Facility Manager/Machine Operative will inspect each load, as it is being deposited, to ensure the material is fully compliant with. If the material is non-compliant, the Facility Manager/Machine Operative will insist that the material is reloaded onto the haulage truck and removed from the site, for authorised disposal elsewhere.

- Once the haulage trucks deposit their material, along the perimeter of the restoration area, the bulldozer shifts the inert material, from where it is deposited by the haulage trucks and spreads it over the area of the deposition site, in compliance with the Waste Permit and the Waste Licence when issued. If waste objects are identified within the inert material (whilst shifting/reclaiming the material), which are not compliant with the Waste Permit or Waste Licence (e.g. pieces of wood, plastic, metal), they will be removed and transported to the Waste Quarantine skips.

3.6.5 Conclusions

The Grannagh Facility has been in operation since 2004, and has since that time been granted two waste permits from Kilkenny County Council and has also been granted full planning permission by Kilkenny County Council. Therefore the site has operated under strict and rigid controls and conditions to protect groundwater and soils. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning groundwater or groundwater quality or contamination.

There will be no significant impacts upon the groundwater or water environment as identified in this section of the EIS as there will be no process emissions to either the ground, surface water or groundwater.

All appropriate mitigation measures have been put forward and are implemented for a soil recovery and C&D materials recycling site of this nature. The Grannagh facility is a low risk activity which poses little or no threat to hydrogeology, groundwater, or surface waters. To ensure the recovery and recycling activity is not having any significant impact upon water and in particular groundwater it is proposed to continue to monitor groundwater at the two on-site groundwater monitoring wells (upgradient GW1 and downgradient GW2) on an annual basis.

SECTION 3.4:
CLIMATE, AIR QUALITY & DUST

CONTENTS

3.4 CLIMATE, AIR QUALITY AND DUST

3.4.1 Introduction

This section of the EIS deals with Climate, Air Quality and Dust associated with the on-going operation of the existing soil and stone recovery and inert materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny.

It is important to stress that CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities.

Therefore the site has operated under strict and rigid controls and conditions to protect air quality and to prevent dust. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning dust or nuisance associated with dust upon local residents or to air quality in general.

Soil recovery facilities and C&D materials recycling and storage facilities operate site activities which by their very nature have the potential to generate dust. Dust arises predominantly from wind-blown dust from inert soil and C&D materials during prolonged dry periods. The main elements influencing dust emissions from an inert soil and C&D materials recovery facility include site plant and mobile machinery; stockpiles; traffic on internal haul roads; unloading of soil material C&D materials and temporary storage; stripping and topsoil storage.

Dust emissions from such facilities are generally dispersed sources rather than point sources and this dictates the measures required to mitigate potential dust related impacts.

Condition 10 of the Planning Permission Register no. 06/1772 states that "*Measures are to be employed to control dust arising from the operation of the facility, including the immediate access roads, such that the operation of the activity does not cause a nuisance. Dust deposition levels shall not exceed 350mg/m^2/day. The Developer/Holder shall carry out monitoring if and/or when instructed to do so by Kilkenny County Council by means of a 30-day composite sample, using the Bergerhoff method*"

3.4.2 Existing Environment

The existing inert soil and stone recovery facility and inert materials recycling and transfer facility is located at The Quarry, Grannagh, Kilmacow, Co. Kilkenny ca. 4 km north of the City of Waterford on the Waterford and Kilkenny County boundary, National Grid Reference 257881E, 114843N.

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use at Grannagh, Kilmacow, County Kilkenny. This is the west portion of the current site.

In addition, within a partially reclaimed section of the quarry to the east of the site, CHI Environmental Ltd. operates as an inert construction and demolition materials recycling and transfer facility whereby construction and demolition waste is screened and crushed in order to produce a secondary aggregate which can be recycled, stored and re-sold as certifiable secondary aggregate products for re-use by the construction industry.

Figure 3.4.2.1 shows the surrounding land use within the geographical location of the existing Grannagh Recovery Facility. The main features to note with regards to the existing Waste Recovery facility and the local area are as follows:

- The former N24 Waterford to Limerick National Primary route was in the recent past downgraded to a secondary local route – the L7526 and this is now where the site entrance into the facility is located. A small number of local residences are located along this road. The new Granny Roundabout and N24/M9 routes effectively bisected the existing quarry site into two distinct sections.

- The principal surrounding land uses comprising of agriculture and dispersed one-off housing developments and old farmsteads. The area is generally rural in character but is influenced by the proximity to Waterford City.

- The existing site has excellent access to the National Roads network, with the N24, M9 and N25 all accessible within ca. 1 km of the site. Furthermore the site is encircled by public roads which has a bearing on existing background air quality levels and noise in the vicinity of the facility. There is also the main Irish Railline which passes within 1 km to the east of the site before branching into two arms, with the western arm running within 1 km of the site in a northerly direction.

- The city of Waterford is ca. 4 km south-east of the existing site and the facility provides an essential piece of waste recovery and recycling infrastructure to the city and hinterland.

- There is a large existing active rock quarry operated by Roadstone located west north west of the site off the N24. This demonstrates the history and importance of rock extraction in the area in addition to the former Granny rock quarry.

- To the west of the site, within 1 km is the Dawn Meats Factory. This demonstrates other industrial land uses within the vicinity of the existing waste recovery facility.

- The existing recovery site which has been in operation since 2004 is located within good fertile agricultural pasture lands. Many of the fields in the area have been amalgamated into larger field units and farming is the principal land use in the area. The quarry areas currently being restored will be returned back to productive agricultural land upon completion of the works with a consequential benefit to agriculture.

- To the south of the site and separated by the intervening landscape, topography and the former N24 road (now downgraded to a secondary local route - the L7526) is the River Suir. This is located at a much lower level than the floor of the former quarry and also therefore the proposed finished restoration profile of the reclaimed quarry. The former quarry site and the recovery facility have no surface water features, i.e. streams or rivers which connect to the River Suir.

Figure 3.4.2.1: Existing Site and Surrounding Land-Use

Figure 3.4.2.2: The Existing Site and the Local Settlement Pattern of the Area and the Existing Dust Monitoring Points

The nearest densely populated area close to the site is Waterford City 4 km south-east of the existing site. **Figure 3.4.2.2** shows the existing site and the local settlement pattern of the area and shows the individual dwelling houses which one could consider as the closest sensitive receptors to dust. There are no nearby public buildings i.e. schools or churches where people congregate. **Figure 3.4.2.2** also shows the existing Dust Monitoring Points D1 and D2.

3.4.3 Climatic Factors

Site Monitoring of Meteorological Data is not required under the current waste permit issued by Kilkenny County Council and should not be required Waste Licence W0260-01 – when issued. Met Eireann have an official 'Synoptic Weather Station' in Rosslare which is the closest station recording climatic factors to the existing site at Grannagh. Background climatic data is useful in determining factors such as the likelihood of dry and windy days at the facility; the prevailing wind direction for potential non-point diffused dust emissions from site activities; and the typical rainfall and precipitation expected at the site.

3.4.3.1 Wind

The wind at a particular location can be influenced by a number of factors such as obstruction by buildings or trees, the nature of the terrain and deflection by nearby mountains or hills. For example, the rather low frequency of southerly winds at Dublin Airport is due to the sheltering effect of the mountains to the south. The prevailing wind direction is between south and west. Average annual wind speeds range from 3m/s in parts of south Leinster to over 8 m/s in the extreme north. On average there are less than 2 days with gales each year at some inland places like Carlow, but more than 50 a year at northern coastal locations such as Malin Head.

Wind is the movement of air caused by pressure differences at the earth's surface, which in turn are caused by the differential heating of the earth's surface by the sun. Winds play a key role in the global transport of heat and energy. The wind regime at the surface is influenced by local topography. Wind measuring sites need to be open, level and free from obstructions due to buildings and trees etc., for this reason wind speed and direction are measured generally at 10m above ground level.

Figure 3.4.3.1.1 shows the prevailing wind direction for the Grannagh area and this is based on statistical data supplied by the Meteorological Service for Rosslare, Co. Wexford. This wind rose shows the percentage frequency of occurrence of wind directions and wind speeds for a period from 1957-1996 for Rosslare (Source: Meteorological Service).

From it can be seen that the prevailing wind direction at the site are those winds from a south-westerly direction. There are also winds originating in the south and west and to a lesser extent in the north-west. Very few winds blow from the north, north-east or east or south-east.

What this means in practical terms is any fugitive dust is likely to be blown across the site from a south-westerly direction towards a north-easterly direction. This means that the prevailing winds blowing across the site do not tend to blow towards the cluster of houses located along the southern side of the site along the L7526 local road. The three dwellings located to the north-east of the existing Grannagh Quarry are physically separated from the site by intervening fields; treelines and hedgerows; the N9 dual carriageway; and a local road. These factors combined with

a good separation distance help ensure that potential fugitive dust emissions off-site do not negatively impact upon these residences.

From data supplied by the Meteorological Service for Rosslare, the percentage frequency of occurrence of wind-speeds that can be expected at the Grannagh Facility are listed below. The wind speed classes are based on the Beaufort Scale which describes the effects of wind on land:

- 0.4 % of the time the winds are calm (Beaufort Scale 0: less than 1 knot): Smoke rises vertically.
- 5.8 % of the time the winds are light air (Beaufort Scale 1: 1 to 3 knots): Smoke drifts, wind vanes do no move.
- 17 % of the time the winds are light breezes (Beaufort Scale 2: 4 to 6 knots): Wind felt on face, leaves rustle, wind vane moves.
- 27 % of the time the winds are gentle breezes (Beaufort Scale 3: 7 to 10 knots): Leaves and twigs move constantly, flags begin to move.
- 31.6 % of the time the winds are moderate breezes (Beaufort Scale 4: 11-16 knots): Raises dust and loose paper; small branches are moved.
- 18.3 % of the time the winds are greater than 17 knots in speed.

The mean wind speed expected at the existing Grannagh facility is calculated to be 11.3 knots or 5.65 m/s and is within Beaufort Scale 4.

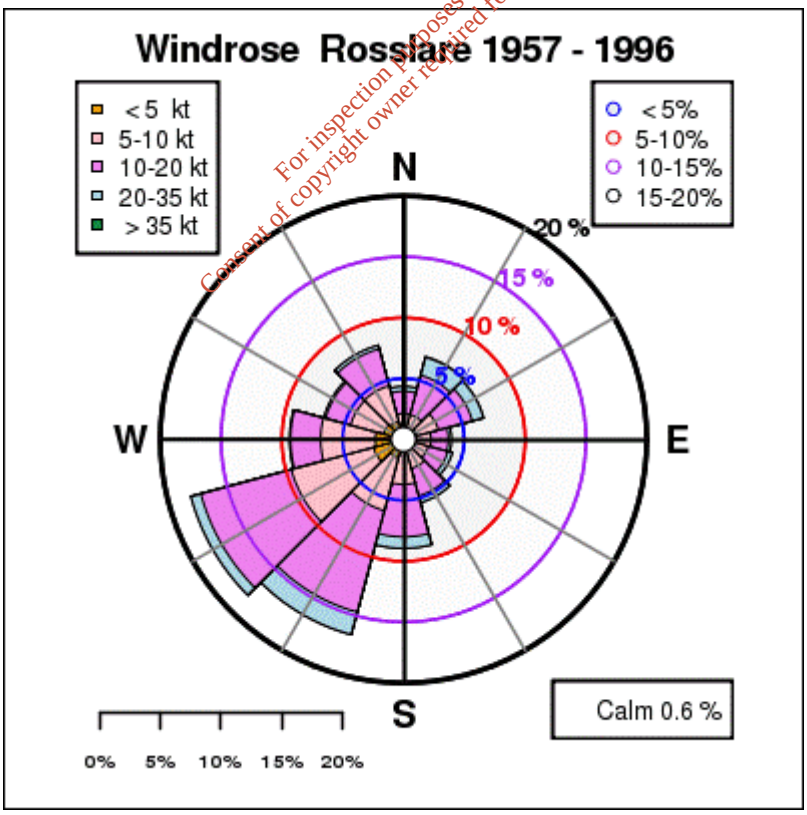


Figure 3.4.3.1.1: Windrose for Rosslare 1957-1996

Following the fugitive emission of dust off a site and into the air, the natural process of dispersion occurs. Dispersion is affected by the wind speeds, intervening topography and features i.e. treelines and hedgerows, berms etc...

Any fugitive dust may be carried along by the wind and diluted by the turbulence present in the atmosphere. This dispersal process has the effect of producing a plume of air which is roughly cone shaped with the apex towards the source. The further down-wind from the source of the emission, the less the concentration of the dust deposition and the greater the dispersion effect. The main controlling factors of dust deposition and dispersion off-site are wind speed and direction, degree of turbulence, topographical and building features. The prevailing wind direction and its relation to the neighbouring dwellings is a major factor in determining the extent to which any fugitive dust may affect residents.

3.4.3.2 Precipitation

Meteorological data for the site is available in the form of published reports from the Meteorological Service in Dublin. The most appropriate monitoring station is Rosslare. Meteorological data and climatic information is useful for predicting the likely impacts that the existing recovery facility at Grannagh could have upon sensitive receptors. Details of monthly and annual mean and extreme values for all the main weather elements for Rosslare for the period of 1961-1990 are presented in **Figure 3.4.3.2.1** (Source: Meteorological Service, Dublin.)

ROSSLARE

monthly and annual mean and extreme values
1961-1990

lat. 52° 15' N
long. 6° 20' W
height 26 metres above mean sea level

TEMPERATURE (degrees Celsius)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
mean daily max.	8.2	7.9	9.3	10.9	13.2	15.9	17.9	17.9	16.3	13.8	10.6	9.1	12.6
mean daily min.	3.9	3.6	4.3	5.6	7.9	10.4	12.1	12.2	10.8	9.0	5.9	4.8	7.6
mean	6.1	5.9	6.8	8.3	10.5	13.2	15.0	15.0	13.6	11.4	8.2	7.0	10.1
absolute max.	12.7	13.0	14.2	20.1	20.3	25.4	26.2	25.9	21.5	19.2	15.7	14.0	26.2
absolute min.	-4.4	-4.1	-2.5	-1.0	-0.3	4.7	5.2	6.2	2.6	0.7	-2.5	-3.1	-4.4
mean no. of days with air frost	2.4	2.0	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.6	8.0
mean no. of days with ground frost	11.0	8.6	7.2	4.4	1.3	0.0	0.0	0.0	0.1	0.8	5.6	8.5	47.4
RELATIVE HUMIDITY (%)													
mean at 0900UTC	86	85	84	82	81	82	82	84	84	86	85	86	84
mean at 1500UTC	81	79	76	76	77	78	77	78	77	80	79	82	78
SUNSHINE (hours)													
mean daily duration	1.94	2.47	3.87	5.74	6.88	6.59	6.29	5.66	4.79	3.27	2.50	1.75	4.33
greatest daily duration	8.2	9.8	11.8	13.4	15.4	15.8	15.9	14.0	12.8	10.2	8.6	7.3	15.9
mean no. of days with no sun	11	8	5	3	1	2	1	2	3	6	9	11	61
RAINFALL (mm)													
mean monthly total	94.8	69.9	67.8	55.7	55.8	50.6	50.7	68.7	73.3	94.9	97.1	97.8	877.1
greatest daily total	44.9	33.4	48.9	27.9	31.0	32.6	79.1	61.0	63.6	54.8	56.7	44.8	79.1
mean no. of days with >= 0.2mm	18	15	16	14	14	13	11	13	14	16	16	17	176
mean no. of days with >= 1.0mm	14	11	12	10	10	8	8	9	10	12	13	13	129
mean no. of days with >= 5.0mm	7	5	5	4	4	3	3	4	5	6	6	7	59
WIND (knots)													
mean monthly speed	12.9	12.8	12.4	11.8	11.4	10.1	9.5	10.0	10.7	11.6	12.1	12.8	11.5
max. gust	76	76	66	75	57	51	50	58	72	87	71	80	87
max. mean 10-minute speed	46	44	42	52	35	38	35	37	47	50	45	50	52
mean no. of days with gales	2.5	1.5	1.1	1.3	0.3	0.2	0.1	0.2	0.5	0.9	1.3	1.9	11.7
WEATHER (mean no. of days with...)													
snow or sleet	2.7	3.7	1.9	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.3	10.7
snow lying at 0900UTC	0.8	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.8
hail	1.8	1.1	2.5	2.1	1.0	0.3	0.0	0.0	0.1	0.4	1.2	1.2	11.8
thunder	0.4	0.2	0.1	0.4	0.8	1.0	1.0	0.7	0.6	0.5	0.7	0.3	6.7
fog	2.0	2.2	3.2	4.2	3.2	4.4	5.0	4.6	3.9	2.5	1.7	1.6	38.5

Figure 3.4.3.2.1: Meteorological Data for Rosslare 1961-1990

The number of dry days was 189 a value that is above national average and is expected in the sunnier south-east of the Country compared to the wetter midlands, west and north-west of the country. A dry day is a day with less than 0.2 mm of precipitation. The annual rainfall is calculated as being ca. 877.1 mm and the wettest months are typically October to January, with the driest months occurring in June and July. This is summarised in **Figure 3.4.3.2.2.**

This suggest that dust suppression methods on site are most likely required in June and July when drier periods of warmer weather may allow fugitive dust particles to become airborne.

Figure 3.4.3.2.2: Summary Information on Mean Precipitation For Rosslare 1961-1990*

Month	Rainfall (mm)	Number of Raindays
January	94.8	18
February	69.9	15
March	67.8	16
April	55.7	14
May	50.8	14
June	50.6	13
July	50.7	11
August	68.7	13
September	73.3	12
October	94.9	16
November	97.1	16
December	97.8	17
TOTAL	877.1mm	176 Raindays

*Source: Meteorological Service, Dublin.

3.4.3.3 Temperature

Temperature data indicates that the climate is relatively mild with mean monthly temperatures of 7^0C or below for the months of December to March. The warmest months are July and August with monthly means of 15^0C. The average number of days with ground frost is 47.4 days per annum with December to February being having the greatest number of days. Snowfall is scare with only 1.8 days per annum having snow lying at 0900UTC.

3.4.3.4 Past Air Quality Studies

In October 2006, a baseline Air Quality Impact Assessment report was carried out for the Grannagh facility by Malone O'Regan. This report formed part of submissions made with the planning application. This was principally a desk-based assessment with suggested mitigation measures. As the site has changed since then, and the site is ca. 8 years further on in development terms, it is considered this report is now outdated.

3.4.4 Dust Monitoring Results

3.4.4.1 Scope of Dust Survey

As per Condition 10 of the existing planning permission, dust monitoring has taken place on an annual basis at two dust monitoring points (D1 and D2) to assess the existing dust levels associated with the operation of the soil recovery and C&D materials recycling facility at Grannagh and how this might have an impact on air quality. The dust monitoring locations are shown on **Figure 3.4.2.2** in relation to the existing residential settlement pattern**.**

3.4.4.2 Survey Approach

Total dust deposition was measured at the site using Bergerhoff gauges specified in the German Standard VDI 2119 (1972) document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)".

The two dust gauges were set up such that the glass containers were approximately 2m above the ground surface. – see **Photo 3.4.2.2.1.**

Photo 3.4.2.2.1: Bergerhoff Dust Monitoring Gauges.

3.4.4.3 Dust Survey Results

The glass jars containing the dust were submitted to NVM Ltd. Ireland, Drogheda, Co. Louth. The Dust Survey levels are presented below in the following table:

Monitoring Point	October 2009 Deposition (mg/m^2/day)	October 2010 Deposition (mg/m^2/day)	August 2011 Deposition (mg/m2/day)	September 2012 Deposition (mg/m2/day)	August 2013 Deposition (mg/m2/day)
D1	92.4	175.9	144.3	98.9	189.4
D2	155.9	48.3	192.2	178.4	115.9

(Source: NVM Ltd. Ireland, Drogheda, Co. Louth)

Certificates of results are maintained on-site as part of the environmental management program.

3.4.4.4 Environmental Assessment of Dust Monitoring

Currently in Ireland, there are no statutory limits for dust deposition. The following thresholds for point and fugitive emission respectively are suggested by ICF, EPA and the DoEHLG for dust arising from quarrying operations:

- ***Point Emissions:***

The concentration of particulate matter in emissions to air should not exceed 100mg/m2 (in effect meaning that there should be no visible dust plume).

- ***Fugitive Emissions:***

The amount of dust deposited anywhere outside the plant boundary, when averaged over a 30-day period, should not exceed:

- 130mg/m2 per day when measured according to the BS method which takes account of insoluble components only, or
- 350mg/m2 per day when measured according to TA Luft, which includes both soluble and insoluble matter. (EPA compliance monitoring is based on the TA Luft method)

The dust deposition measurements from D1 & D2 for the years of 2009 through to 2013 are well below the 350 mg/m2/day threshold. Therefore, the ongoing operation of the soil recovery and C&D materials recycling facility is having no significant direct or indirect impacts from dust upon sensitive receptors and is having no negative impact upon air quality in general.

