ENVIRONMENTAL IMPACT STATEMENT

FOR A QUARRY AT TULLIGMORE

DRIPSEY

CO. CORK

Prepared For: -

O' Regan's Quarry Products Limited,
The Mills Commercial Park,
Crookstown,
Co. Cork.

Prepared By: -

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9th October 2006

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Introduction

O' Regan's Quarry Products Limited (O'Regans Ltd), formerly Roadmac Transport Ltd, the quarry operator, is required to submit an application for planning permission for the continued operation of its sand and gravel quarry at Tulligmore. The application is required under Section 261 of the Planning & Development Act 2000, which deals with the regulation of quarries that started before October 1964.

This Environmental Impact Statement (EIS) was prepared as part of the planning application. It describes the proposal to continue quarrying and reinstatement works, and to start new and complementary construction and demolition waste recycling and green waste composting. It examines the potential impacts and significant effects on the environment associated with the proposals. Where the possibility of a significant impact is identified the measures to prevent and/or mitigate that impact are presented.

Site History

The quarrying began some time in the 1950s. The site was acquired by Ready Mixed (South West) Ltd who continued quarrying and began making concrete blocks. Ready Mixed (South West) Ltd stopped quarrying and shut down the block plant in around 2003. Dripsey Green Partnership acquired the site in 2004 and leased it to O'Regans Ltd, the current operator, who restarted quarrying in 2005.