3.4.5 Other Air Emissions

Minor emissions of sulphur oxides, nitrogen oxides and hydrocarbons are released by plant equipment and machinery, but this is normal and will not result in any exceedance of current or future EU Air Standards. All equipment used on site are the most efficient possible in terms of fuel use, noise minimization and overall efficiency. Machinery is turned off when not in use and will only operate when needed during the stated daytime working hours.

3.4.6 Assessment of Impacts

3.4.6.1 Potential Impacts from Dust on Air Quality

There are a number of features relating to the site that have the potential to generate dust and the potential to affect the air quality in the vicinity of the site. These are:

1. Typical exhaust emissions from site plant and machinery and from the haulage trucks delivering material to the site for recovery/reclamation and their movement across haul roads.

2. Fugitive dust from the unloading of material from the haulage trucks, and the subsequent movement/spreading of the inert material over the area of the deposition site.

3. Fugitive dust from the screening, crushing and stockpiling of recycled C&D materials. The site has been up and running for the past ca. 10 years without any complaints or enforcement issues relating to dust or dust nuisance as proven by Kilkenny County Council records. Furthermore, the compliance monitoring is all up to date and is all compliant with the permit and planning permission requirements.

The predominant prevailing wind on-site is from the south-west which means that fugitive dust emissions should not be blown towards the nearest residential dwellings, which are predominantly south and south-east of the facility.

3.4.6.2 Potential Impacts upon Climate

Conventional recycling methods and operating procedures are used at the Grannagh facility and it is not considered that the operation of the facility will have any negative impacts upon Climate. If anything the recycling and re-sue of concrete products from the facility will assist in reducing Ireland's CO^2 emissions generated in the production of cement and in the concrete industry.

3.4.7 Dust and Air Quality Mitigation Measures

There are certain measures that are adhered to in effectively minimising dust emissions from the existing site operations at the Grannagh Facility. The principal cause of fugitive dust is from traffic movements on-site. Air emission abatement measures are already achieved through the following on-site control and mitigation measures:

- Provision of paved internal roadways, where appropriate.
- Provision of on-site speed limits to prevent unnecessary generation of Fugitive dust emissions.
- Mobile water bowsers deployed around the site and/or mobile road sweeper deployed around the site and site entrance.
- Reduction in the volume of the stockpiles and use of landscaping berms where applicable.
- All stockpiles are conditioned with water to minimise dust during dry weather.
- Minimising drop heights of material.
- All completed areas of land reclamation will be spread with topsoil and grass seeded to eliminate any wind blown dust.
- Dust monitoring will be carried out annually.
- Water spraying stockpiles and access roads during prolonged dry periods.
- Where crushing and screening occurs on-site then the drop height of falling material should be minimised.

With the above mitigation measures in place, no likely significant effects on air quality are envisaged at the Grannagh facility. Furthermore detailed measures at the facility also include:

- All trucks delivering inert materials to this site will be confined within the Applicant's landholding. Internally within the application site, warning notices, direction signs and

speed restriction signs are located along paved and/or unpaved roads leading to and from the active restoration areas and the construction and demolition waste recycling area.

- Trucks will initially travel over a paved road surface on to the site before travelling over a network of unpaved internal roads to get to the active restoration area or the C&D materials recycling area. All site roads will be maintained to ensure the safe movement of vehicles within the facility. Provision for employee and visitor car parking is currently provided on a paved area adjacent to the site office, where all visitors must report to before entering the site.

- The unloading of material from the haulage trucks, and the subsequent movement/spreading of the inert material over the area of the deposition site, may produce dust on the site, during periods of dry weather. However, the site restoration works take place within a depression in the topography of the surrounding area which helps mitigate any dust moving off-site. This depression is also surrounded by a mature tree line as is the C&D recycling operation.

- In order to prevent soiling of public roads with fugitive dust and soil materials from rigid tipper trucks, a temporary wheelwash facility has been installed close to the site entrance. All egressing site traffic is required to pass through the wheel wash. Also paved roads on site are cleaned with the on-site tractor driven mechanical road sweeper.

- It is proposed that during extended periods of dry weather, a tractor with water bowser will sprinkle water over hardcore areas and the access road, to dampen down any dust. This presently occurs under the Waste Permit.

- Dust emissions from established restoration activities at the application site and the C&D recycling operations are measured using Bergerhoff dust gauges at 2 No. locations across the site, as described in the EIS. These gauges are located along the boundary of the application site ad monitoring results demonstrate that the site operations are not having any significant impact upon air quality from dust.

- It is currently envisaged that the existing dust monitoring regime will remain in place for the duration of the site restoration works and will continue for during the on-going C&D materials recycling operation thereafter.

3.4.8 Monitoring

Monitoring of Dust Levels at the two site boundary locations (D1 and D2) will continue at the site as part of the Environmental Management Monitoring Programme. There is already an existing Dust Monitoring Programme in place as demonstrated by the existing monitoring results presented in the EIS. Certificates of dust results will be maintained on-site as part of the on-going Environmental Management Program.

SECTION 3.5:
NOISE

CONTENTS

3.5 NOISE

3.5.1 Introduction

This section of the EIS deals with Noise associated with the on-going operation of the existing soil and stone recovery and inert materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny.

It is important to stress that CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities.

For the past ca. 10 years, the Grannagh facility has operated under strict and rigid controls and conditions to protect noise sensitive receptors from noise. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning noise or noise nuisance. This is confirmed by annual environmental audits carried out by Kilkenny County Council and the on-site Environmental Management Program which records and incidents or complaints of which there have been none.

In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon human beings or noise sensitive locations

Condition 9 of the Planning Permission Register no. 06/1772 states that "*Noise levels (measured from the closest residence) shall not exceed 55dB (A) L_{Aeq} (30 minutes), during the day (0800-2200) and 45dB (A) (30 minutes), during the night (2200 to 0800). Reason : In the interests of residential amenity*".

The planning condition above did not explicitly imply that continuing noise monitoring should be carried out, just that noise levels as specified in the condition of planning should not be exceeded.

A noise assessment report associated with the facility was undertaken in 2006 by Malone O'Regan Engineers. The results of this baseline noise survey is outlined in this part of the EIS.

3.5.2 Existing Environment

The existing inert soil and stone recovery facility and inert materials recycling and transfer facility is located at The Quarry, Grannagh, Kilmacow, Co. Kilkenny ca. 4 km north of the City of Waterford on the Waterford and Kilkenny County boundary, National Grid Reference 257881E, 114843N.

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use at Grannagh, Kilmacow, County Kilkenny. This is the west portion of the current site.

In addition, within a reclaimed section of the quarry to the east of the site, CHI Environmental Ltd. operates as an inert construction and demolition materials recycling and transfer facility whereby construction and demolition waste is screened and crushed in order to produce a secondary aggregate which can be recycled, stored and re-sold as certifiable secondary aggregate products for re-use by the construction industry.

Figure 3.5.2.1 shows the surrounding land use within the geographical location of the existing Grannagh Recovery Facility. The main features to note with regards to the existing Waste Recovery facility and the local area are as follows:

- The former N24 Waterford to Limerick National Primary route was in the recent past downgraded to a secondary local route – the L7526 and this is now where the site entrance into the facility is located. A small number of local residences are located along this road. The new Granny Roundabout and N24/M9 routes effectively bisected the existing quarry site into two distinct sections.

- The principal surrounding land uses comprising of agriculture and dispersed one-off housing developments and old farmsteads. The area is generally rural in character but is influenced by the proximity to Waterford City.

- The existing site has excellent access to the National Roads network, with the N24, M9 and N25 all accessible within ca. 1 km of the site. Furthermore the site is encircled by public roads which has a bearing on existing background air quality levels and noise in the vicinity of the facility. There is also the main Irish Railline which passes within 1 km to the east of the site before branching into two arms, with the western arm running within 1 km of the site in a northerly direction.

- The city of Waterford is ca. 4 km south-east of the existing site and the facility provides an essential piece of waste recovery and recycling infrastructure to the city and hinterland.

- There is a large existing active rock quarry operated by Roadstone located west north west of the site off the N24. This demonstrates the history and importance of rock extraction in the area in addition to the former Granny rock quarry.

- To the west of the site, within 1 km is the Dawn Meats Factory. This demonstrates other industrial land uses within the vicinity of the existing waste recovery facility.

- The existing recovery site which has been in operation since 2004 is located within good fertile agricultural pasture lands. Many of the fields in the area have been amalgamated into larger field units and farming is the principal land use in the area. The quarry areas currently being restored will be returned back to productive agricultural land upon completion of the works with a consequential benefit to agriculture.

- To the south of the site and separated by the intervening landscape, topography and the former N24 road (now downgraded to a secondary local route - the L7526) is the River Suir. This is located at a much lower level than the floor of the former quarry and also therefore the proposed finished restoration profile of the reclaimed quarry. The former quarry site and the recovery facility have no surface water features, i.e. streams or rivers which connect to the River Suir.

Figure 3.5.2.1: Existing Site and Surrounding Land-Use

Figure 3.5.2.2: The Existing Site and the Local Settlement Pattern of the Area

The nearest densely populated area close to the site is Waterford City 4 km south-east of the existing site. **Figure 3.5.2.2** shows the existing site and the local settlement pattern of the area and shows the individual dwelling houses which one could consider as the closest sensitive receptors to noise. There are no nearby public buildings i.e. schools or churches where people congregate.

The site operational hours are between 08.00 hours and 18.00 hours each weekday and 08.00 hours to 14.00 hours on Saturday. No materials are accepted at any other time including Sundays and Public Holidays. The site entrance gates are locked shut when the facility is closed and unsupervised. There is therefore no potential for noise from the facility at nightime.

It is important to stress that the Grannagh facility has been continuously operational since 2004 and that the N24 and N9 roads are relatively new within the landscape and the Grannagh Facility pre-dates these. Therefore these roads have encroached on the existing Grannagh facility, rather than the other way around. Previous, to these roads being constructed the only major road was the now downgraded N24 which ran along the southern boundary of the site. This has now been downgraded to a secondary local road, the L7526. Therefore there are new noise sources impacting upon the Grannagh Facility rather than the other way around since operations commenced.

3.5.2.1 Wind

The wind at a particular location can be influenced by a number of factors such as obstruction by buildings or trees, the nature of the terrain and deflection by nearby mountains or hills. Wind is the movement of air caused by pressure differences at the earth's surface, which in turn are caused by the differential heating of the earth's surface by the sun. Winds play a key role in the global

transport of heat and energy and influences the movement of sound pressure waves. The wind regime at the surface is influenced by local topography

The prevailing wind direction at the Grannagh site are those winds from a south-westerly direction. There are also winds originating in the south and west and to a lesser extent in the north-west. Very few winds blow from the north, north-east or east or south-east. What this means in practical terms is any noise generation is likely to be carried from the site from a south-westerly direction towards a north-easterly direction. This means that the prevailing winds blowing across the site do not tend to blow towards the cluster of houses located along the southern side of the site along the L7526 local road. The three dwellings located to the north-east of the existing Grannagh Quarry are physically separated from the site by intervening fields; treelines and hedgerows; the N9 dual carriageway; and a local road. These factors combined with a good separation distance help ensure that potential noise emissions off-site do not negatively impact upon these residences.

3.5.3 Potential Impacts from Noise

Soil recovery facilities and C&D materials recycling facilities by their very nature of using machinery and vehicles for delivery have the potential to generate noise albeit low levels and occasional in nature.

The only Noise Emissions from the facility will be from mobile plant and the screeners and crushers with occasional trucks delivering soil material and C&D materials for recycling. The recycling equipment is principally located in the north-eastern corner of the site and are far away from noise sensitive receptors located to the south of the site. Furthermore the downgrading of the N24 to a secondary local road, the L7526 has resulted in a decrease in road noise for noise sensitive receptors located close to the southern boundary of the site. Other plant such as the wheel loader, bullbozer and mechanical excavator operate around the site where needed. The soil recovery section of the site to the west of the site, again is away from noise sensitive receptors.

The plant on site, is used intermittently on daily/weekly basis, thus does produce high levels of noise emissions to the atmosphere and there is certainly no continuous noise emissions.

Based on the proposed annual intake, it is expected that there will be approximately 10,000 rigid tipper truckloads of soil and stone, and construction and demolition material delivered to the site on an annual basis (i.e. ca. 200 loads per week). A large proportion of the lorries that leave the site will be reloaded and used for deliveries off-site of recycled secondary aggregates. These therefore do not generate any new or additional traffic movements. Based on a recovery/recycling rate of ca. 85% plus, then ca. 38,250 tonnes of certified secondary aggregates will be sold off-site per annum. This equates to about 2,400 lorry loads per annum or ca. 48 lorry loads per week based on a 50 week year leaving the facility.

3.5.4 Noise Impact Assessment Report

A baseline noise monitoring study took place in October 2006 by Malone O'Regan to assess the existing noise levels associated with the operation of the soil recovery facility at Grannagh and how this might have an impact on air quality and on potential noise sensitive receptors. This is summarised below:

1.0 Introduction

Robert Murphy proposes to develop a waste recovery facility within the Grannagh Quarry site at Granny, Kilmacow, Co. Kilkenny. Figure 1 illustrates the location.

Malone O' Regan was commissioned to prepare this report which discusses the existing ambient noise levels in the area, assesses the potential impacts of the proposed waste recovery operation in relation to increased noise levels at sensitive receptors and the abatement measures that may be employed to reduce / eliminate any impact that may arise.

2.0 Study Assessment and Methodology

2.1 Literature Survey – Existing Ambient Noise Levels

A literature survey was carried out in order to characterise existing ambient noise levels within the area. The following reports were reviewed:

- Dawn Meats IPCL Ref. No. 175 – Noise Report, May 2004
- Mooncoin By-pass Route Selection Studies, July 2002
- A report prepared in March 2006 by Malone O' Regan for Ascon Ltd. regarding the temporary re-opening of Grannagh Quarry for the purposes of extracting material for the construction of a section of the N25 By-Pass of Waterford City at Grannagh, Newrath and Smartcastle, Co. Kilkenny.

2.2 Prediction Modelling

Prediction modeling of noise sources has been carried out with reference to the following:

- BS 5228: Part 1: 1997, Noise and Vibration Control on Construction and Open Sites.
- ISO 9613.:2 - Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

3.0 Receiving Environment

The location of Grannagh Quarry is shown on Figure 1. Quarry operations have taken place in the past and it is understood that Ascon Ltd. have permission to use the quarry to extract limestone for the Waterford By-pass scheme.

Figure 2 shows the outlined area (in red) of the proposed waste recovery activity within existing quarried areas with floor levels as low as 3.2mOD. The area also contains existing agricultural land at levels ranging from 15.5 to 25m OD, also indicated on Figure 2. The nearest sensitive receptors to the proposed waste recovery activity lie south between the boundary and the N24 at approximately 17.5m OD.

A review of noise monitoring surveys carried out within the area indicates that the N24 is the dominant noise source with levels ($L_{Aeq,t}$) of 65dB recorded at approximately 10m from the roadside; given the rural undulating landscape it can be expected that the existing N24 will be audible up to 300m distant. Table 1 below details where past noise monitoring has been carried out in the area. Figure 3 shows the locations. Typically road traffic noise levels ($L_{Aeq,t}$) experienced within the site would be in the region of 45 - 55 dB depending on the boundary location chosen.

Table 1: Noise Monitoring Undertaken in the General Area

Location	Literature Source	$L_{Aeq,t}$ (dB)	$L_{A10,t}$ (dB)	$L_{A90,t}$ (dB)
Entrance to Dawn Meats; approx. 10m from N24	IPCL Noise Report Prepared in May 2004	65	69	51
Road to Roadstone Quarry, New Aglish, near N24	Mooncoin Route Selection Report	67	66	49

Note: Measurement time t varied from 15 – 60 mins

The nearest noise sensitive receptors to the site are shown on Figure 2. These are located off the N24 with facades varying between 6 – 18m from the N24. Therefore the ambient noise environment is dominated by the N24 to the front of the houses. However to the rear, the buildings are likely to provide some screening, reducing traffic noise by up to 6 decibels. Accordingly the ambient noise environment ($L_{Aeq,t}$) to the rear of the houses, facing the site is likely to be in the region of 55 -60 dB during daytime hours. A fifteen minute reading taken in March 2006 (with no on site activity) some 10m from the rear boundary of one of the houses near the entrance indicated an $L_{Aeq,15min}$ of 55 dB. The report prepared in March 2006 for the re-opening of the quarry predicted a worst case scenario $L_{Aeq,t}$ of 75 dB with general levels likely to be in the region of 60 – 65 dB(A); however it is understood that quarrying activities are not currently being carried out.

4.0 Characteristics of the Proposal and Assessment

4.1 Proposal Description

The activity comprises deposition works within the existing quarry site in accordance with the requirements and conditions attached to Waste Permit WMP 22/2003.

It is understood that initially the existing entrance on the Kilmacow Road will be used for Phase 1 of the deposition works within the quarry site.

A proposed new entrance as shown on Figure 2 and permitted by planning permission P06/246 will be used for Phase 2 of the activity which will commence in 2009 when the by-pass is complete.

It is also understood that prior to commencement of filling works on the site all waste on the site not qualifying as inert construction and demolition waste will be removed from the site and disposed of at an authorised waste facility. All foliage will be removed to an authorised waste facility.

Also, a 500mm thick layer of low permeability soil will be placed and compacted on the quarry floor prior to commencement. Thereafter the inert waste will be placed in 500mm thick layers. Only one working face will exist at any one time for the deposition of the waste material.

All inert construction and demolition waste will be delivered to the site in covered trucks. The material will be deposited by tipping and distributed on the site by caterpillar D5 dozer, Komatsu 210 excavator and Volvo front loaders. A Valmet tractor and trailer and water dowser will also be available on the site. All equipment will be mobile. The dozer, excavator and loaders will work at varying levels 2-18 mOD as the quarry is filled.

The operating times are from 8.00 – 17.00 Mon – Fri and 8.00 – 14.00 on Sat.

Traffic Generation

Phase 1

The Waterford Bypass is not due for completion until the end of 2009 and in the interim access to the quarry will be via the existing access to the quarry from the Kilmacow Road. However traffic volumes in the period until the completion of the N25 Waterford Bypass will remain very low – less than 10 trucks per day. Such low volumes will not have any significant noise impact and thus Phase 1 truck movements will not be assessed further.

Phase 2

In the long term, the proposal will generate up to 50-60 truck movements per day with estimated peak volumes of 10 movements per hour. These volumes are extremely low compared to the existing traffic flows on the road at present (c9,000 AADT). These flows will be very substantially reduced on the existing road once the by-pass is complete however not to the extent that 50-60 truck movements per day at the proposed new entrance will represent a perceptible noise impact. Therefore Phase 2 truck movements on the N24 will not be assessed further.

4.2 Potential Noise Impact Assessment

4.2.1 Operational Phase

Receptor 1 (as shown on Figure 2) is some 10m from the boundary. The proposed compound area containing welfare cabins, office, weighbridge and bunded diesel storage area lie between the receptor and the internal access/haul road. The main body of the existing site therefore lies 30m from Receptor 1 although Receptor 2 as shown on Figure 2 lies approximately 12m from the boundary. Figure 2 shows the general direction of filling at the end of the internal access road; this is 120m from Receptor 1.

Table 2 details the equipment likely to be used and contains predictions for the worst case scenario.

Table 2 Likely Noise Levels Arising from the Waste Recovery Operation and Predicted to the Nearest Sensitive Receptor

Activity	Activity equivalent continuous sound pressure level L_{Aeq} @ 10m	Distance (m)	Predicted LAeq,t @ Receptor 1
General Waste Deposit Activities			
Dozer	84	120	62
Tracked Excavator	81	120	59
Front Loader	76	120	54
Total			**64**

The above calculations consider the situation where source levels chosen are typically the "loudest" likely, all sources are in operation at any given time, sources are in operation constantly and where waste recovery is carried out at the same OD level as receptors and at 120m from the nearest receptor. In reality much of the work will occur on lower OD levels and the existing quarry walls will also provide a screening effect. Accordingly, taking all factors into account, waste recovery activities are generally likely to give rise to lower noise levels ($L_{Aeq,t}$) between 55 – 60 dB at the nearest noise sensitive receptor. However, it should be noted that as waste recovery activities move closer to the receptors then it will be necessary to implement mitigation measures to reduce noise as the waste permit has specified the following limits in Condition 7.2:

"Noise levels (measured from the closest residence) shall not exceed 55 dB(A) L_{Aeq} (30 minutes), during the day and 45 dB(A) L_{Aeq} (30 minutes), during the night."

Truck Movements on Internal Access Road

Approximately 50 -60 truck movements are expected per day with a maximum of 10 per hour when the activity is operating at peak level. The internal route is shown on Figure 2. Therefore the route will pass within approximately 25m from Receptor 1.

In order to assess the noise emissions from these trucks passing by receptors on the internal haul road, the maximum single event level (SEL) will be used for each truck. The overall level will be determined for a typical 30 minute period[1] for Receptor 1. The maximum SEL for a single passing truck is 87 dB(A). The following equation was used to determine the resulting 30 min L_{Aeq}:

$$LAeq(30\ min) = 10\log\{\sum (n_i \times 10^{SEL_i/10})/T\}$$

where T is in seconds, and n_i is the total number of events.
SEL is the single event level value in dB.

[1] Permit specifies 30 minute period.

Accordingly, within a 30 minute period the $L_{Aeq(30\ min)}$ predicted value for truck noise at the side of the internal haul road is 61 dB. This level would decrease to well below 55 dB given the intervening distance from the haul road to Receptor 1. Accordingly, it is not considered that haul trucks will impact or significantly contribute to the overall cumulative impact of the proposed activity.

Compound Area

Other than truck movements as described above, this area is not likely to significantly contribute to ambient noise levels.

Cumulative Impact

The actual movement of plant equipment on site is the most significant factor in determining the cumulative impact of the overall activity. As shown above, the potential exists to breach the daytime limit set in the waste permit. Activities will not occur during night time hours (generally considered 22.00 – 08.00 hrs) therefore the night time limit will not be breached.

4.2.2 Construction Phase

The construction of the compound area, proposed entrance and internal haul road will result in temporary elevated noise levels; however this will be temporary in nature and Table 3 below specifies typical noise limits applicable to construction noise:

Table 3 Maximum Permissible Noise Levels at the Façade of Dwellings During Construction

Days & Times	$L_{Aeq\ (1hr)}$ dB	L_{Amax} dB
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60[2]	65
Saturday 08:00 to 16:30hrs	65	75
Sundays and Bank Holidays 08:00 to 16:30hrs	60	65

5.0 Mitigation Measures and/or Factors

Noise

In order to achieve the limits set in the waste permit, the following should be carried out:

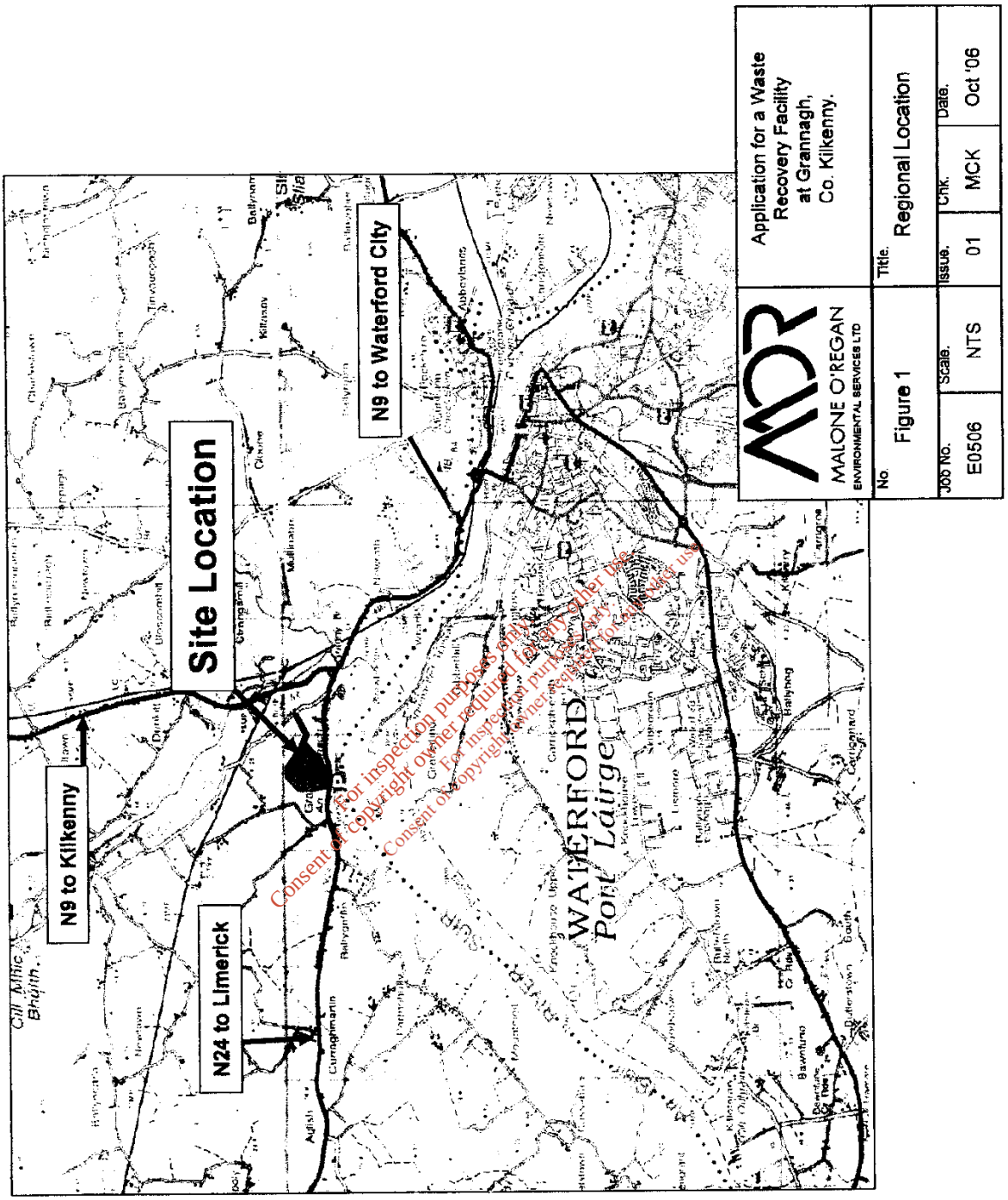
[2] Construction activity at these times, other than that required in respect of emergency works, will normally require the explicit permission of the relevant local authority

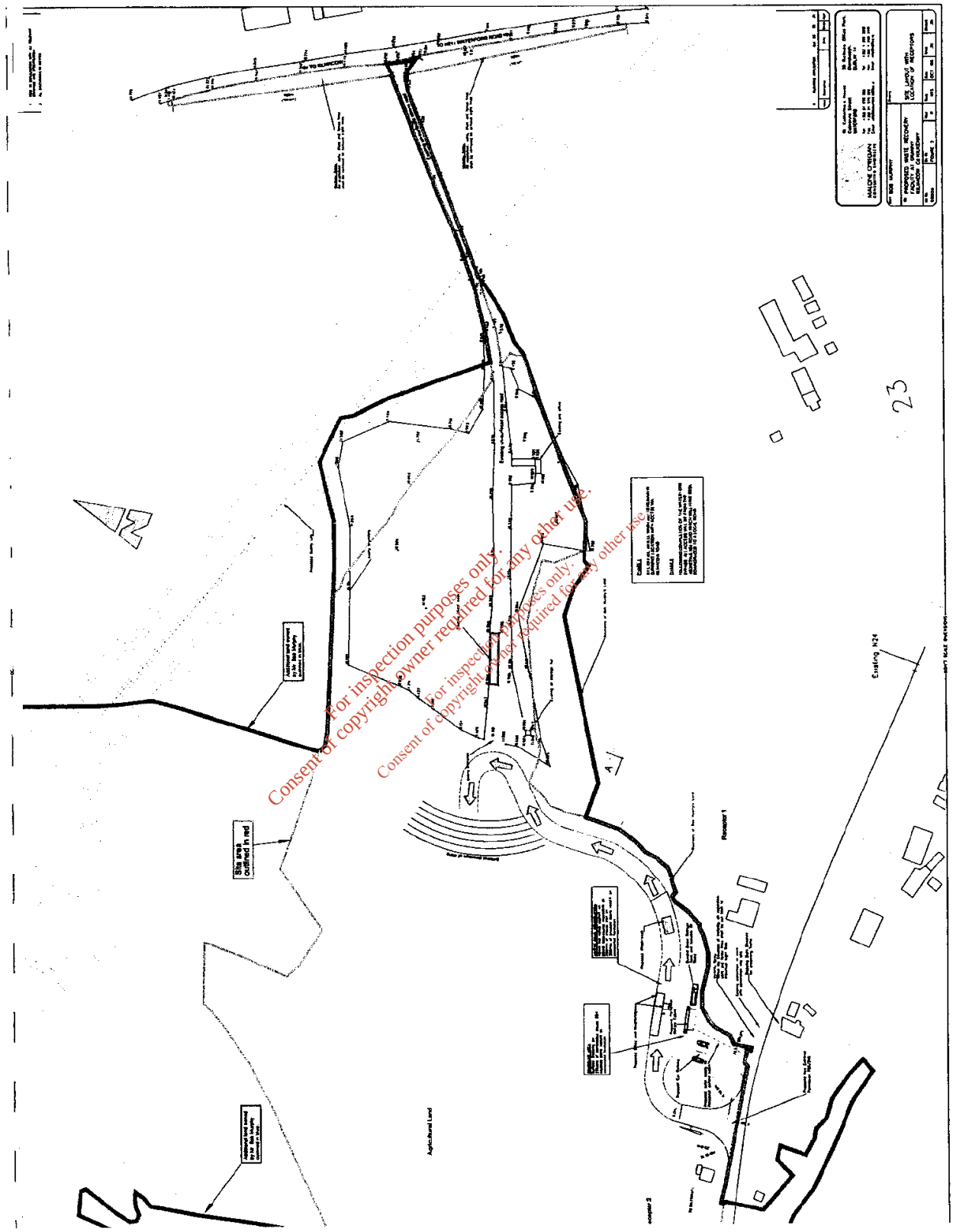
- *Periodic monitoring at the boundary with sensitive receptors should be carried* out to ensure that the limits set within the waste permit will be adhered to. Where the potential for exceedance is identified through monitoring then mitigation measures such as fitting of silencers and management of operating times for equipment should be investigated and implemented.
- Proper maintenance of all vehicles and equipment is essential. The efficiency of *silencers should be checked regularly and* all ball-bearings kept lubricated.
- Equipment used should comply with regulations regarding maximum admissible noise levels e.g. CE-marking.
- All HGVs and earthmoving equipment should comply with the EU Directives regarding the permissible sound power levels from construction plant and equipment (SI No. 320 of 1988). Account should also be taken of BS 5228: Part 1: 1997 - *Noise Control on Construction and Open Sites.*
- Any complaints received should be thoroughly investigated with suitable mitigation measures taken at the time such as restricting the use of noisy equipment during certain hours. With these measures, noise impact should be kept to a minimum and within acceptable levels to noise sensitive receptors.

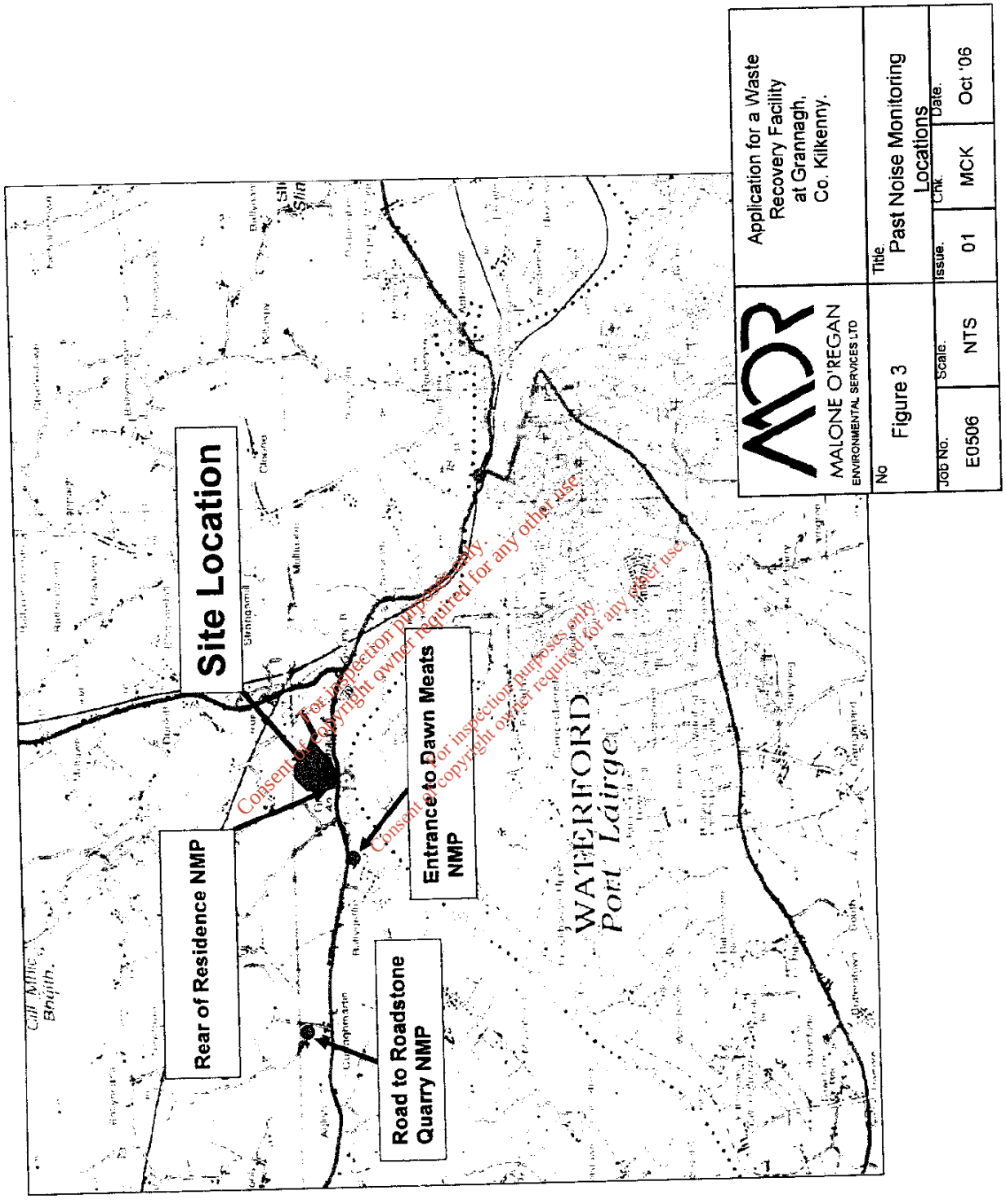
6.0 Conclusions and Recommendations

Provided the conditions of the waste permit are adhered to, then the impact of the waste recovery activity on the nearest sensitive receptors will not be significant.

The limits specified in Table 3 will be adhered to where possible during the construction of ancillary elements of the proposed development.







3.5.5 Mitigation Measures

The Malone O'Regan Noise Impact Assessment report concluded that: "*Provided the conditions of the waste permit are adhered to then the impact of the waste recovery activity upon the nearest sensitive receptors will not be significant*".

For the past ca. 10 years, the Grannagh facility has operated under strict and rigid controls and conditions to protect noise sensitive receptors from noise. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning noise or noise nuisance. This is confirmed by annual environmental audits carried out by Kilkenny County Council and the on-site Environmental Management Program which records and incidents or complaints of which there have been none.

The only noise source on the site is intermittent machinery noise. All activities take place during the stated daylight working hours with no night time operation at all.

The applicant will take all adequate steps to minimise noise and ensure where possible that site operations adhere to BS 5228, 1997 Noise Control on Construction and Open Sites.

In relation to exhaust emissions from the site plant, all machinery is serviced regularly to ensure exhaust emissions are kept to a minimum. The engines are turned off when not in use.

The operators take all reasonable steps as far as is practical to minimise noise emissions from material handling operations and use reasonable techniques for minimising the release of noise into the atmosphere.

If any complaint were to be received regarding noise, then the Facility Manager would investigate this as a matter of urgency and address the problem immediately with appropriate mitigation measures.

SECTION 3.6: HYDROGEOLOGY – GEOLOGY, GROUNDWATER AND SOILS

CONTENTS

3.6 HYDROGEOLOGY – GEOLOGY, GROUNDWATER AND SOILS

3.6.1 Introduction

This section of the EIS deals with hydrogeology which consists of the topics relating to geology, groundwater and soils. This section has been compiled and prepared by the following specialist:

- Mr. Freddie P.R. Symmons B.Env.Sc. MCIEEM – Senior Environmental Consultant – Kingfisher Environmental Consultants

3.6.2 Existing Environment

3.6.2.1 Introduction

The following report provides a hydrogeological description of the Groundwater at the site and provides information relating to the local Bedrock Geology; Aquifer Classification: and Groundwater Vulnerability Rating relating to the existing soil recovery and inert materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny. The soils and subsoils of the site and local area are also discussed within this section.

It is important to stress that the Grannagh Facility has been in operation since 2004, and has since that time been granted two waste permits from Kilkenny County Council and has also been granted full planning permission by Kilkenny County Council. Therefore the site has operated under strict and rigid controls and conditions to protect groundwater and soils. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning groundwater or groundwater quality or contamination.

The following references/sources were consulted during the preparation of this report and associated Aquifer Classification and Groundwater Vulnerability Map:

- Daly, D. (1995). *"Groundwater Protection Schemes In Ireland: a proposed approach",* Internal Report Series, Geological Survey of Ireland, 38pp.
- Daly, D. and Warren W.P. (1994) *"G.S.I Guidelines on Groundwater Vulnerability and Vulnerability Mapping",* Groundwater Newsletter, Geological Survey of Ireland, No.25.
- Geological Survey of Ireland at www.gsi.ie - online Groundwater Mapping GIS package for Bedrock data; Aquifer Classification and Groundwater Vulnerability.
- EPA – ENVision online GIS Maps for Soil Data
- Waste Licence Application for Waste Licence W0260-01

Information retained by the Geological Survey of Ireland (GSI) and Environmental Protection Agency (EPA) was accessed to provide the hydrological and hydrogeological setting of the site.

This report has been prepared using the recommendations set out in the Environmental Protection Agency (EPA) document 'Guidelines on Information to be contained in Environmental Impact Statements' (2002). The guidelines and recommendations of the

Institute of Geologists of Ireland (IGI) publication 'Geology in Environmental Impact Statements – A Guide' was also taken into account in the preparation of the hydrogeological aspects of this section.

3.6.2.2 Bedrock

The bedrock geology of the Grannagh Quarry site is classified as DLIL– Dinantian Lower Impure Limestones – see **Figure 3.6.2.2**. This information has been sourced from the Geological Survey of Ireland. As the site is a former limestone quarry, there is clear physical evidence of the rock type present on site. Furthermore, the nearby Roadstone quarry demonstrates the importance of this quarrying in this area

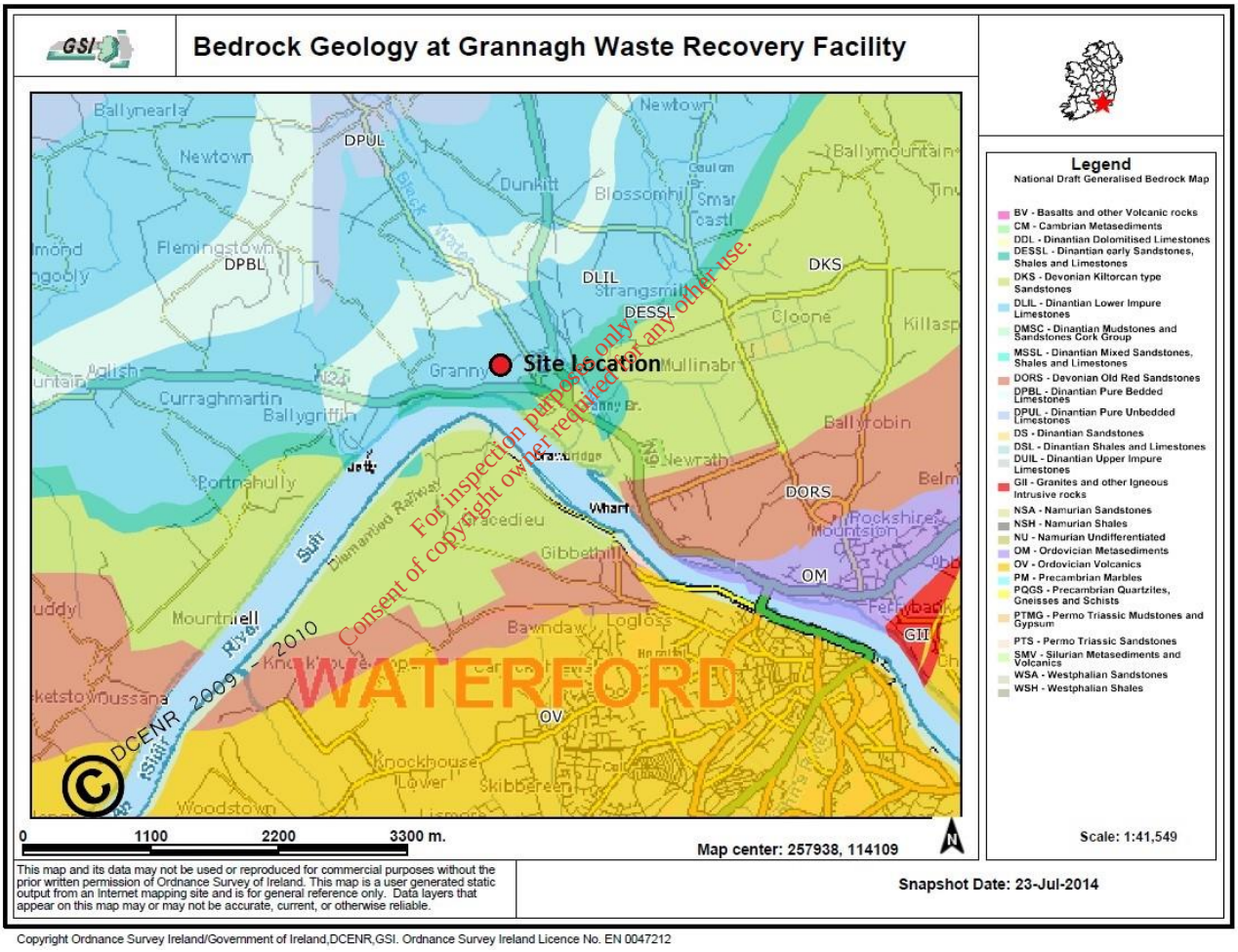


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Figure 3.6.2.2: Bedrock Geology of the Grannagh Site (Source: GSI)

3.6.2.3 Bedrock Aquifer Classification and Groundwater Vulnerability

The information contained in this section is available for interactive viewing at www.gsi.ie. This section provides the Aquifer classification (type) and also the groundwater vulnerability rating for the Grannagh area. The DEHLG, EPA, and GSI have produced guidelines on vulnerability mapping that aims to represent the intrinsic geological and hydrogeological characteristics that determine how groundwater quality may be affected by surface activities.