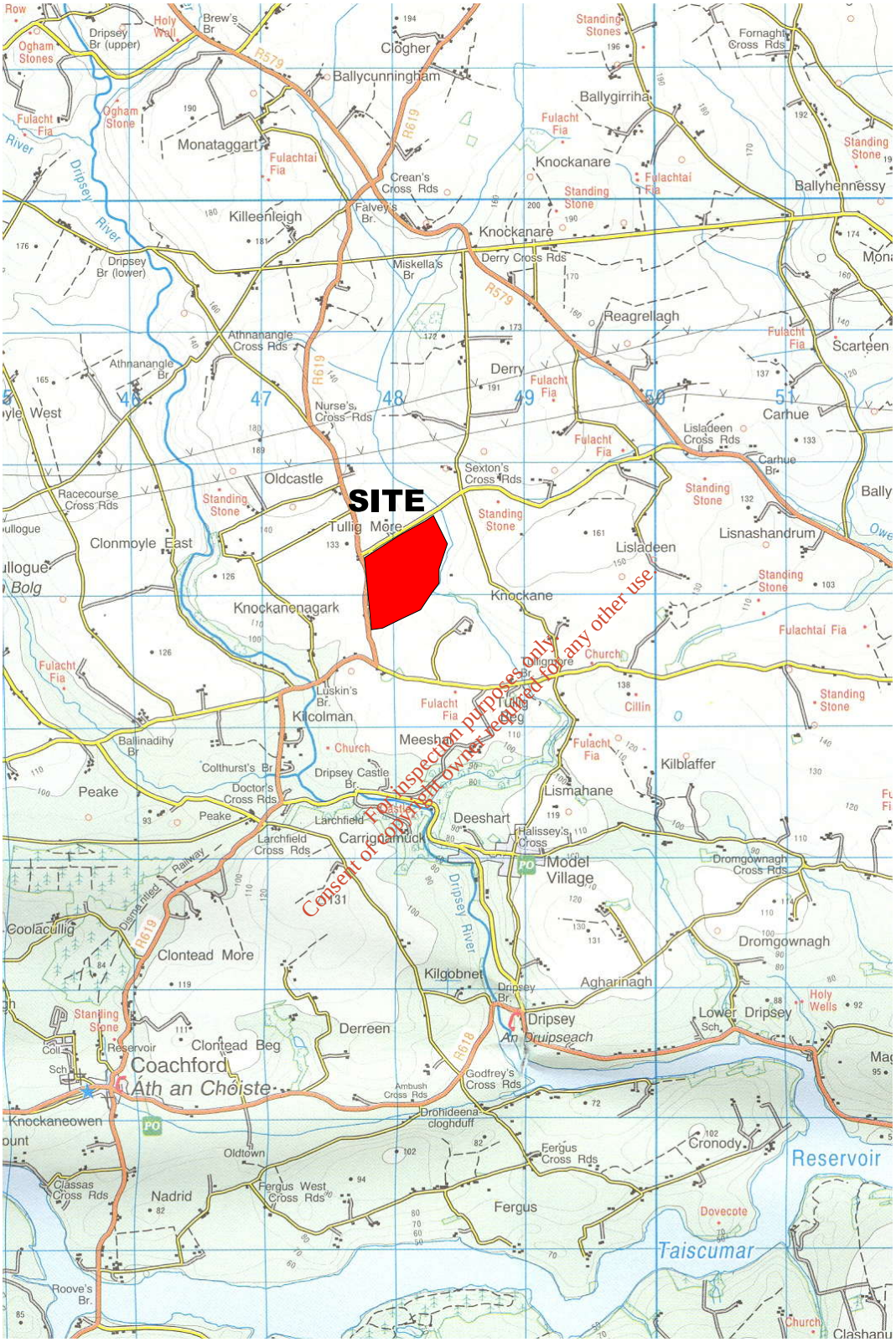
Public Consultation

O'Regans Ltd invited written comments from the general public on its intention to apply for planning permission for the continued use of the quarry and to develop recycling activities by means of a public advertisement in the Evening Echo. A total of three written submissions were received from residents living near the site. The submissions raised concerns about noise and dust emissions, vermin, impact on water supply and future regulatory enforcement.

Description of the Proposed Development

Site Location

The site, which encompasses approximately 32 ha (80 acres), is located in the townland of Tulligmore, approximately 3 kilometres north east of Coachford (Figure 1). The existing site entrance and approach route is on the R619. The majority of the site is at a level considerably lower than the surrounding lands.



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CLIENT
RoadMac Ltd

TITLE
Site Location Map

Details

O.S. Licence Agreement Number AR 0038702

Ordnance Survey Ireland.
Government of Ireland.

FIG. No
1

Scale
NTS

Rev.
A

The surrounding lands are mainly used for agricultural purposes; however there is a sand and gravel quarry approximately 100 m to the west of the site. A stream forms part of the eastern boundary. There are 27 houses within 500 metres of the site (Figure 2). The nearest houses are on the western site boundary, and the gardens of 3 of these are within 20 metres of worked out areas and directly overlook the site.

Operational Hours

The site currently operates from 6 am to 7 pm Monday to Saturday and is closed on Sundays and on Bank Holidays. Construction sites, which form almost all of O'Regans Ltd customers, normally begin work at 7 am and can continue to 7 pm each day. These customers require early morning/late evening deliveries to avoid delays in the construction programme. The early and late delivery times also avoid peak traffic times in urban areas where the majority of the construction sites are located. The current operational hours allow O'Regans Ltd to deliver aggregates cost effectively and on time, which are the key customer requirements. It is crucial to the economic viability of the quarry that O'Regans Ltd continues to operate and send out delivery trucks from 6 am to 7 pm Monday to Saturday.