A combination of the aquifer type and the vulnerability rating provides the groundwater protection zone (GPZ) rating. The following provides the groundwater information for the Grannagh site:

- **Aquifer Type**: The bedrock aquifer type at the site is given the code **Ll** – Locally Important Aquifer, Bedrock which is moderately productive, only in local zones. This is shown in **Figure 3.6.2.3.1**.

- **Vulnerability Classification**: Groundwater vulnerability is a term used to determine the geological and hydrogeological conditions that will determine the ease with which groundwater can become impacted upon by surface activities (i.e. by contamination). The groundwater vulnerability rating for the Grannagh Site is shown in **Figure 3.6.2.3.2** and is Extreme as rock is near the surface. This is due to past quarrying activities having removed the protective overburden and subsoil and topsoil and leaving exposed bedrock as a consequence of quarrying activities. However, the restoration works associated with the filling with inert soil and stone serves to replace this protective material, which as a consequence serves to protect groundwater and improve the vulnerability rating.

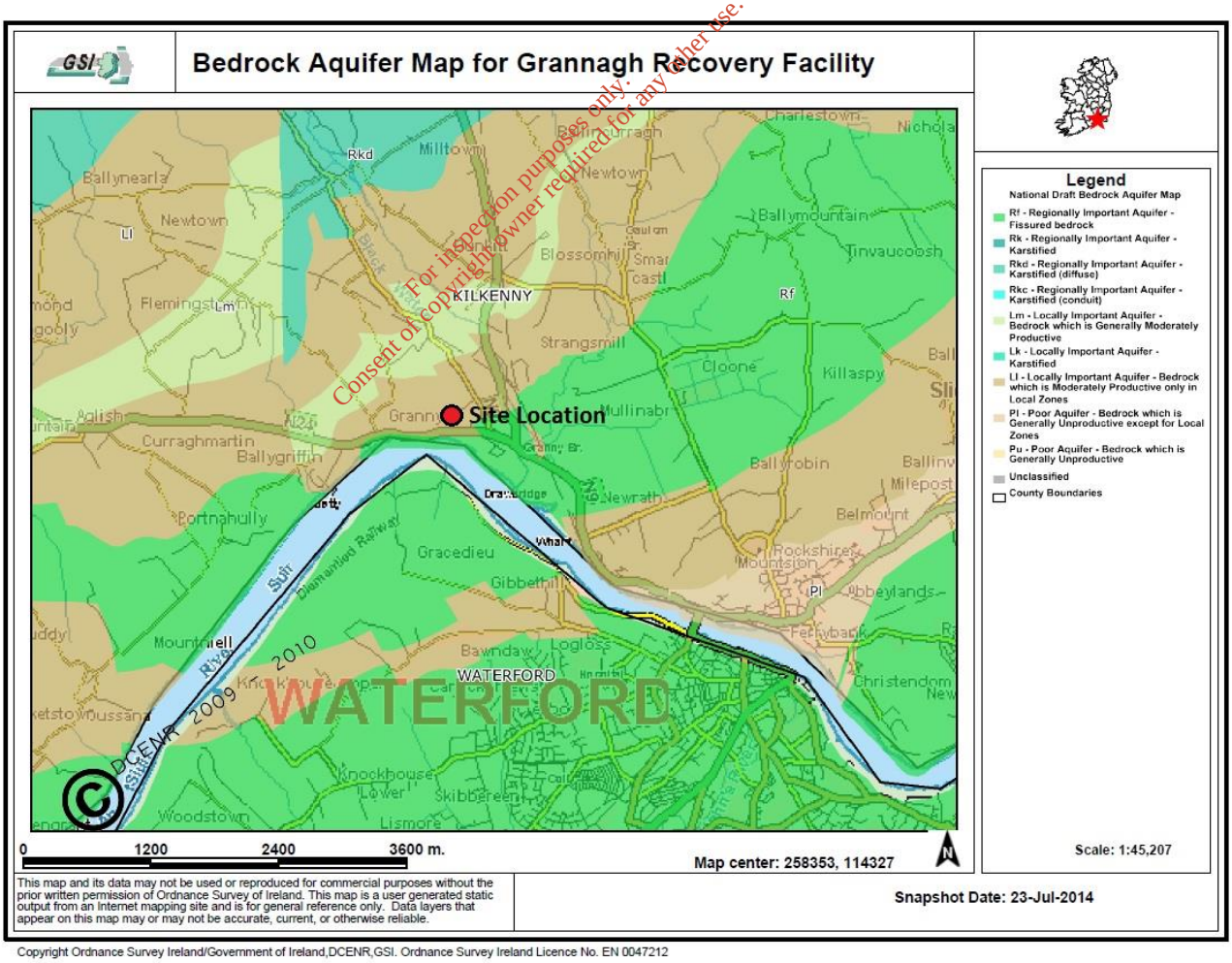

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Figure 3.6.2.3.1: Bedrock Aquifer Map for the Grannagh Site (Source: GSI)

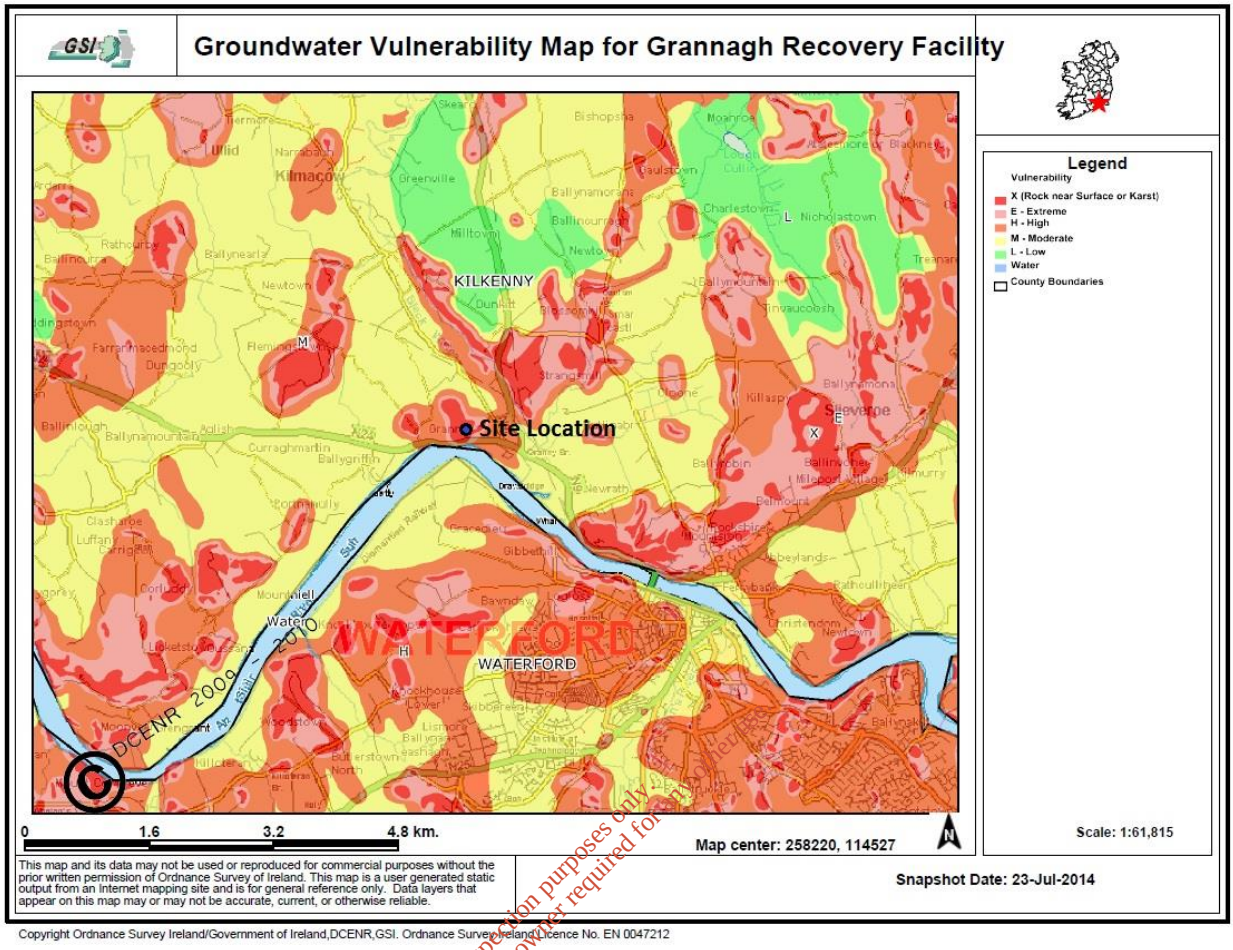


Figure 3.6.2.3.2: Groundwater Vulnerability Map for the Grannagh Site (Source: GSI)

- **Groundwater Protection Zone Rating**: The groundwater protection zone rating for the area of the site is **LI/E**.

- **Source Protection Areas**: There are no source protection areas either at or near to the existing Grannagh Recovery site as shown on GSI maps as shown on **Figure 3.6.2.3.3**.

- **Karst Features**: There is only one karst feature in the general locality and this is identified on the GSI maps as a spring in limestone located ca. 500 metres west of the site in Waulsortian rocks within the townland of Granny as shown on **Figure 3.6.2.3.3**. This spring is far removed from the site and there will be no impact upon this spring by the quarry restoration activities.

- **Wells:** The soil recovery facility and C&D materials recycling facility, does not have existing or proposed extraction wells from Groundwater. No groundwater wells were identified in close proximity to the site supplying water for domestic or animal needs as shown on **Figure 3.6.2.3.3**. All potable water requirements come from an existing mains supply to the site office and staff cabin.

- **Groundwater Response Matrix**: For inert soil and stone recovery facilities there is no groundwater response matrix unlike for Municipal Solid Waste (MSW) Landfills. The

response for a MSW landfill (which this site most certainly is not) would be R2[2] – meaning acceptable in principle, subject to certain conditions.

- **Groundwater Monitoring Wells**: In accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells have been installed on-site by CHI Environmental to monitor groundwater quality upgradient and downgradient of the existing facility. The results of groundwater monitoring for 2012 and 2014 are presented later in this section of the EIS.

  Condition 11 stated: "*Within one month of the date of grant of this permission, the Developer shall arrange for the installation of 2 groundwater monitoring boreholes-one to be located up-gradient and one down-.gradient. Analysis of the samples shall be carried out for COD, PH, Temperature, Total Ammonia (expressed as N), Nitrate (expressed as NO_2), Total Phosphorous (expressed as p), Total Hydrocarbons to include mineral oils, Total Organic Content (TOC), Potassium (as K), Chloride (as Cl) and Sulphate as ($S0_4$). Monitoring shall be carried out annually and results shall be submitted to the Planning Authority*".

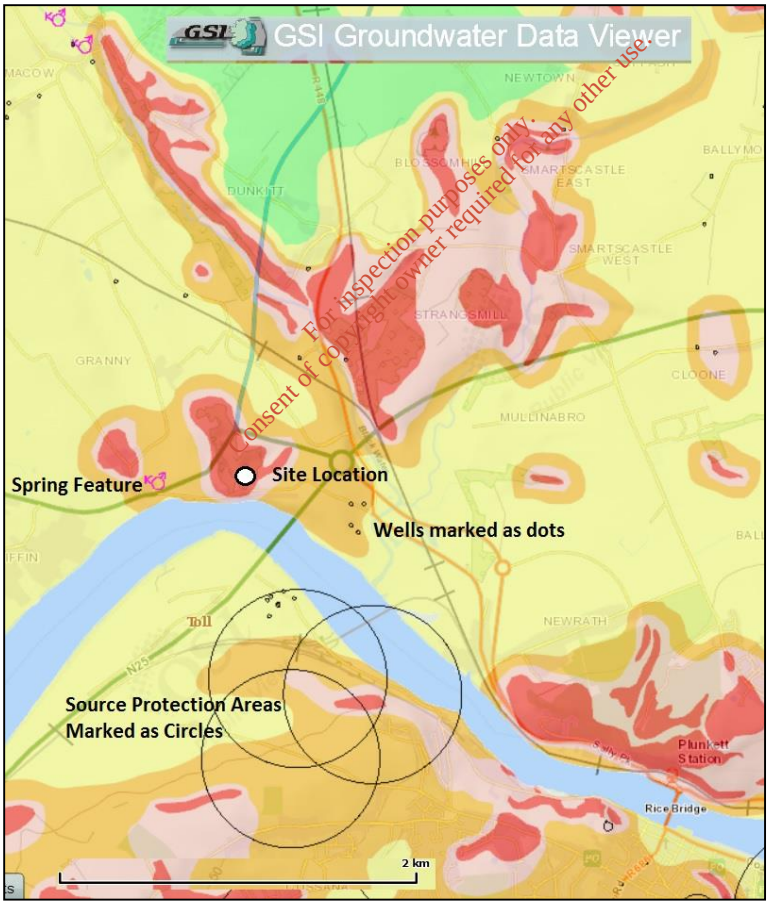


Figure 3.6.2.3.3: **Map Showing Source Protections Areas, Wells and Karst Features.**

- **Former Land Use:** A full hydrogeological assessment of the site in relation to the restoration activities on site was not required by Kilkenny County Council as part of the application for Planning Permission on the site nor as part of the applications for the two Waste Permits for the site.

  It is understood that Kilkenny County Council is itself required to carry out a risk assessment on a portion of the site, which is adjacent to the recovery activities. This part of the site was formerly used by Kilkenny County Council as a historical municipal waste landfill. It is a requirement of Kilkenny County Council to carry out any risk assessment on historical landfills as per the EPA guidelines and requirements.

3.6.2.4 Soils

The soils consisting of subsoil and topsoil on the site and in the vicinity of the site were identified using data from the Geological Survey of Ireland (GSI) and EPA on-line GIS viewers which is based on An Foras Taluntais, National Soil Survey of Ireland-Soil Map.

As the site consists of a former rock quarry and is now partially restored, most of the original soils will have been historically stripped and removed. Therefore the site of the existing soil and stone recovery and C&D materials recycling facility is marked on the subsoil maps as being Rck – Bedrock at the surface as seen in **Figure 3.6.2.4.1**. The surrounding area consists of subsoil classified as TDSs – Sandstone Till (Devonian). In reality the site consists of made ground through the deposition of inert soil and stone for the purposes of restoring the former quarry site back to productive agricultural use.

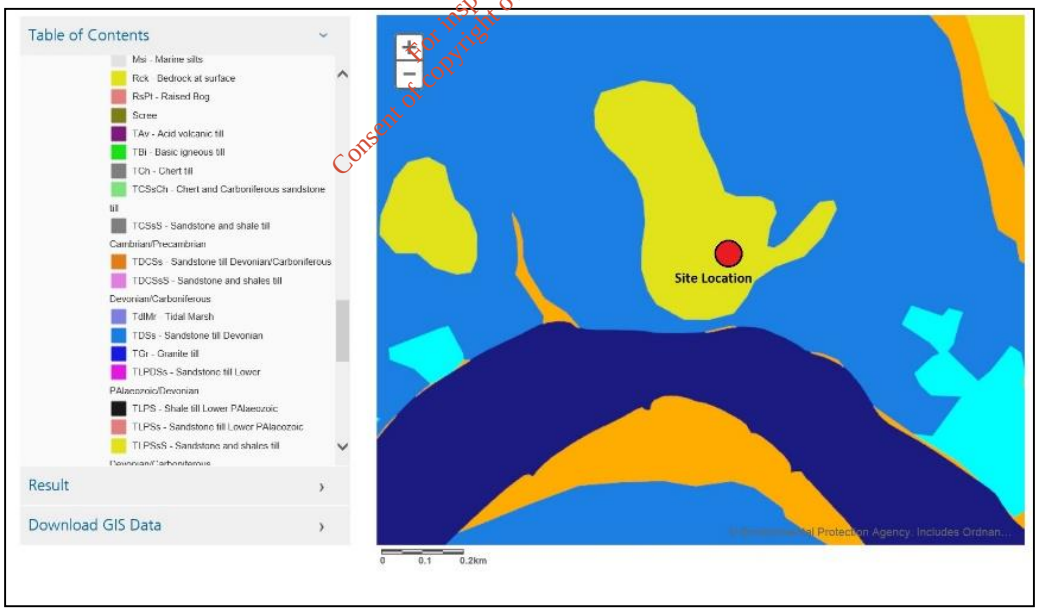


Figure 3.6.2.4.1.: Subsoil Map of the Grannagh Site and Local Area (Source: EPA)

The soils map for the site and the surrounding area taken from the EPA website on-line GIS viewer shows the site identified as being BminSW – Shallow well drained mineral soil derived from mainly basic parent material. These are categorised as being Renzinas/Lithosols.

The soils of the surrounding area are predominantly AminDW – Deep well drained mineral soils derived from mainly acidic parent materials. These are categorised as being Acid Brown Earths/Brown Podzolics. This information is shown in **Figure 3.6.2.4.2.**

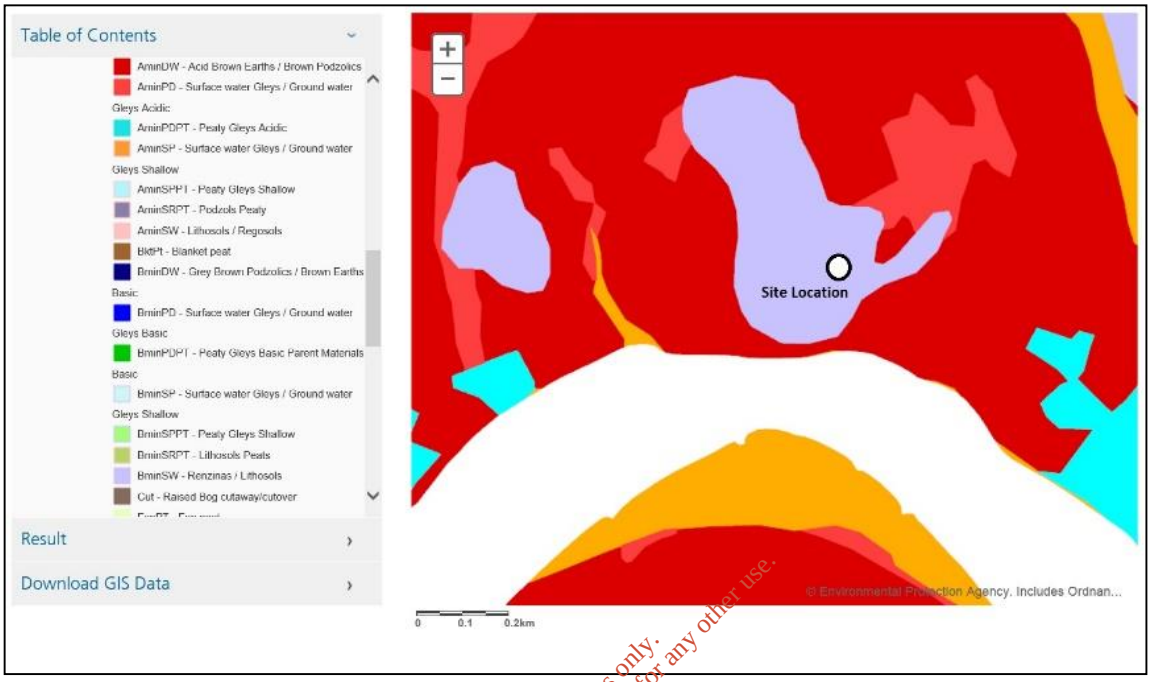


Figure 3.6.2.4.2: Soil Map of the Grannagh Facility and Surrounding Area (Source: EPA)

The former quarry site at Grannagh has been used for the authorised land restoration using inert soil and stone material for the consequential benefit to agriculture since 2004. A small portion of the quarry site has been infilled satisfactorily to date as part of this process, and is presently covered in hardstanding and is where the C&D material recycling and stockpiling occurs.