Quarry Operations

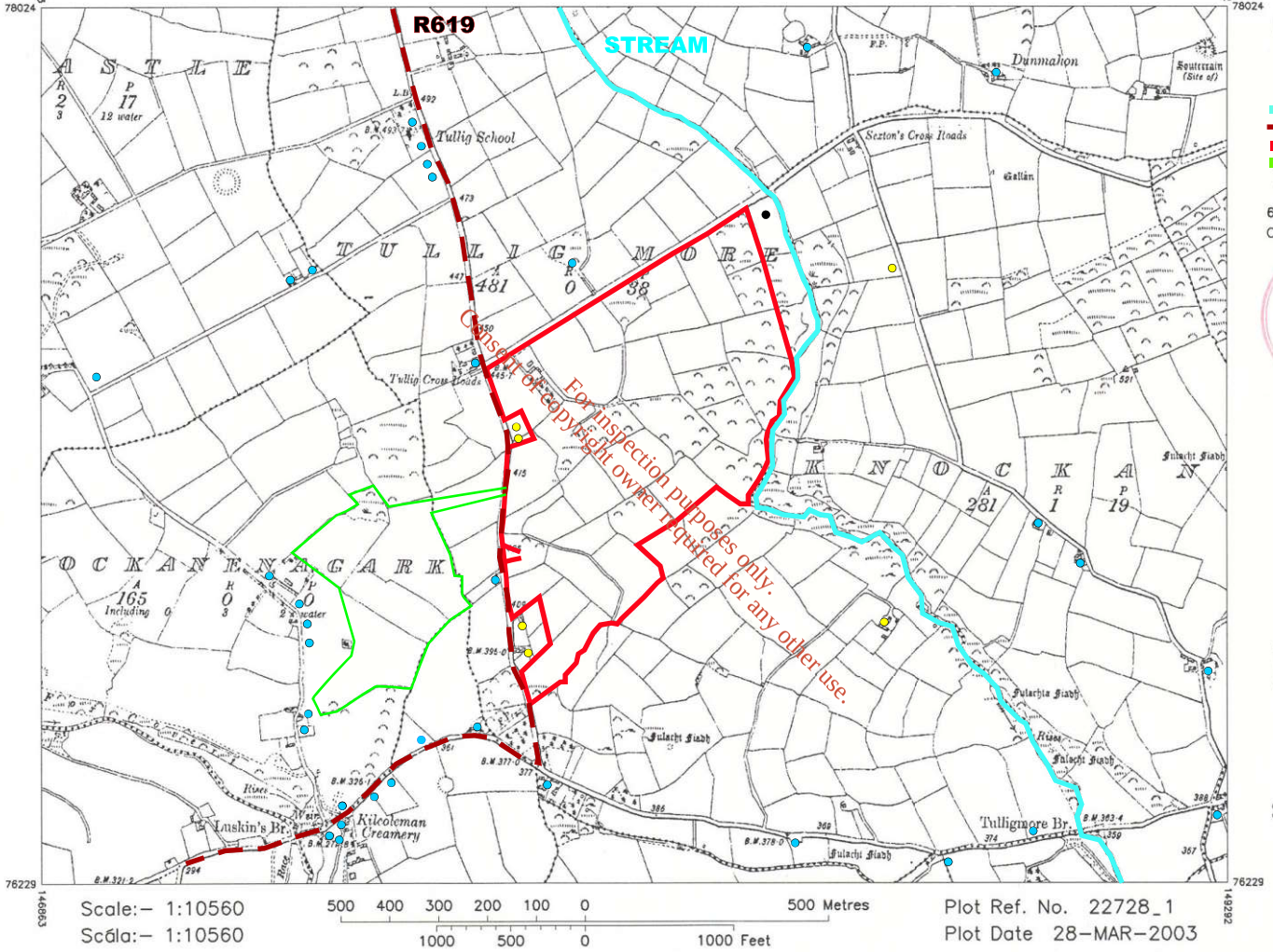
The continued operation of the quarry does not require digging in any previously undisturbed areas. All digging will be carried out in previously worked areas in the southern and central parts of the site. To avoid disturbance to the nearest neighbours, who are to the south west and north-west, no digging will be carried out in these areas. It is estimated that approximately 2.3 million tonnes of sands and gravels will be removed over the next 6 - 10 years, depending on market conditions.

The quarrying does not involve digging below the water table. The materials are excavated using diggers and brought to a washing and screening plant using dump trucks, where they are washed and screened (sieved) to produce different grades (sizes) of gravel. Occasionally boulders or large rocks are found in the sands and gravels. A mobile rock crusher is regularly brought to the site to crush the rocks to a size suitable for sale. The materials are delivered to the customers in trucks.

The water used in the washing plant is obtained from a sump (hole) dug in the southern part of the site. This is pumped to the washing plant, where it is used to clean the sands and gravel. The wash water, which contains small particles (sand and silt), is pumped to ponds in the centre of the site, where the sand and silt settles to the bottom. The clear water from the ponds, and rainwater from the central and northern parts of the site, then flows in channels back to the hole in the south of the site.