The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

From a groundwater protection perspective, the spreading of suitable soil and stones over the site will provide many additional metres of protective soil cover which will have a positive impact upon the protection of groundwater in the area. The lands adjacent to the Grannagh facility are principally used for productive pasture land for the grazing of livestock.

3.6.3 Groundwater Monitoring

The inert nature of the soil material accepted at the facility and the strict waste acceptance criteria ensure soil and stone materials and inert C&D materials accepted at the site do not contain any potential contaminants to groundwater. Notwithstanding this, in accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells were installed on-site by CHI Environmental in 2012 to monitor groundwater quality upgradient (GW1) and downgradient (GW2) of the existing facility.

The groundwater monitoring wells could not be installed earlier due to the pending completion of the new N25 which bisects the Grannagh Quarry site and CHI Environmental Ltd. had to wait until all land issues associated with the construction works had been resolved with Kilkenny County Council.

The position of these groundwater monitoring wells is shown in **Figure 3.6.3.1**. The results of groundwater monitoring for 2012 and 2013 are presented below in **Table 3.6.3.1.** The analysis results are compared against the groundwater quality threshold limits (where available) set in the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010). The results show that the quality of groundwater is generally excellent with only one slight exceedance for ammonical nitrogen in the downgradient borehole GW2 in 2012, which in 2013 was back to the normal background levels therefore suggesting a natural phenomenon. In 2013, sulphate in GW2 showed slight elevated levels and monitoring results for 2014 will determine whether this is also a temporary natural occurrence. Overall the results demonstrate that the site recovery and recycling activities are having no significant negative impact upon groundwater quality at the Grannagh Facility.

Figure 3.6.3.1: Site Plan showing locations of the 2 No. Groundwater Monitoring Wells

Table 3.6.3.1: Groundwater Monitoring Results for 2012 and 2013 at Grannagh Facility

Parameter	Unit	Detection Limits	Screening Value	GW 1 2012	GW1 2013	GW 2 2012	GW 2 2013
pH	mg/l			7.7	7.59	7.5	7.27
Electrical Conductivity	mSc m^{-1}		1.875	0.646	0.629	1.040	1.32
Dissolved Oxygen	mg/l			9.29	9.62	8.64	7.24
Magnesium	mg/l	<0.036		21.71	24.6	21.1	27.1
Sodium	mg/l	<0.076	187.5	26.6	19.4	41.4	62.7
Chloride as Cl	mg/l	<2	187.5	47.9	41.8	69.6	102
Sulphate as SO4	mg/l	<2	187.5	81.6	19.3	114	287
Ammonical Nitrogen	mg/l	<0.2	0.175	<0.2	<0.2	0.334	<0.2
Total Alkalinity	mg/l	<2		235	305	390	40
Total Dissolved Solids	mg/l	<5		429	424	754	1080
Arsenic	mg/l	<0.00012	0.0075	0.000322	0.000308	0.000466	0.000686
Boron	mg/l	<0.009	0.750	0.0681	0.0373	0.0987	0.105
Cadmium	mg/l	<0.0001	0.00375	<0.0001	<0.0001	0.000551	0.000432
Chromium	mg/l	<0.00022	0.0375	0.00215	0.0116	0.00222	0.00596
Copper	mg/l	<0.00085	1.5	<0.00085	0.00099	0.00169	0.00271
Lead	mg/l	<0.00002	0.01875	<0.00002	0.000102	0.000063	0.000198
Manganese	mg/l	<0.00004		<0.00004	0.000414	0.301	0.194
Nickel	mg/l	<0.00015	0.015	<0.00015	0.00201	0.00402	0.00848
Zinc	mg/l	<0.00041		0.00508	0.00605	0.00838	0.00902
Mercury	mg/l	<0.00001	0.00075	0.0000404	0.0000526	<0.00001	0.0000131
Potassium	mg/l	<2.34		<2.34	1.18	8.06	10.1
Iron	mg/l	<0.019		<0.019	<0.019	<0.019	<0.019
Phosphate as PO4	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Organic Carbon	mg/l	<3		<3	<3	5.04	5.86
Fluoride	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Oxidised Nitrogen	mg/l	<0.1		3.58	2.96	5.68	2.69
Chromium (tot. unfilt)	mg/l	<0.003		<0.003	0.0106	<0.003	<0.003
Total Cyanide	mg/l	<0.05	0.0375	<0.05	<0.05	<0.05	<0.05

3.6.4 Potential Impacts

It is important to stress that the Grannagh Facility has been in operation since 2004, and has since that time been granted two waste permits from Kilkenny County Council and has also been granted full planning permission by Kilkenny County Council. Therefore the site has operated under strict and rigid controls and conditions to protect groundwater and soils. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning groundwater or groundwater quality or contamination.

The soil recovery and the C&D materials recycling facility as presently permitted, does not have any existing or proposed Emissions to Groundwater any and does not propose to have Emissions to Groundwater through the application for a Waste Licence.

Existing toilet facilities are located in the staff changing room and effluent is directed to a concrete holding tank which is emptied as required by an approved Waste Contractor. It is envisaged that this arrangement will continue for the duration of the site restoration works. There are no discharges of sewage to ground and therefore no potential impact upon soils or groundwater will occur.

During the infilling and restoration of the quarry site, surface water will be allowed to run over the existing ground surface to percolate through the deep soils to groundwater. At no time during the restoration works will surface water run-off be directed to watercourses or ponds beyond the site boundary.

The waste quarantine area, will be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and bunded to a design storm volume. Any surface water running over the surface of the concrete slab will be directed toward an underground collection tank with double skin protection located on the western side of the hardstanding area. Surface water will only be collected in the buried tanks when suspect waste consignments are stored at the quarantine facility.

At all other times, surface water run-off from the impervious concrete slabs will be diverted and allowed to percolate directly through the soils to the underlying groundwater table.

Any wastewater collected in the underground tank will be emptied by licensed waste collectors and transferred to a collection tanker for disposal off-site at an approved waste water treatment facility.

No groundwater wells have been identified in close proximity to the site supplying water for domestic and animal needs.

Given that the materials to be deposited are non-leachate forming and given the mitigation measures proposed with regards to waste acceptance, the impact of groundwater contamination on groundwater in the area during operation and upon completion of the project will be negligible.

It is not proposed to store any fuel on site and it is not intended to provide bunded fuel storage tanks at the application site. A fuel tanker will visit the site, when required and fill the onsite plant. Refuelling for mobile plant takes place on the concrete hardstanding area of the quarantine area, and booms and spill kits are kept adjacent to this. Static tracked plant such as screeners etc. are refuelled directly at their location with the use of mobile spill trays.

A small bunded tank for waste oils will be provided on the concrete slab at the waste quarantine area. This tank will be emptied at intervals by a licensed waste contractor and disposed off-site at a suitably licensed waste facility.

No re-fuelling of HGV trucks will take place on site. Oil and lubricant changes for wheeled or tracked plant will be undertaken on-site at the existing concrete hardstanding area at the quarantine area.

Plant maintained on site principally comprises mechanical excavators and/or bulldozers, mobile screening and crushing plant. Both tracked and wheeled plant will be serviced as necessary at their location on the hardstanding area or, if necessary, on the concrete slab at the waste quarantine area

The inert nature of the soil material accepted at the facility and the strict waste acceptance criteria ensure soil and stone materials and inert C&D materials accepted at the site do not contain any potential contaminants to groundwater. Notwithstanding this, in accordance with Condition 11 of planning permission P.06/1772, two no. groundwater monitoring wells have been installed on-site by CHI Environmental to monitor groundwater quality upgradient and downgradient of the existing facility. The results of groundwater monitoring for 2012 and 2013 demonstrates that the site recovery and recycling activities are having no significant negative impact upon groundwater quality.

The soil recovery and the C&D materials recycling facility has been up and running for the past ca. 10 years without any complaints or enforcement issues relating to water or water pollution or impacts upon groundwater as proven by Local Authority records and site audits. Furthermore, the compliance monitoring is all up to date and is all compliant with the permit requirements and planning permission. All in all, it is considered that CHI Environmental Ltd. operate an extremely well run and well-monitored permitted soil recovery and C&D materials recycling facility.

From a groundwater protection perspective, the restoration of the former Grannagh rock quarry using suitable inert soil and stones over the site will provide an additional protective soil cover which will have a positive impact upon the protection of groundwater in the area.

3.6.5 Mitigation Measures

With regards to ensuring that there are no significant impacts upon groundwater, the following mitigation measures will ensure that the continued operation of the The soil recovery and the C&D materials recycling facility at Grannagh will not impact upon groundwater:

- The plant machinery is refuelled using a Mobile Fuel Bowser. No fuel is stored on the site. This eliminates the risk of potential fuel leakages from storage tanks and prevents any environmental impact on groundwater.

- Spill kits are provided, in the unlikely event of a spillage, that the spillage is confined to the immediate area.

- As part of the Environmental Management System on site, Emergency Response Procedures have been put in place to deal with emergencies.

- In the unlikely event of a larger fuel spillage, either from the site plant or refuelling tanker, the emergency procedures listed below will be followed:

In the event of a larger fuel spillage, either from the site plant or refuelling tanker, the emergency procedures listed below will be followed:

In the event of a threat to groundwater the following is to be implemented:

• Inform the EPA and Kilkenny County Council.
• Contain any spillage as far as possible using the spill kits and booms
• Detect source and carry out necessary remedial works;
• Monitor situation hourly until threat is removed.

In the event of a threat to outside the site:

• Detect source;
• Inform the EPA and Kilkenny County Council;
• Monitor extent of contamination;
• Inform public if risk is posed;
• Take appropriate action to alleviate situation.

In the event of a threat to outside the site:

• Detect source;
• Inform the EPA;
• Monitor extent of contamination;
• Inform public if risk is posed;
• Take appropriate action to alleviate situation.

- No chemicals (e.g. Insecticides, Herbicides, Rat Poisons, Cleaning Agents, Water Treatment Chemicals, Cooling Water/Boiling Water Additives, Laboratory Chemicals, etc.) are required or accepted at the facility and there is no change in this regard in the application for a Waste Licence.

- The only Waste Arising at the facility are those materials moved to/stored in the Waste Quarantine Area (e.g. wood, plastics, metals, paper) and wastes from the facility portacabin (office and staff accommodation). The amounts of these materials generated on the basis of experience in operating the existing facility to date are very low. Waste acceptance letters are in place for acceptance of these waste streams by the appropriate waste recovery/disposal facilities.

- The wastes from the Quarantine skips are removed by authorised Waste Collection Permit Holders for disposal or recovery to authorised waste facilities.

- All wastes in the site office/staff accommodation are divided into 'Recyclable Waste' and 'Landfill Waste' and appropriately disposed of/recovered.

- Full records are maintained in the site office of all wastes leaving he site and these form part of the Annual Environmental Report (AER).

- All machinery will be regularly serviced and checked to ensure there are no leakages of fuel or hydraulic liquids. All routine servicing of plant and equipment will, insofar as possible be undertaken off-site. Emergency repairs to plant and equipment will ensure that drip trays and oil catcher tanks are employed to collect hydraulic or oil lubricant liquid.

- Each load of soil/waste that arrives at the facility will be checked in at the weighbridge. Information on the conveyance note will be cross-checked against the electronic records held on the database. If the information provided conforms to the information on the database, the driver will be asked to proceed to the designated waste reception area. Personnel operating within the waste reception area will be advised of any need to carry out a more rigorous inspection of the deposited wastes.

- Any load that is deemed unauthorised or unsuitable waste [based on visual/olfactory evidence] will be loaded back on to the delivery vehicle and the driver instructed to leave the facility. All deliveries from the source site will be suspended until inquiries are completed and appropriate measures put in place to prevent a re-occurrence.

- Should materials be identified that are potentially hazardous/unauthorized/unsuitable following a satisfactory initial inspection, they will be transferred to a designated quarantine area until they can be disposed of at an appropriately licensed facility in accordance with the relevant conditions of the Waste Permit (or Waste Licence when issued).

- With regards specifically to loads of inert soil and stone, the Facility Manager/Machine Operative will inspect each load, as it is being deposited, to ensure the material is fully compliant with. If the material is non-compliant, the Facility Manager/Machine Operative will insist that the material is reloaded onto the haulage truck and removed from the site, for authorised disposal elsewhere.

- Once the haulage trucks deposit their material, along the perimeter of the restoration area, the bulldozer shifts the inert material, from where it is deposited by the haulage trucks and spreads it over the area of the deposition site, in compliance with the Waste Permit and the Waste Licence when issued. If waste objects are identified within the inert material (whilst shifting/reclaiming the material), which are not compliant with the Waste Permit or Waste Licence (e.g. pieces of wood, plastic, metal), they will be removed and transported to the Waste Quarantine skips.

3.6.6 Conclusions

The Grannagh Facility has been in operation since 2004, and has since that time been granted two waste permits from Kilkenny County Council and has also been granted full planning permission by Kilkenny County Council. Therefore the site has operated under strict and rigid controls and conditions to protect groundwater and soils. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning groundwater or groundwater quality or contamination.

There will be no significant impacts upon the groundwater or soils environment as identified in this section of the EIS as there will be no emissions to either the ground or groundwater.

The inert soil material imported to the recovery facility at Grannagh is excavated at construction /development sites or for utilities installation/maintenance. Given that excavation and handling of such materials incurs a cost, it can be implicitly assumed that engineering designers and/or works contractors will avoid or minimise, insofar as possible, the volume of excess soil material excavated in order to execute the planned development or maintenance works.

It can also be implicitly assumed that excess excavated soil material will only be exported off-site where it is not possible to re-use it within the development site or to backfill temporary excavations. Given the limited scale of most demolition projects, inert construction and demolition waste is generally transferred off-site for recovery at permitted or licensed facilities.

Where excavated soil is inert, it can be re-used at off-site locations for practical and beneficial purposes without the need for treatment, processing or other form of recycling. It is therefore evident that where excess inert soil is generated by development or utilities related works and requires to be exported off site, the highest tier activity on the waste hierarchy to which it may be assigned is a waste recovery activity. The proposed backfilling of the site at Grannagh using inert waste soils and its long-term restoration back to beneficial agricultural use will achieve a desirable outcome which would not otherwise be possible or would require extensive use of natural soil resources.

Recycling is defined in the Waste Framework Directive as *'any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes"* It can generally be taken as a given that demolition of existing structures is only undertaken as necessary to facilitate construction and development projects.

At the Grannagh facility, construction and demolition waste is crushed and screened in order to produce a secondary aggregate which can be recycled, stored and re-sold as a certifiable granular fill product for re-use by the construction industry. In general, recycling of inert construction and demolition waste in this way is the highest tier on the waste hierarchy to which this waste stream can be assigned. The Grannagh Facility is a vital part of Waste infrastructure to help Ireland meet the targets set for 2020 for C&D Waste under the EU Waste Framework Directive (2008/98/EC).

All appropriate mitigation measures have been put forward and are implemented for a soil recovery and C&D materials recycling site of this nature. The Grannagh facility is a low risk activity which poses little or no threat to hydrogeology, groundwater, geology or soils. To

ensure the recovery and recycling activity is not having any significant impact upon groundwater it is proposed to continue to monitor groundwater at the two on-site groundwater monitoring wells (upgradient GW1 and downgradient GW2) on an annual basis.

SECTION 3.7:
CULTURAL HERITAGE

CONTENTS

3.7 CULTURAL HERITAGE

3.7.1 Introduction

This section of the EIS outlines a brief summary of any Architectural, Archaeological and Cultural Heritage features that could relate to the existing soil recovery and C&D materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny, which is subject to a Waste Licence Application – Ref: W0260-01.

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772.

The site activities carried out under the existing Waste Permit and which are subject to the Waste Licence Application W0260-01, have been fully examined by Kilkenny County Council and assessed in relation to matters relating to cultural heritage and protection of sites of archaeological or historical importance. In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon items of cultural heritage or sites of archaeological or historical importance.

Within the planning permission description, it is stated by Kilkenny County Council that: "*The existing quarry is included in the Record of Protected Structures listed in the 2002 County Development Plan as a Grade 4 industrial archaeology site (RPS Ref: D129)*". Notwithstanding this, the restoration of the site back to beneficial agricultural use was obviously something that was viewed as being a positive development and one that would not compromise the former quarry (as the former quarry footprint would still remain intact, but would be filled in with suitable material – something which is not irreversible in archaeological terms).

Condition 3 of the Planning Permission related to mitigation measures to ensure the protection of any unknown archaeology on-site:

Condition 3. (a) The applicant is required to employ a suitably qualified archaeologist to monitor all site clearance associated with the development of the existing quarry area.
(b) Should archaeological material be found during the course of monitoring, the archaeologist may have work on the site stopped, pending a decision as to how best to deal with the archaeology. The developer shall be prepared to be advised by this Department with regard to any unnecessary mitigating action (e.g. Preservation in situ, or excavation) and should facilitate the archaeologist in recording any material found.
(c) The Planning Authority and the Department of the Environment, Heritage and Local Government shall be furnished with a report describing the results of monitoring.
Reason: To ensure the continued preservation (either in situ or by record) of places, caves. Site features or other objects or archaeological interest,

Notwithstanding this point, this section of the EIS identifies and reaffirms that there will be no negative impacts upon items of cultural heritage either within or close to the existing Grannagh Facility.

CHI Environmental Ltd. applied for a Waste Licence (Ref: WO260-01) to the EPA on 13/2/2009 and in accordance with the relevant legislation, they continue to operate under their present Waste Permit (No. WMP 23/2007) under the authority of Kilkenny County Council until the waste licence application is decided upon by the Agency.

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use. The backfilling of the existing void with inert soils and stone is deemed to constitute inert waste recovery for the purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing. The material will be brought to the tipping area and post visual inspection will be graded over the active restoration area with a bulldozer.

In addition, the site operates as an inert construction and demolition materials recycling and transfer facility whereby construction and demolition material is screened and crushed in order to produce a secondary aggregate which can be recycled, stored and re-sold as a certifiable secondary aggregate products for re-use by the construction industry. Suitable soil and stones of a size of 0 – 40 mm are re-incorporated into the restoration of the former quarry.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for recovery at the site as already permitted and authorised by the existing waste permit and planning permission. The sole reason a Waste Licence was applied for, was due to the changes in the National Waste Permit legislation and the obligations which this brought.

Furthermore, the recovery activities do not entail the excavation of material from the site (say like a quarry) but rather the restoration of the exhausted rock quarry site with inert soil and stone. Therefore any direct impacts upon items of cultural heritage or sites of archaeological or historical importance would have occurred in an historical sense during the past excavation of the quarry void which removed all surface features and the rock below. The excavation and quarrying occurred in the past 100 to 200 years, and did not occur so long ago to have created archaeology within the footprint of the quarry void.

3.7.2 Existing Environment

This study determines, as far as reasonably possible from existing records, the nature of the cultural heritage resource within the site (if any) and the general area of the existing soil recovery and C&D materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny using appropriate methods of study. Desk-based research is defined as an assessment of the known or potential archaeological resource within a specified area consisting of a collation of existing written and graphic information. The assessment takes place in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource.

The study involved detailed interrogation of the archaeological and historical background of the existing site and general area.