Record PLACE Map

Surveyed 1841
Revised 1934
Levelled 1934



DESCRIPTION

- House - Quarry Visible
- House - Quarry Not Visible
- Heavy Goods Yard
- Stream
- Regional Road
- Site Boundary
- Adjacent Quarry

MAP SCALES

6inch
CK061

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Scale:– 1:10560
Scála:– 1:10560

500 400 300 200 100 0 500 Metres
1000 500 0 1000 Feet

Plot Ref. No. 22728_1
Plot Date 28–MAR–2003

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CLIENT: RoadMac Ltd

TITLE: Surrounding Landuse

Details

O.S. Licence Agreement number AR 0038702

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FIGURE NUMBER: 2

Scale: Not To Scale

Revision: A

The existing worked out areas in the northern part of the site will be reinstated for long term agricultural use. This area will be raised to approximately the same level as the roads along the western and northern site boundaries. It is proposed to use materials won on-site that are not suitable for sale; clean soils from construction sites; and processed construction and demolition materials from the proposed recycling facility (e.g. crushed concrete, bricks, tiles) that are not suitable for sale. Compost from the proposed green waste composting will be used as a soil conditioner.

The reinstatement will be carried out in stages, starting in the north western area and then extending to the east (Figure 3). It is estimated that the reinstatement of these areas will require approximately 250,000 m^3 of materials. It is also intended to reinstate the central and southern area of the sites, but the final level of this area has not yet been established and it may be at a lower level than the north of the site.

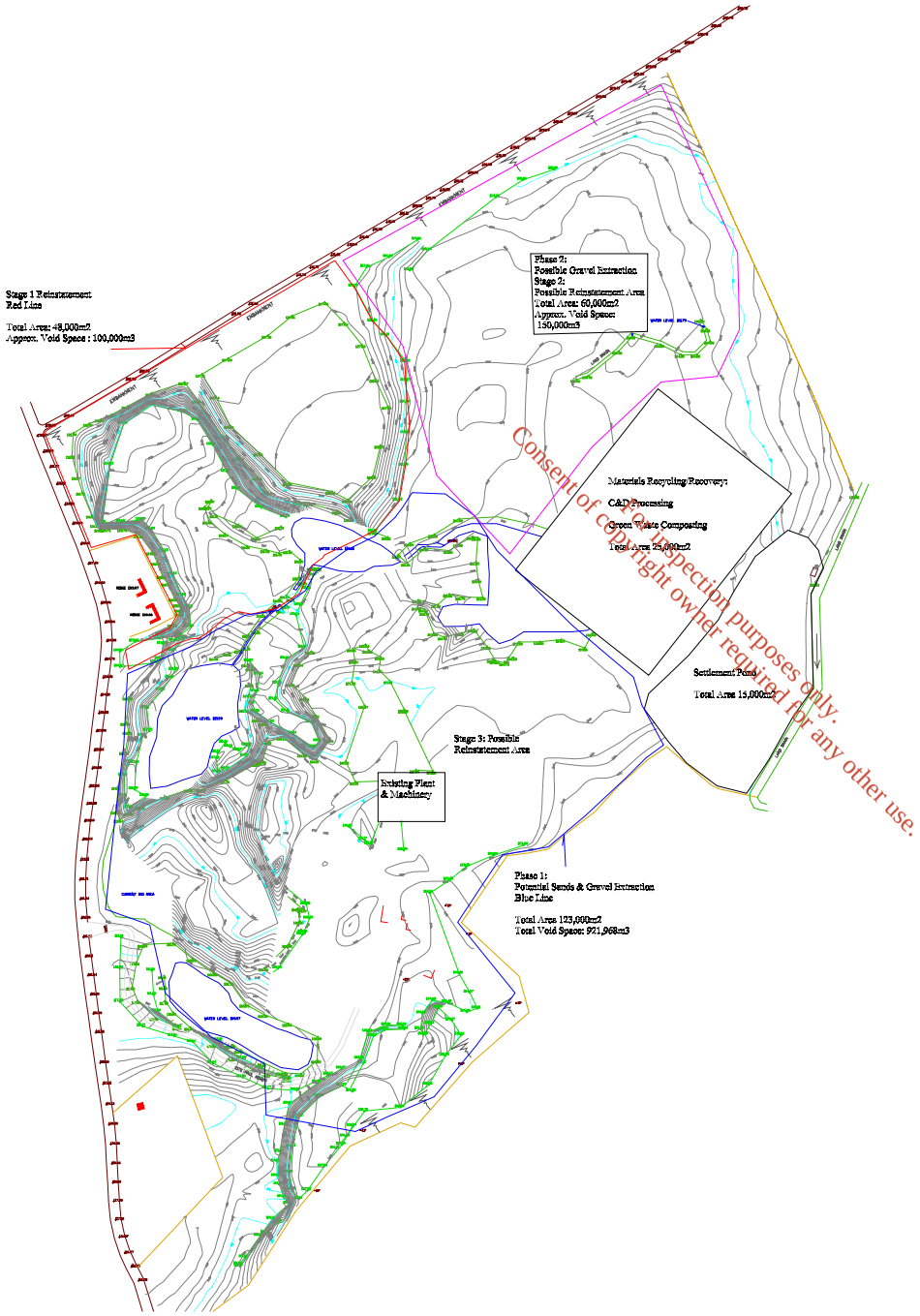
Construction and Demolition Waste Recycling