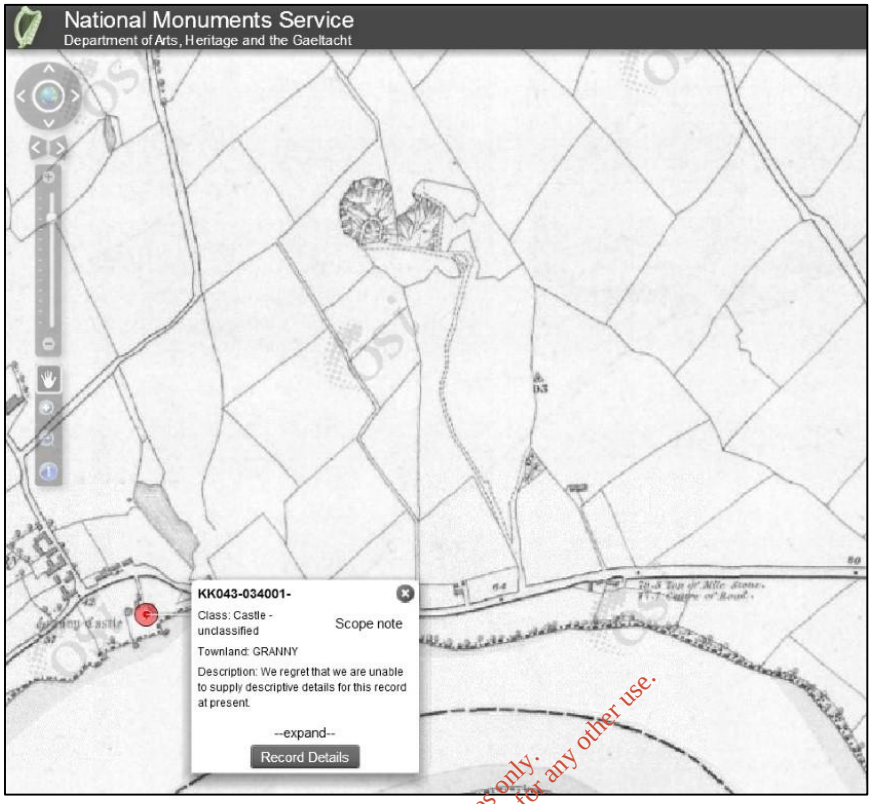
Information has been principally obtained from the National Monuments Service of the Department of Arts, Heritage and the Gaeltacht. This was in the form of the Archaeological Survey Database which can be accessed via the ArcGIS Viewer at www.archaeology.ie. This incorporates the SMR (Sites and Monuments Record) of Co. Kilkenny together with historic 6 inch Ordnance Survey Maps and aerial photography. Further assessment and information was taken from the Kilkenny County Development Plan 2014 – 2020.

3.7.2.1 Site and Monuments Records – Archaeological Interest.

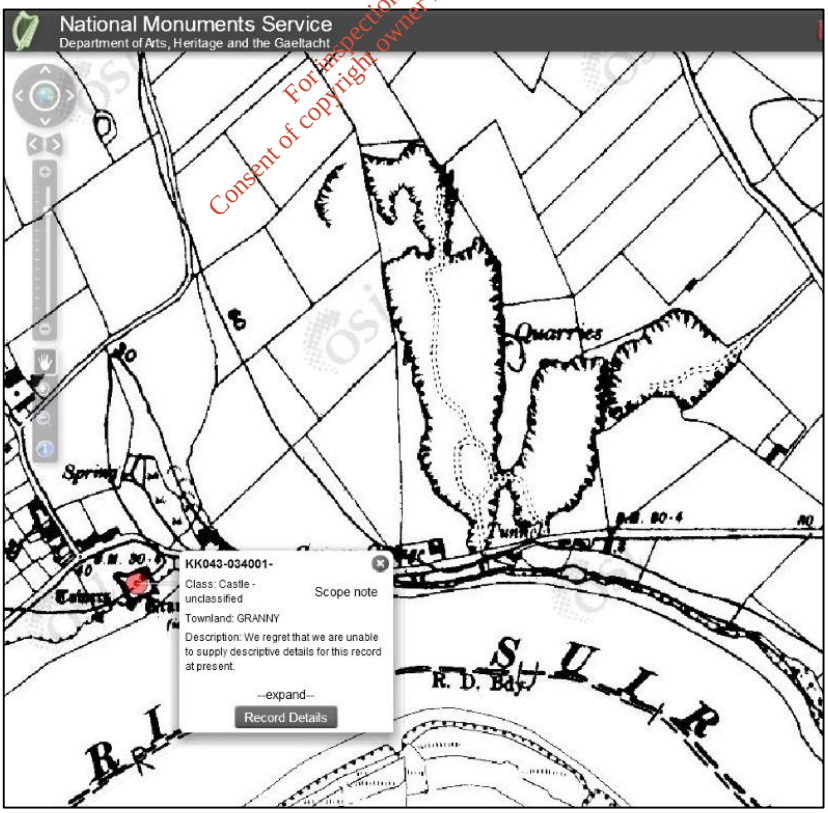
The following Maps and Aerial Photographs (**Figures 3.7.2.1.1**) are derived from the National Monuments Service - Archaeological Survey Database which can be accessed via the ArcGIS Viewer at www.archaeology.ie. These maps identify any protected SMR sites within or close to the Grannagh Facility.

Figures 3.7.2.1.1: Maps and Aerial Photographs relating to Protected Sites and Monuments

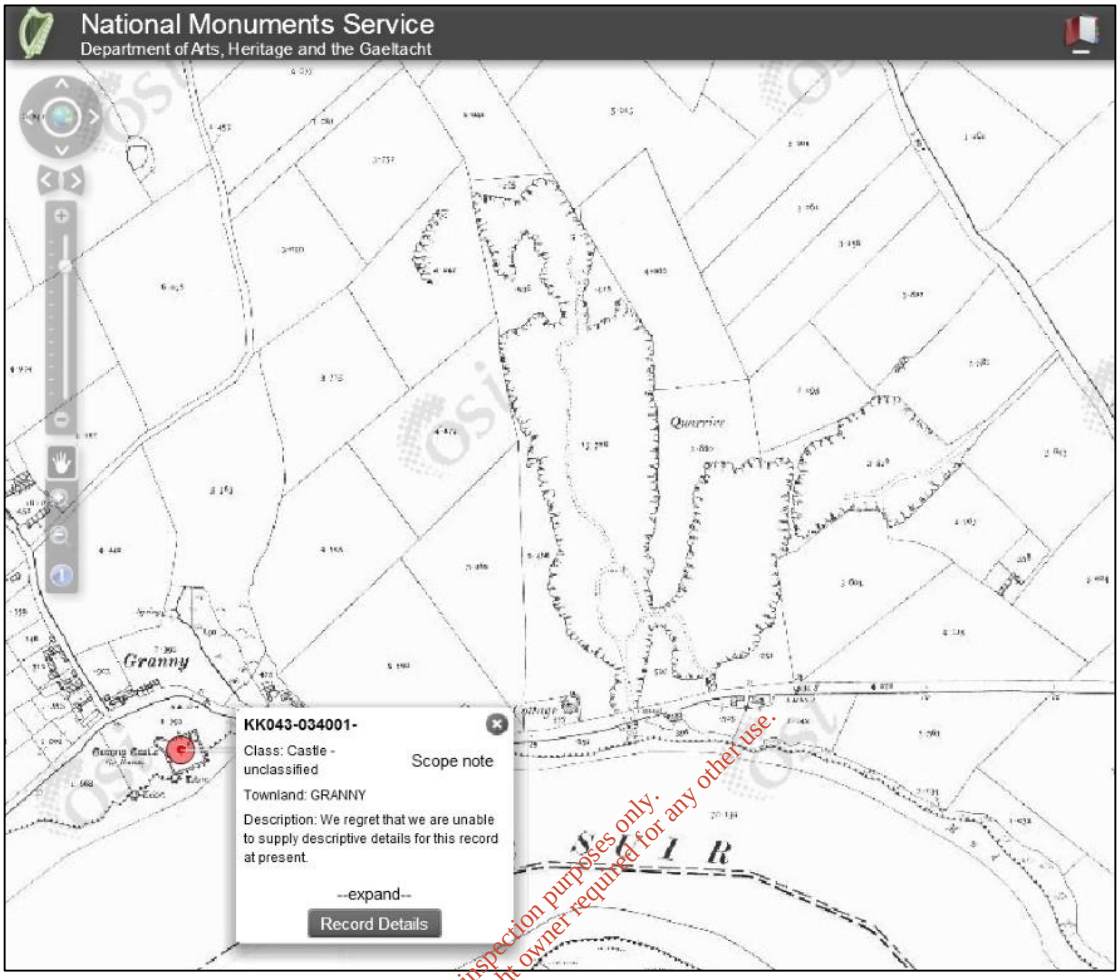
National Monuments OS Aerial Photo (Not Current)



National Monuments Historic 6 Inch Ordnance Survey Map



National Monuments Cassini 6 Inch Ordnance Survey



National Monuments Historic 25 Inch Ordnance Survey Map

The aerial photographs and maps clearly show that there are no know archaeological sites or monuments within or within close proximity to the existing soil recovery and C&D materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny. The OS aerial photo is some years old now and probably dates from ca. 2000 as the site restoration works nor the new N24 road are shown.

The historical 6 inch Ordnance Survey Map also show that there were no known archaeological sites within the site prior to it being fully quarried out.

One protected SMR record is shown on the maps at a distance of ca. 400 metres west of the Grannagh facility site boundary. This is SMR Record KK043-034001 and is an unclassified castle in ruins called Granny Castle – see **Figure 3.7.2.1.2.** This site is so far removed from the Grannagh Facility that there will be no possible impact whatsoever on this site.

An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht

NATIONAL MONUMENTS SERVICE

Archaeological Survey of Ireland

Record Details

SMR Number:	KK043-034001-
Related SMR number(s):	None
Class:	Castle - unclassified
ITM Reference (E,N):	657278, 614686
Irish Grid Reference (E,N):	257341, 114633
Townland(s):	GRANNY
Record of Monuments and Places:	Yes

(c) Ordnance Survey Ireland
Scales are approximate only

Description:

Description: We regret that we are unable to supply descriptive details for this record at present.

Figure 3.7.2.1.2: SMR Record for Granny Castle

3.7.2.2 Geological Heritage

Within the planning permission description, it is stated by Kilkenny County Council that: "*The existing quarry is included in the Record of Protected Structures listed in the 2002 County Development Plan as a Grade 4 industrial archaeology site (RPS Ref: D129)*". Notwithstanding this, the restoration of the site back to beneficial agricultural use was obviously something that was viewed as being a positive development and one that would not compromise the former quarry (as the former quarry footprint would still remain intact, but would be filled in with suitable material – something which is not irreversible in archaeological terms).

Within the current Kilkenny County Development Plan the Granny Quarry is listed as a County Geological Site as Site no. 11 listed in Appendix E and shown on Figure 8.1 in the plan. It is noted for being a "*Disused quarry exposing limestone*".

As the new N24 has bisected the original quarry footprint and split the former rock quarry into separate sections, it is likely in the short to medium term that the northern sections will remain as exposed disused limestone quarries. The N24 road recently went through the full planning process and an EIS to address any environmental or cultural heritage issues and was allowed to proceed. The existing Grannagh facility has been granted full planning permission by Kilkenny County Council for the site restoration works to the former limestone quarry. This is with the knowledge that the site was on the RPS as a County Geological Site.

It is important to note that current best practise in quarrying and in getting authorisation for quarry development is to be able to demonstrate full restoration plans in a phased and logical manner. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

This fully complies with the policies set out in the current Kilkenny County Development Plan 2014 -2020 which states in Section 6.4.2 with regards to quarries:

- Ensure that all existing workings shall be rehabilitated and that all future extraction activities will allow for the rehabilitation of pits and proper land use management.
    - The Council may require that development is phased and that each phase is rehabilitated before the next phase is developed/commenced;
    - The Council shall require applicants to submit a restoration programme with their application on the manner and timing of restoration;
    - The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

and:

- The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

3.7.2.3 Built Heritage / Kilkenny County Record of Protected Structures

Within the Kilkenny County Development Plan are listed records of protected structures (RPS). **Table 3.7.2.3.1** shows the RPS records for Granny Townland. The Granny Quarry is listed here as record D129 along with a tower house; a thatched cottage, Granny Bridge; and Dunkitt Railway Viaduct.

Table 3.7.2.3.1: RPS records for Granny Townland

KILKENNY COUNTY RPS 2014

ADDRESS	DESCRIPTION	DETAILED DESCRIPTION	LOCATION	NIAH REF	RPS REF
Granny	Tower House	A later C. 14th tower-house with later work including a C. 17th oriel window, and partial restoration in the C 18th. Beside the tower is a medieval two-storey hall, and the whole is surrounded by a curtain wall. It is now a National Monument.	(Granny) 2 miles W of Waterford 23.S.57.14	N/A	C432
Granny	Thatched cottage	Detached three-bay single storey thatched cottage with dormer attci, c. 1825	Granny	12404309	C675
Granny	Suir Railway Viaduct	Nine-span bridge, 1200 ft (367 m) in length, Viaduct. Of Pratt truss construction by Sir William Arrol of Glasgow, its spans are supported on twin cast-iron piers, the central span lifting to allow boats to pass through.	Over the River Suir	N/A	D11
Granny	Quarry, Limestone	Extensive remains of abandoned deep workings		N/A	D129
Granny	Granny Bridge	Single segmental arch formerly carried Thomastown - Waterford road over Black Water. The extrem shallowness of the arch necessitated later reinforcement to cope with the increasing traffic. Now superceded by a modern concrete bridge immediately dwonstream	Over Black Water	12404314	D154
Granny	Dunkitt Railway Viaduct	Nine-span railway viaduct over river, opened 1853. Series of nine flat spans with lattice girders on two pairs of paired cast-iron pylons having cross girders, and iron railings to parapet. Carrying Limerick-Waterford line.	Over Black Water	12404313	D62

The closest of these to the existing Grannagh facility is the thatched cottage at Granny, but as with this building and all of the other listed RPS, the continued authorised use of the site at Grannagh for inert soil recovery and a C&D materials recycling facility will not have any direct or indirect impact upon these structures. There are no schools or churches or places where people congregate in close proximity to the site either.

3.7.2.4 Cultural Heritage

Cultural heritage includes aspects of heritage such as traditions, practices, knowledge and skills which are an expression of our Culture. In Kilkenny the cultural heritage includes oral history, place names, folklore, local history and sport. It also encompasses features of cultural heritage interest such as mass rocks, mass paths, rag trees and vernacular gates which are locally significant and add to the distinctive character and sense of place of an area.

As the development intends to reinstate the land for beneficial agricultural use as so commonly found within the area and will not stretch past its current site limits, there will be no disturbance to the townland boundary or loss of townland name. In fact the new roundabout at the N24 and M9 interchange is called the Quarry Roundabout, reflecting the history and use of the site for past quarrying.

As there are no other cultural heritage features which could be impacted upon the existing Grannagh facility will not negatively impact upon the cultural heritage record.

3.7.3 Assessment of Potential Impacts

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772.

The site activities carried out under the existing Waste Permit and which are subject to the Waste Licence Application W0260-01, have been fully examined by Kilkenny County Council and assessed in relation to matters relating to cultural heritage and protection of sites of archaeological or historical importance. In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon items of cultural heritage or sites of archaeological or historical importance.

Within the planning permission description, it is stated by Kilkenny County Council that: "*The existing quarry is included in the Record of Protected Structures listed in the 2002 County Development Plan as a Grade 4 industrial archaeology site (RPS Ref: D129)*". Notwithstanding this, the restoration of the site back to beneficial agricultural use was obviously something that was viewed as being a positive development and one that would not compromise the former quarry (as the former quarry footprint would still remain intact, but would be filled in with suitable material – something which is not irreversible in archaeological terms).

The existing facility at Grannagh does not contain, nor is close to, nor abuts any protected archaeological site or monument. The activity will therefore have no direct or indirect impacts upon archaeology.

The landscape where the site is located does not have specific historical, cultural or archaeological significance apart from its historical significance as an area of past quarrying.

There are no standing structures within the area of land interest and due to the nature of the existing soil and stone recovery activity it is envisaged that there will be no direct negative impacts on the architectural heritage or the local area. The emplacement of soil and stone within the void of the quarry cannot destroy any unknown subsurface archaeological features as the site is not being excavated or cleared, but rather layers of inert soil and stone will be placed upon the existing excavated land surface (historically, the original excavation works would have removed any known or unknown archaeology anyway) .

As the development intends to reinstate the land for beneficial agricultural use and will not stretch past its current limits there will be no disturbance to the townland boundary or name. Therefore, there are no potential impacts of the proposed development to the cultural heritage record.

3.7.4 Mitigation Measures

As it is concluded that there will be no direct or indirect impacts upon Cultural Heritage, no specific mitigation measures are required or are proposed.

However, notwithstanding this, the site operator will recognise and adhere to Condition 3 of the Planning Permission Register no. 06/1772 which relates to mitigation measures to ensure the protection of any unknown archaeology on-site:

Condition 3. (a) The applicant is required to employ a suitably qualified archaeologist to monitor all site clearance associated with the development of the existing quarry area.
(b) Should archaeological material be found during the course of monitoring, the archaeologist may have work on the site stopped, pending a decision as to how best to deal with the archaeology. The developer shall be prepared to be advised by this Department with regard to any unnecessary mitigating action (eg. Preservation in situ, or excavation) and should facilitate the archaeologist in recording any material found.
(c) The Planning Authority and the Department of the Environment, Heritage and Local Government shall be furnished with a report describing the results of monitoring.
Reason: To ensure the continued preservation (either in situ or by record) of places, caves. Site features or other objects or archaeological interest,

SECTION 3.8:
HUMAN BEINGS AND MATERIAL ASSETS

CONTENTS

3.8 HUMAN BEINGS AND MATERIAL ASSETS

3.8.1 Introduction

This section of the EIS outlines a brief summary of any potential impacts upon Human Beings and Material Assets from the existing soil recovery and C&D materials recycling facility at Grannagh, Kilmacow, Co. Kilkenny, which is subject to a Waste Licence Application – Ref: W0260-01.

In undertaking this study, due regard has been had to aspects such as infrastructure and economic activities and recreation and cultural matters in the vicinity of the site, and the impact of the continued restoration of the application site on these factors.

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772.

The site activities carried out under the existing Waste Permit and which are subject to the Waste Licence Application W0260-01, have been fully examined by Kilkenny County Council and assessed in relation to matters relating to human beings and protection of residential amenity and material assets.

In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon human beings or material assets such as roads and traffic.

For the past ca. 10 years, the Grannagh facility has operated under strict and rigid controls and conditions to protect human beings and material assets such as roads. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning impacts upon human beings or material assets. This is confirmed by annual environmental audits carried out by Kilkenny County Council and the on-site Environmental Management Program which records and incidents or complaints of which there have been none.

Notwithstanding this point, this section of the EIS identifies and assesses any potential impacts upon human beings and material assets

3.8.2 Existing Environment

3.8.2.1 Existing Site Activities

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use. The backfilling of the existing void with inert soils and stone is deemed to constitute inert waste recovery for the

purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing. The material will be brought to the tipping area and post visual inspection will be graded over the active restoration area with a bulldozer.

The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

In addition, the site operates as an inert construction and demolition materials recycling and transfer facility whereby construction and demolition material is screened and crushed in order to produce a secondary aggregate which can be recycled, stored and re-sold as a certifiable secondary aggregate products for re-use by the construction industry. Suitable soil and stones of a size of 0 – 40 mm are re-incorporated into the restoration of the former quarry.

In general, the recycling of inert construction and demolition waste in this way is the highest tier on the waste hierarchy to which this waste stream can be assigned. The Grannagh Facility is a vital part of Waste infrastructure to help Ireland meet the targets set for 2020 for C&D Waste under the EU Waste Framework Directive (2008/98/EC). This is beneficial in terms of serving society wit alternatives to primary aggregates and also reduces CO^2 emissions in the production of cement and concrete products.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for recovery at the site as already permitted and authorised by the existing waste permit and planning permission. The sole reason a Waste Licence was applied for, was due to the changes in the National Waste Permit legislation and the obligations which this brought.

3.8.2.2 Surrounding Land Use

Figure 3.8.2.2.1 shows the surrounding land use within the geographical location of the existing Grannagh Recovery Facility. The main features to note with regards to the existing Waste Recovery facility and surrounding land-use are as follows:

- The former N24 Waterford to Limerick National Primary route was in the recent past downgraded to a secondary local route – the L7526 and this is now where the site entrance into the facility is located which is fully authorised under planning permission. This had a significant effect on the overall landholding owned by Mr. Bob Murphy upon which CHI Environmental Ltd. lease their waste recovery facility. The new Granny Roundabout and N24/M9 routes effectively bisected the existing quarry site into two distinct sections.

Figure 3.8.2.2.1: Existing Site and Surrounding Land-Use

- The city of Waterford is ca. 4 km south-east of the existing site and the facility provides an essential piece of waste recovery and recycling infrastructure to the city and hinterland.

- The lands adjacent to the Grannagh facility are principally used for productive pasture land for the grazing of livestock.

- The existing site has excellent access to the National Roads network, with the N24, M9 and N25 all accessible within ca. 1 km of the site. Furthermore the site is encircled by public roads which has a bearing on existing background noise levels in the vicinity of the facility. There is also the main Irish Rail line which passes within 1 km to the east of the site before branching into two arms, with the western arm running within 1 km of the site in a northerly direction.

- There is a large existing active rock quarry operated by Roadstone located west north west of the site off the N24. This demonstrates the history and importance of rock extraction in the area in addition to the former Granny rock quarry.

- To the west of the site, within 1 km is the Dawn Meats Factory. This demonstrates other industrial land uses within the vicinity of the existing waste recovery facility.

- The existing recovery site which has been in operation since 2004 is located within good fertile agricultural pasture lands. Many of the fields in the area have been amalgamated into larger field units and farming is the principal land use in the area. The quarry areas currently being restored will be returned back to productive agricultural land upon completion of the works with a consequential benefit to agriculture.

- To the south of the site and separated by the intervening landscape, topography and the former N24 road (now downgraded to a secondary local route - the L7526) is the River Suir. This is located at a much lower level than the floor of the former quarry and also therefore the proposed finished restoration profile of the reclaimed quarry. The former quarry site and the recovery facility have no surface water features, i.e. streams or rivers which connect to the River Suir.

3.8.2.3 Local Housing Settlement Pattern

The nearest densely populated area close to the site is Waterford City 4 km south-east of the existing site. **Figure 3.8.2.3.1** shows the existing site and the local settlement pattern of the area. This information was gathered through a local residential housing survey; consultation with Ordnance Survey Mapping; Aerial Photographs and Google Maps and Google Street View; in combination with local knowledge from the site operators.

The local housing settlement plan shows the individual dwelling houses which one could consider as the closest sensitive receptors. There are no nearby public buildings i.e. schools or churches where people congregate.

The assessment of potential impacts relating to dust and noise upon human beings is discussed in the relevant sections of the EIS, but it is important to note that the C&D recycling activities are carried out in the north-eastern section of the site far away from any potential sensitive receptors and likewise the restoration of the former rock quarry is phased in a north-westerly

direction away from any potential sensitive receptors. Issues pertaining to traffic and roads is considered to have been fully addressed by Kilkenny County Council in granting full planning permission to the site and new site entrance in 2006 and in the further granting of a second waste permit in 2007.

Figure 3.8.2.3.1: Local Housing Settlement Pattern

Agriculture, particularly livestock grazing is a fundamental part of the local economy and culture of the local community and this recovery project will further assist in providing productive agricultural land in the area for future generations without having any detrimental impact upon the local environment.

3.8.2.4 Demography

Baseline information on the demography of the local Grannagh area was obtained through reference to the Central Statistics Office (CSO) census data for 2006 and 2011.

The Grannagh Facility is located within the townland of Granny within the District Electoral Division (DED) of Aglish, Co. Kilkenny. The CSO Census results for 2011 for the townland of Granny is shown in **Figure 3.8.2.4.1**.

The total population within the townland of Granny in the 2011 Census was 211, of which males numbered 110 and females were 101. The total housing stock was 82 of which vacant households numbered 7. No comparable figures for the townland of Granny are available for the 2006 Census, however, comparable census figures are available for the DED of Aglish for 2006 and 2011 in which the townland of Granny and the existing Grannagh Facility is located. This is shown in **Table 3.8.2.4.1**.

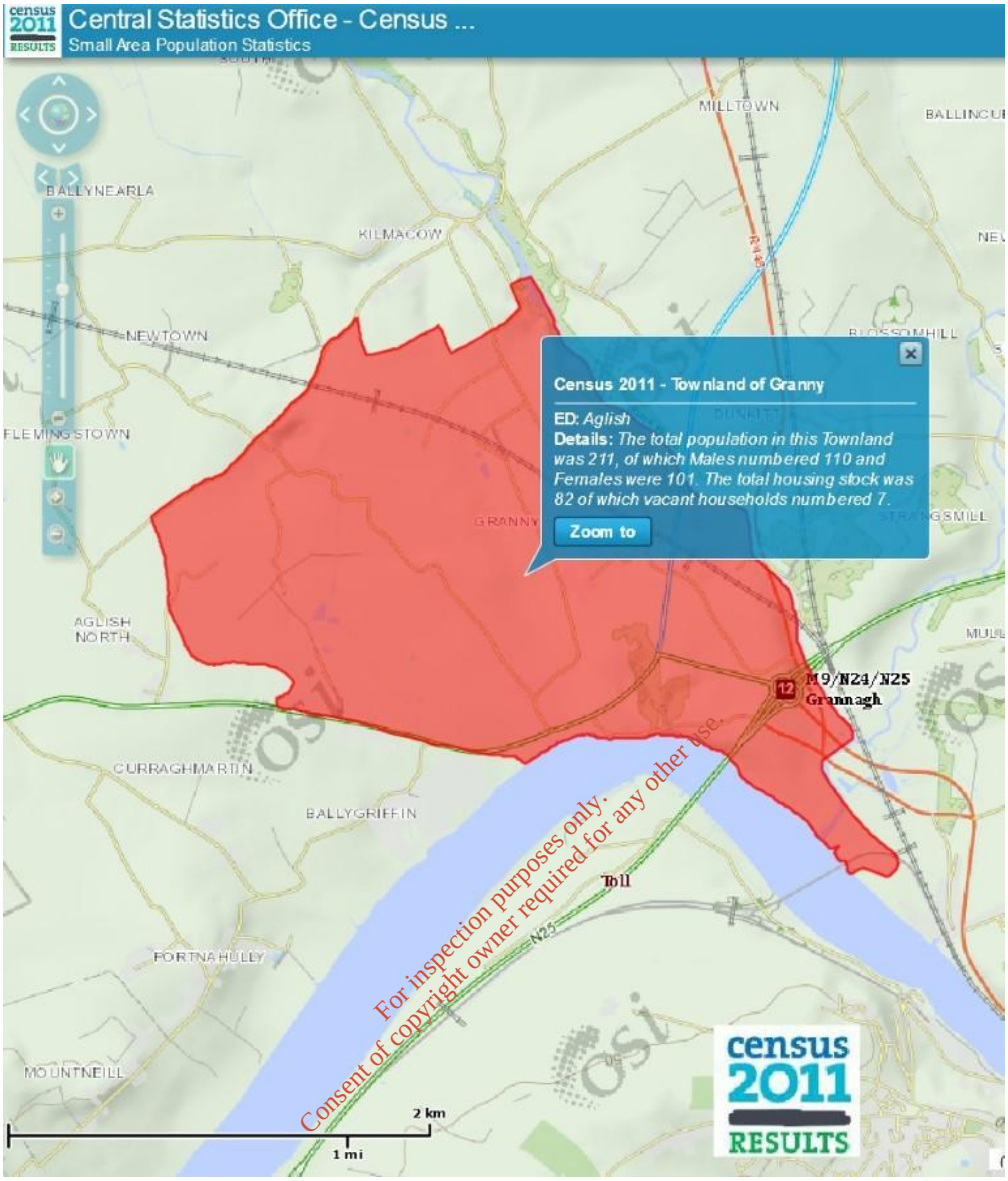


Figure 3.8.2.4.1: 2011 Census Results for the Townland of Granny (Source: CSO)

Census Year	Males	Females	Total
2006	484	436	920
2011	465	406	871

Table 3.8.2.4.1: Census Data for DED of Aglish, Co. Kilkenny (DED 07099). Source CSO

The demographic trend for the period of 2006 to 2011 shows a marked decrease in the overall population within the DED of Aglish from 920 people in 2006 to 871 in 2011. This equates to a 5.3 % decrease in the population. This trend may be explained through the economic downturn which occurred in the period post 2006 and continues to this day and without doubt led to people leaving rural areas in search of jobs in urban areas or emigration abroad.

3.8.2.5 Employment

3.8.2.5.1 Local Employment

Table 3.8.2.5.1.1 shows the breakdown of employment types in the Aglish DED for the 2011 census (source: CSO). Based on the known land-uses within the general area (i.e. Dawn Meats, Roadstone Quarry,) and the proximity of the major employment centre of Waterford City and excellent local road transport links, the findings are not surprising. The agricultural employment figures of ca. 9 % is almost twice the national average suggesting the strong agricultural base of the area.

The high number of people employed in manufacturing industries (16.4 %) may be reflective of the local Dawn Meats plant and Roadstone quarry and other manufacturing businesses in nearby Waterford City. This again is well above the national average. The employment figures also suggest Building and Construction makes up 10% of the workforce and may be reflective of the active quarrying in the area and proximity to Waterford City and construction projects.

Females from the Aglish DED area are primarily employed in Commerce and trade and Professional services.

Persons at work by industry and sex		
Industry	Males	Females
Agriculture, forestry and fishing	26	4
Building and construction	27	6
Manufacturing industries	35	19
Commerce and trade	39	31
Transport and communications	20	2
Public administration	9	7
Professional services	23	47
Other	19	16
Total	198	132

Table 3.8.2.5.1.1: Breakdown of Employment Types in the Aglish DED for 2011

3.8.2.5.2 Employment at the Grannagh Facility

CHI Environmental Ltd., is a local County Kilkenny owned/operated company, which provides employment to ca. 8 no. people in the Kilmacow area. The company entered the Waste Management Area in 2004, when they applied for and received a Waste Facility Permit WMP 22/2003 from Kilkenny County Council.

CHI Environmental Ltd is a member of the Soil Recovery Association (SRA) which is a National Organisation affiliated to the Construction Industry Federation (CIF) which represents Members involved in the excavation, transport and recovery of soil and stones at authorised permitted and licensed soil and stone recovery facilities.

All personnel working at the Waste Licenced Facility are qualified on the basis of appropriate education, training and experience (as is required) and all are fully aware of the requirements.

The site Managing Director has completed the FAS waste management course for facility operation in 2006.

3.8.2.6 Site Office and Staff Accommodation

All site administration and management functions are based at a temporary site office cabin near to the weighbridge. This office is suitable for the processing and storage of documentation. All visitors entering the facility must report to the site office. Permanent telephone, fax and email facilities are all provided at the temporary site office. The site health and safety statement; copies of environmental information, including copies of the current waste permit are stored in the site office.

All key site personnel with responsibility for site backfilling and restoration works and for the C&D materials recovery and recycling operations at the existing site are contactable by mobile phone. This includes the facility manager and deputy facility manager who are contactable by mobile phone at all times during the facility operation times,

There is currently site accommodation for staff personnel in the form of a temporary on-site welfare cabin which provides changing facilities, hand washing, cooking facilities and toilet. This is located adjacent to the office facility.

3.8.2.7 Traffic and Roads

The works proposed under the existing waste permit and the Waste Licence involves the recovery of approximately 125,000 tonnes per annum of inert soil and stones for the purposes of restoring a former rock quarry to beneficial agricultural use, and for the importation and recycling of approximately 45,000 tonnes per annum of inert construction and demolition material for the purposes of re-sale as certifiable secondary (recycled) aggregate for re-use in the construction industry.

Based on the proposed annual intake, it is expected that there will be approximately 10,000 rigid tipper truckloads of soil and stone, and construction and demolition material delivered to the site on an annual basis (i.e. ca. 200 loads per week). A large proportion of the lorries that leave the site will be reloaded and used for deliveries off-site of recycled secondary aggregates. These therefore do not generate any new or additional traffic movements. Based on a recovery/recycling rate of ca. 85% plus, then ca. 38,250 tonnes of certified secondary aggregates will be sold off-site per annum. This equates to about 2,400 lorry loads per annum or ca. 48 lorry loads per week based on a 50 week year leaving the facility.

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772.

In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the

development would not negatively impact upon human beings or material assets such as roads and traffic.

The existing site has excellent access to the National Roads network, with the N24, M9 and N25 all accessible within ca. 1 km of the site. Furthermore the site is encircled by public roads which has a bearing on existing background noise levels in the vicinity of the facility.

For the past ca. 10 years, the Grannagh facility has operated under strict and rigid controls and conditions to protect human beings and material assets such as roads. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning impacts upon human beings or material assets. This is confirmed by annual environmental audits carried out by Kilkenny County Council and the on-site Environmental Management Program which records and incidents or complaints of which there have been none.

The Facility Manager on the site maintains a record of the tonnage of each load entering and leaving the site. This allows him to keep an accurate record of volumes/quantities of materials being accepted at the facility on a daily, weekly and annual basis.

Access to the application site can only be gained via an authorised bell-mouth site entrance off a secondary road, the L7526, which was downgraded and was previously the N24 Waterford to Limerick national primary route. This was all covered under Planning Permission Register no. 06/1772.

Upon entering the site, authorised vehicles pass through double lockable security gates and then proceed along the access road and are directed towards the site office and weighbridge. Here a record sheet is completed; weight taken on the weighbridge and then the vehicle is directed to the appropriate unloading and inspection area.

The existing recovery site operates a comprehensive CCTV recording system with up to 7 (seven) cameras operating at any one time. These are strategically positioned to be able to fully monitor site access and security and traffic movement.

The site operational hours are between 08.00 hours and 18.00 hours each weekday and 08.00 hours to 14.00 hours on Saturday. No materials are accepted at any other time including Sundays and Public Holidays. The site entrance gates are locked shut when the facility is closed and unsupervised.

All trucks delivering inert materials to this site will be confined within the Applicant's landholding. Trucks will initially travel over a paved road surface on to the site before travelling over a network of unpaved internal roads to get to the active restoration area or the C&D materials recycling area. All site roads will be maintained to ensure the safe movement of vehicles within the facility. Provision for employee and visitor car parking is currently provided on a paved area adjacent to the site office, where all visitors must report to before entering the site.

Internally within the application site, warning notices, direction signs and speed restriction signs are located along paved and/or unpaved roads leading to and from the active restoration areas and the construction and demolition waste recycling area.

In order to prevent soiling of public roads with dust and soil materials from rigid tipper trucks, a temporary wheelwash facility has been installed close to the site entrance. All egressing site traffic is required to pass through the wheel wash. Also paved roads on site are cleaned with the on-site tractor driven mechanical road sweeper.

3.8.3 Assessment of Potential Impacts

Baseline noise and dust studies and on-going monitoring of dust has been carried out to assess the existing noise and dust levels associated with the operation of the existing recovery facility at Grannagh and how this might have an impact on potential sensitive receptors. These surveys demonstrate that the existing operation is not impacting upon Human Beings in a negative manner and therefore there is no impairment of their amenities or a reduction in property values as a consequence of the existing and proposed site activities.

The existing recovery facility, as permitted, does not have existing or proposed extraction wells from Groundwater (there are only two groundwater monitoring wells). No groundwater wells were identified in close proximity to the site supplying water for domestic and animal needs. There is therefore no likely impact upon drinking water for Human Beings.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for recovery at the site as already permitted and authorised by the existing waste permit and planning permission. The sole reason a Waste Licence was applied for, was due to the changes in the National Waste Permit legislation and the obligations which this brought.

This site at Grannagh has been subject to industrial activity in terms of rock extraction for almost 200 years and therefore this area has always had a visible presence within the local community and the restoration and recycling activities at the site seek to restore this former rock quarry whilst also operating a market leading C&D materials recycling facility.

Due to the inert nature of the soil and stone recovered & reclaimed at the site, vermin do not present an environmental nuisance and there will be no change in this regard in the application for a licence review.

The existing authorised Hours of Operation during daylight hours only ensure that site operations and traffic do not cause nuisance to Human Beings. These hours are as follows:

- **Hours of Operation and Waste Acceptance/Handling:**

8.00am to 6.00pm - Monday to Friday
8.00am to 2.00pm - Saturday
Closed - Sundays & Bank Holidays

The existing Grannagh facility does not contain, nor is close to, nor abuts any archaeological monuments. The activity will therefore have no impact upon archaeology. The quarry site is noted for its geological interest which has been discussed elsewhere in the EIS.

For the past ca. 10 years, the Grannagh facility has operated under strict and rigid controls and conditions to protect human beings and material assets such as roads. As such there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning impacts upon human beings or material assets. This is confirmed by annual environmental audits carried out by Kilkenny County Council and the on-site Environmental Management Program which records and incidents or complaints of which there have been none.

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use. The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

In general, the recycling of inert construction and demolition waste in this way is the highest tier on the waste hierarchy to which this waste stream can be assigned. The Grannagh Facility is a vital part of Waste infrastructure to help Ireland meet the targets set for 2020 for C&D Waste under the EU Waste Framework Directive (2008/98/EC). This is beneficial in terms of serving society wit alternatives to primary aggregates and also reduces CO^2 emissions in the production of cement and concrete products.

The facility has therefore no potential significant negative impacts upon Human Beings or Material Assets but rather is a recovery and recycling facility with environmental gains and benefits to the local area and Co. Kilkenny and Waterford City.

3.8.4 Mitigation Measures

As it is concluded that there will be no direct or indirect negative impacts upon Human Beings or Material Assets of the area no mitigation measures outside those already set out in the EIS concerning the day to day operation of the site are required or are proposed. Any mitigation measures outlined in other sections of this EIS are primarily directed to the protection of adjacent sensitive receptors such as residential dwellings.

Rather there will be positive impacts as a consequence of the application for a Waste Licence W0260-01 such as continued local employment; increased agricultural productivity; and increased recycling of C&D materials and their re-sue and sale as secondary aggregates to the construction industry.

Furthermore, for the past ca. 10 years, the Grannagh facility has operated under strict and rigid controls and conditions to protect human beings and material assets such as roads. As such

there have never been any environmental incidents or cause for concern from the site operators or the Local Authority concerning impacts upon human beings or material assets. This is confirmed by annual environmental audits carried out by Kilkenny County Council and the on-site Environmental Management Program which records and incidents or complaints of which there have been none.

All in all it is considered that CHI Environmental Ltd. operate an extremely well run and well-monitored permitted soil recovery and C&D materials recycling facility.

SECTION 3.9:
LANDSCAPE AND VISUAL ASSESSMENT

CONTENTS

3.9 LANDSCAPE AND VISUAL ASSESSMENT

3.9.1 Introduction

This section of the EIS describes the existing landscape and includes a visual assessment of the existing landscape and provides a description of how the final restored site will appear. This section of the EIS identifies potential impacts upon landscape and visual amenity and examined mitigation measures (if required).

It should be noted that landscape includes other elements apart from the visual element and these have already been discussed and addressed in detail within this EIS. Natural heritage has been reviewed and discussed in and Section 3.2 of this EIS. Cultural Heritage including Architectural, Archaeological and Historical elements of the landscape has been discussed in Section 3.7 of this EIS. Section 2 of the EIS provides a detailed assessment and description of the site layout and character, topographical levels and restoration drawings, and Section 3.8 outlines the local settlement pattern and potential impacts upon Human Beings.

A full review and assessment has been made with regards to Landscape Protection in the Kilkenny County Development Plan 2014 – 2020.

CHI Environmental Ltd. commenced recovery and recycling operations at The Quarry at Grannagh in April 2004, when they applied for and were granted a Waste Permit WMP 22/2003 from Kilkenny County Council. The existing permitted site was granted another Waste Permit (No. WMP 23/2007) by Kilkenny County Council in November 2007. In December 2006, full planning permission was granted by Kilkenny County Council for the site recovery activities - Register no. 06/1772.

The site activities carried out under the existing Waste Permit and which are subject to the Waste Licence Application W0260-01, have been fully examined by Kilkenny County Council and assessed in relation to matters relating to landscape and visual assessment. In making their decision to grant planning permission for the restoration of the former rock quarry and the C&D recycling activities, Kilkenny County Council were satisfied that the development would not negatively impact upon the landscape or create a negative visual impact.

Within the planning permission description, it is stated by Kilkenny County Council that: "*The existing quarry is included in the Record of Protected Structures listed in the 2002 County Development Plan as a Grade 4 industrial archaeology site (Ref: D129)*". Notwithstanding this, the restoration of the site back to beneficial agricultural use was obviously something that was viewed as being a positive development and one that would not compromise the former quarry (as the former quarry footprint would still remain intact, but would be filled in with suitable material – something which is not irreversible in archaeological terms).

CHI Environmental Ltd. applied for a Waste Licence (Ref: WO260-01) to the EPA on 13/2/2009 and in accordance with the relevant legislation, they continue to operate under their present Waste Permit (No. WMP 23/2007) under the authority of Kilkenny County Council until the waste licence application is decided upon by the Agency.

The Waste Licence Application provides for an existing inert soil and stone recovery facility for the restoration of a former rock quarry to beneficial agricultural use. The backfilling of the existing void with inert soils and stone is deemed to constitute inert waste recovery for the purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing. The material will be brought to the tipping area and post visual inspection will be graded over the active restoration area with a bulldozer.

In addition, the site operates as an inert construction and demolition materials recycling and transfer facility whereby construction and demolition material is screened and crushed in order to produce a secondary aggregate which can be recycled, stored and re-sold as a certifiable secondary aggregate products for re-use by the construction industry. Suitable soil and stones of a size of 0 – 40 mm are re-incorporated into the restoration of the former quarry.

The application for Waste Licence W0260-01 is for the continued recovery operations as per the existing Waste Permit, and the application for a Waste Licence creates no proposed significant change to the content, nature, composition or volume of materials intended for recovery at the site as already permitted and authorised by the existing waste permit and planning permission. The sole reason a Waste Licence was applied for, was due to the changes in the National Waste Permit legislation and the obligations which this brought.

Furthermore, the recovery activities do not entail the excavation of material from the site (say like a quarry) but rather the restoration of the exhausted rock quarry site with inert soil and stone. Therefore any direct impacts upon the landscape and any visual impact would have occurred in an historical sense during the past excavation of the quarry void which removed all surface features and the rock below.

3.9.2 Existing Environment

3.9.2.1 Existing Landscape

Figure 3.9.2.1.1 shows the landscape within the geographical location of the existing Grannagh Recovery Facility. The main features to note with regards to the existing Waste Recovery facility and surrounding land-use are as follows:

- The former N24 Waterford to Limerick National Primary route was in the recent past downgraded to a secondary local route – the L7526 and this is now where the site entrance into the facility is located which is fully authorised under planning permission. This had a significant effect on the overall landholding owned by Mr. Bob Murphy upon which CHI Environmental Ltd. lease their waste recovery facility. The new Granny Roundabout and N24/M9 routes effectively bisected the existing quarry site into two distinct sections.

Figure 3.9.2.1.1: Existing Site and Surrounding landscape

- The city of Waterford is ca. 4 km south-east of the existing site and the facility provides an essential piece of waste recovery and recycling infrastructure to the city and hinterland.

- The lands adjacent to the Grannagh facility are principally used for productive pasture land for the grazing of livestock.

- The existing site has excellent access to the National Roads network, with the N24, M9 and N25 all accessible within ca. 1 km of the site. Furthermore the site is encircled by public roads which has a bearing on existing background noise levels in the vicinity of the facility. There is also the main Irish Rail line which passes within 1 km to the east of the site before branching into two arms, with the western arm running within 1 km of the site in a northerly direction.

- There is a large existing active rock quarry operated by Roadstone located west north west of the site off the N24. This demonstrates the history and importance of rock extraction in the area in addition to the former Granny rock quarry.

- To the west of the site, within 1 km is the Dawn Meats Factory. This demonstrates other industrial land uses within the vicinity of the existing waste recovery facility.

- The existing recovery site which has been in operation since 2004 is located within good fertile agricultural pasture lands. Many of the fields in the area have been amalgamated into larger field units and farming is the principal land use in the area. The quarry areas currently being restored will be returned back to productive agricultural land upon completion of the works with a consequential benefit to agriculture.

- To the south of the site and separated by the intervening landscape, topography and the former N24 road (now downgraded to a secondary local route - the L7526) is the River Suir. This is located at a much lower level than the floor of the former quarry and also therefore the proposed finished restoration profile of the reclaimed quarry. The former quarry site and the recovery facility have no surface water features, i.e. streams or rivers which connect to the River Suir.

3.9.2.2 Historical Development of the Grannagh Quarry within the Landscape

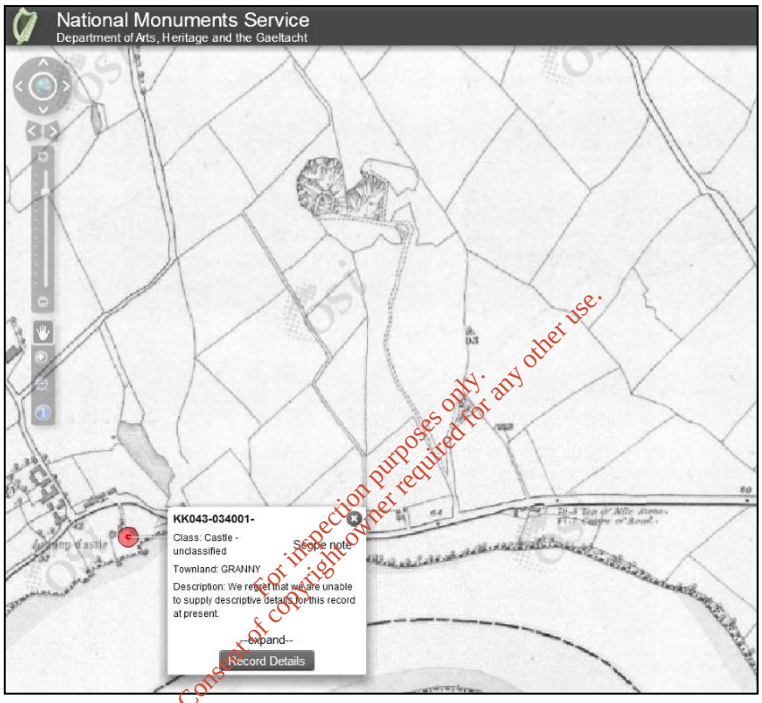
The following aerial photographs and Ordnance Survey maps contained as **Figures 3.9.2.2.1** clearly show that there has been quarrying activity at the Grannagh site for ca. 200 years. The OS aerial photo is some years old now and probably dates from ca. 2000 as neither the site restoration works nor the new N24 road are shown.

The historical 6 inch Ordnance Survey Map also shows the presence of quarrying to the north-west of the present day site which then extended in a southerly direction.

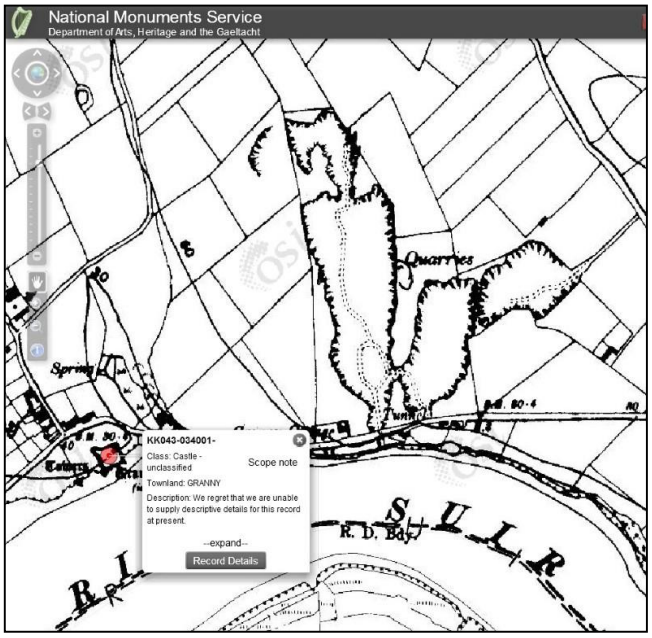
The former quarry site at Grannagh has been used for the authorised land restoration using inert soil and stone material for the consequential benefit to agriculture since 2004. A small portion of the quarry site has been infilled satisfactorily to date as part of this process, and is presently covered in hardstanding and is partially where the C&D material recycling and stockpiling occurs.

The subject lands have little or no agricultural benefit at present due to extensive and historical quarrying activities. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to soils in the area from an agronomy perspective.

Figures 3.9.2.2.1: Maps and Aerial Photographs Showing the Development of the Grannagh Quarry Footprint from ca. early 19th Century up to recent times.



Historic 6 Inch Ordnance Survey Map



Cassini 6 Inch Ordnance Survey Map

OS Aerial Photo (Not Current) Probably from ca. 2000

Recent Aerial Photograph of Site Showing Restored Eastern Section and New N24 Bisecting the Quarry Site (Source: Bing)

3.9.2.3 Planning Status of the Grannagh Quarry Site and Landscape Protection

The existing Grannagh soil recovery and C&D materials recycling facility is located within the Landscape Character Type: "Lowland" within Figure 8.2 of the Kilkenny County Development Plan 2014-2020.

A protected view pointing west is located to the east of the site and it is presumed that this relates to the view towards Granny Castle.

Within the planning permission description, it is stated by Kilkenny County Council that: "*The existing quarry is included in the Record of Protected Structures listed in the 2002 County Development Plan as a Grade 4 industrial archaeology site (RPS Ref: D129)*". Notwithstanding this, the restoration of the site back to beneficial agricultural use was obviously something that was viewed as being a positive development and one that would not compromise the former quarry (as the former quarry footprint would still remain intact, but would be filled in with suitable material – something which is not irreversible in archaeological terms).

Within the current Kilkenny County Development Plan the Granny Quarry is listed as a County Geological Site as Site no. 11 listed in Appendix E and shown on Figure 8.1 in the plan. It is noted for being a "*Disused quarry exposing limestone*".

As the new N24 has bisected the original quarry footprint and split the former rock quarry into separate sections, it is likely in the short term that the northern sections will remain as exposed disused limestone quarries. The N24 road recently went through the full planning process and an EIS to address any environmental or landscape issues and was allowed to proceed. The existing Grannagh facility has been granted full planning permission by Kilkenny County Council for the site restoration works to the former limestone quarry. This is with the knowledge that the site was on the RPS as a County Geological Site.

It is important to note that current best practise in quarrying and in getting authorisation for quarry development, is to be able to demonstrate full restoration plans in a phased and logical manner. Historically, rock quarrying only sought to remove the valuable rock resource with little if any thought of restoration or further use for the quarried lands. The restoration activities carried out by CHI Environmental Ltd. addresses this issue by the phased restoration of the quarry void back to beneficial agricultural use. The importation of subsoil involves land levelling, reinstatement of topsoil and reseeding with a good quality grass seed mixture, the end result will be beneficial to agriculture in the area from an agronomy perspective.

This fully complies with the policies set out in the current Kilkenny County Development Plan 2014 -2020 which states in Section 6.4.2 with regards to quarries:

- Ensure that all existing workings shall be rehabilitated and that all future extraction activities will allow for the rehabilitation of pits and proper land use management.
    - The Council may require that development is phased and that each phase is rehabilitated before the next phase is developed/commenced;
    - The Council shall require applicants to submit a restoration programme with their application on the manner and timing of restoration;
    - The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

and:

- The Council will consider the current land/quarry resource of the applicant and may seek that current quarries are restored before new sites are developed.

3.9.2.4 Visual Impact Survey and Assessment of the Visual Impact of the Grannagh Facility upon the Landscape

A detailed photographic survey was carried out, taking into account all potential viewing points from which the Grannagh soil and stone recovery and C&D materials recycling facility may be visible from the surrounding landscape i.e. from major transport routes or roads.

It is important to stress that the Grannagh facility has been continuously operational since 2004 and that the N24 and N9 roads are relatively new within the landscape and the Grannagh Facility pre-dates these. Therefore these roads have encroached on the existing Grannagh facility, rather than the other way around. Previous to these roads being constructed the only major road was the now downgraded N24 which ran along the southern boundary of the site. This has now been downgraded to a secondary local road, the L7526.

It is fair to state therefore that the potential viewing points into the Grannagh facility have increased as a consequence of the new road network which now essential encircles the Grannagh Facility. Notwithstanding this, the operators of the Grannagh Facility continue to ensure that the authorised facility has as minimum a visual impact upon the local landscape as much as is practicable. This is achieved through the strategic placing of landscaping berms on potentially exposed view points and the maintenance and retention of all mature treelines and hedgerows. As the former Grannagh Quarry left a void, much of the restoration work occurs below the surrounding existing topography which also assists in the assimilation of the recovery operation within the existing landscape.

A total of 9 key viewing points were chosen from within and around the vicinity of the site boundary to ascertain the potential visual impact that the Grannagh recovery facility may have on the landscape. Each viewing point has a representative photograph shown below. These viewing points/photograph locations are identified on the aerial photo which forms **Figure 3.9.2.4.1** One must also remember that this is a former deep limestone quarry which was extensively worked, leaving a large scar and void within the landscape. In present times such practise of abandoning a quarry without proper restoration with a view to future-use would run counter to best planning policy and best practice. The restoration of the quarry by CHI Environmental Ltd. will essentially return the lands to their pre-excavation state in terms of visual impact, with the lands being progressively filled, top-soiled and seeded and returned to productive agricultural use, consistent with the surrounding and adjoining land uses and field patterns of the local landscape.

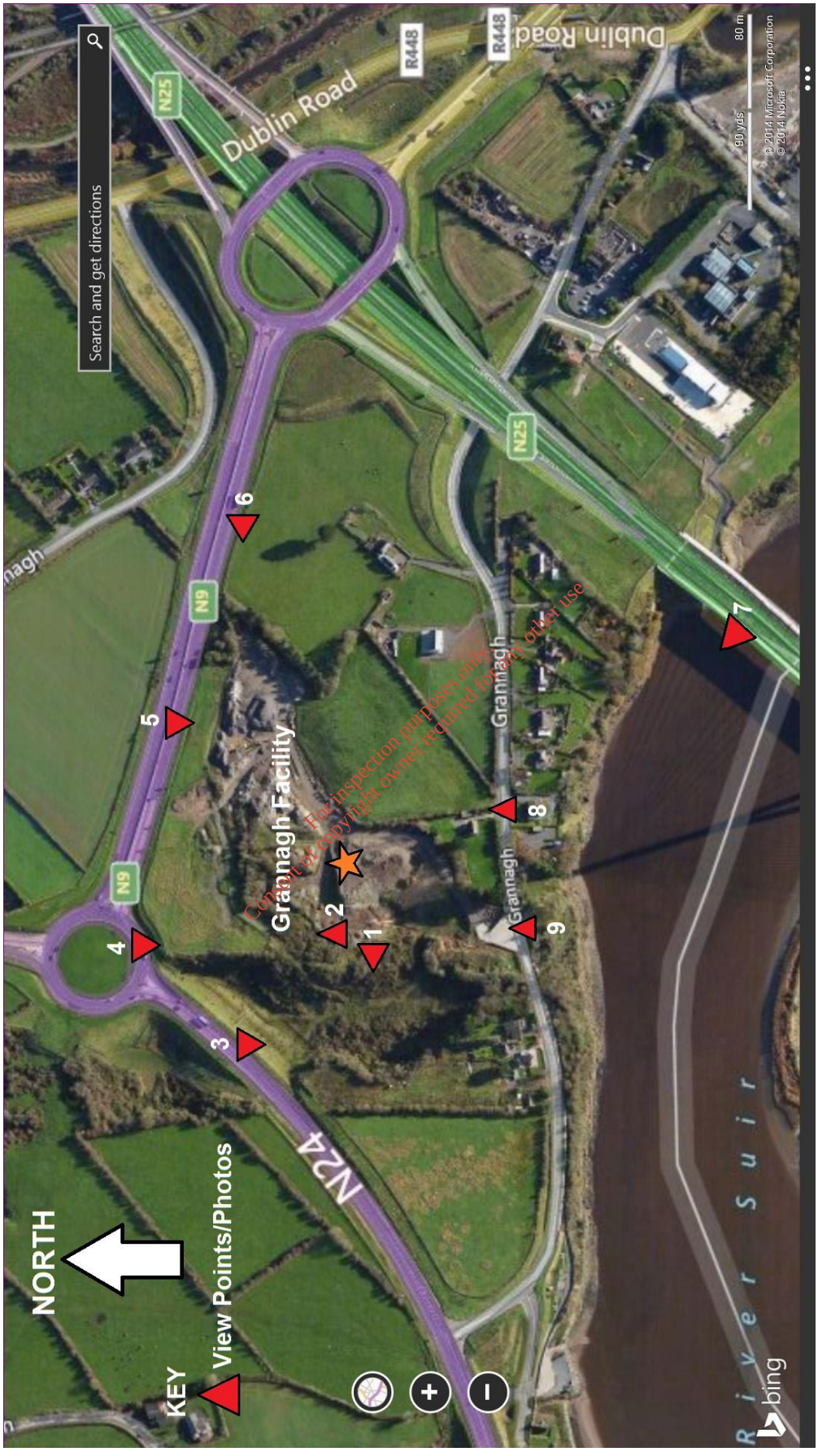


Figure 3.9.2.4.1: Aerial Photo Showing Location of Key Viewing Points/Photographs

View 1: Restoration Works within Grannagh Site looking NW towards the new N24

View 2: Restoration Works within Grannagh Site looking North to Granny Roundabout

View 3: Looking South into the Grannagh Restoration Site from new N24

View 4: Looking South towards the Grannagh Site from Granny Roundabout

View 5: Looking South into Grannagh C&D Recycling Site from new N9

View 6: Looking West along new N9 with Grannagh C&D Recycling Site Hidden from View by Existing Treelines and Topography

View 7: Looking North-west across River Suir towards the Grannagh Site from the new N25 Bridge. Site is not visible.

View 8: Looking North from L7526 via Nearest Dwelling towards Grannagh Facility which is not visible

View 9: Looking North from L7526 Public Road into the new authorised Site Entrance for the Grannagh Recovery Facility.

3.9.2.5 Phasing, Decommissioning, Restoration and Aftercare

The principle activity undertaken at the application site is the restoration of lands within a former limestone rock quarry. As previously noted, the site will be restored on a phased basis moving in a northerly direction to give a landform which merges into the surrounding undulating pastoral landscape, as shown in the site survey plan and restoration drawings.

On completion, the final landform will be profiled to give a domed shape in order to facilitate rainwater to percolate into in-situ sand and gravels along the site boundary. It will then be sown with grass in order to promote stability and minimise soil erosion and dust generation and the lands will be progressively returned to their former use as agricultural grassland.

The construction and demolition material recovery and recycling activity will continue to operate as a going-concern long after the site quarry restoration works are completed. It is envisaged that the life time of this business is in excess of twenty years as the recycling of C&D material is only going to become more important for society especially with the recycling targets set for C&D waste by 2020 under the Waste Directive 2008/98/EC

If and when the C&D recycling operation ceases, all mobile plant and equipment would be progressively removed off-site or decommissioned.

Whenever possible, hardstanding surfaces would be broken up using a hydraulic breaker and subjected to validation testing to confirm the materials are acceptable for re-use in ongoing land restoration works. Any materials are found to exceed inert waste criteria will be transferred off site to a suitable licensed waste disposal or recovery facility.

Following completion of the restoration and site decommissioning works, provision would be made for further, short term (<1 year) environmental monitoring of groundwater.

3.9.3 Assessment of Impacts upon Landscape

The thorough visual assessment carried out has demonstrated that the Grannagh Facility is not highly visible within the landscape. This is despite encroachment closer and closer to the site by new roads and major traffic routes.

It is accepted that as time progresses the restoration works will progress closer towards the N24 and Grannagh Roundabout, but this must be considered in the context that these works are fully authorised and covered under the current waste permit and the planning permission and seek to fully restore the former quarried lands to productive agricultural lands consistent with the surrounding landscape.

It is therefore concluded that the Grannagh facility, does not and will not have a significant impact upon the landscape in terms of visual impact or compatibility of use.

3.9.4 Mitigation Measures

As it is concluded that there will be no direct or indirect negative impacts upon landscape or Visual Assessment, no mitigation measures outside those already set out in the EIS concerning the day to day operation of the site are required or are proposed. The operators already minimize visual impacts through the strategic siting of equipment; use of landscape berms and maintenance and retention of mature hedgerows and treelines.

Rather there will be positive impacts as a consequence of the continuation of the Grannagh Facility, such as the restoration of a formerly abandoned and unrestored rock quarry and scar on the landscape. The site works will also provide additional reclaimed and productive agricultural land; increased agricultural productivity; and increased land values. Furthermore, the activity will occur as already permitted and as covered under planning permission granted by Kilkenny County Council. This provides a win-win scenario for the site operator; the local community; and the regulatory authorities (i.e. EPA)

Furthermore, the site has been up and running for the past ca. 10 years under a Waste Permit and under planning permission without any complaints or enforcement issues relating to landscape intrusion or impacts upon the landscape.

SECTION 3.10:
INTERACTION OF THE FOREGOING

CONTENTS

3.10 INTERACTION OF THE FOREGOING

3.10.1 General

The interaction of the various environmental media and their potential impacts and mitigation measures have been covered within each of the sub-sections contained within Section 3. There are many interactions and in many cases information has had to be repeated in more than one section of this EIS.

Table 3.10.1 presents a matrix of interactions between the various environmental media. Where an interaction is likely to occur, then this is highlighted in green. Where the operation of the existing soil recovery and C&D material recycling facility at Grannagh does not have the potential to impact or affect the interaction then that interaction is not highlighted (i.e. Water and Noise).

Table 3.10.1: Matrix of Interaction between Environmental Media

	Flora & Fauna	**Water**	**Climate Air Quality & Dust**	**Noise**	Hydrogeology geology, groundwater and soils	**Cultural Heritage**	**Human Beings & Material Assets**	**Landscape & Visual Assessment**
Flora & Fauna								
Water								
Climate, Air Quality & Dust								
Noise								
Hydrogeology geology, groundwater and soils								
Cultural Heritage								
Human Beings & Material Assets								
Landscape & Visual Assessment								

As an example, the interaction of Climate, Air Quality and Dust and Human Beings has been discussed in Section 3.4 of the EIS, and Noise and Human Beings has been addressed in Section 3.5 of the EIS. The interaction of Flora and Fauna and Landscape and Visual Assessment has been addressed in Sections 3.2 and 3.9 of the EIS.