Only concrete rubble, bricks, tiles, tarmacadam, timber, soils and stones will be accepted at the site. These materials do not cause smells, attract birds or rats, or present a threat to groundwater quality. The majority of the materials will be from construction sites to which O'Regans Ltd delivers sand and gravel and wherever possible the materials will be brought back to the site in the O'Regans Ltd delivery trucks.

The materials will be stored in the north-eastern part of the site (Figure 3). Depending on the type of materials they will initially be crushed and then screened to produce a suitable size. The material will be sold for use in the making of concrete blocks, or for road building. The materials will comply with relevant quality standards and specifications that deal with the use of recycled products. Materials that cannot be sold will be used for reinstatement. The site will handle approximately 180,000 tonnes a year and will occupy an area of approximately 2.5 hectares (6 acres).

Greenwaste Composting

Composting is the breakdown of organic material, such garden waste, by organisms (e.g. bacteria and fungi) in a controlled environment. The green waste composting will be located in the north east of the site beside the proposed recycling area. The green waste will include trees and branches from tree surgery business, grass and shrub trimmings from garden and park maintenance by landscape gardeners, grass and shrub trimmings from civic amenity areas and timber and wood recovered from the construction and demolition materials. This type of material is not attractive to birds or rats.



N

NOTES

REV.	DATE	DESCRIPTION	DRN	CHKD	APP
A	11/09/2008	PRE ISSUE	WN	JOC	JOC

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CLIENT
ROADMAC

TITLE
PROPOSED
SITE PHASING

SCALE	DRAWING No.	REV.
NTS A3	FIGURE 3	A

DOS Filename : DOSFILENAME

The composting area will cover some 2,000 m^2 and will be completely lined with a concrete slab. The proposed method of composting involves a number of stages. The first is the shredding and mixing of the different waste types to ensure the proper physical and nutrient mix. The mixed materials are then placed in a long row (windrow), approximately 5 metres wide, 2.5 metres high and 25 metres long using a front-end loader. The windrow allows the control of the air supply and temperature, which is vital to the production of a good quality compost.

After the windrows the material is moved to maturation area using the front loading shovel, where it is sieved to remove impurities (plastic, glass, large pieces of wood). The compost will remain in the maturation area for approximately 8 weeks following which it will either be sold or used in the reinstatement works.

The composting system is designed to handle about 5,000 tonnes of green waste annually and produce around 3,500 tonnes of compost.

Existing Environment, Potential Environmental Effects and Mitigation Measures

Climate

The climate can be described as mild and wet, with the prevailing wind direction from the south west. The development will not result in any impacts on the climate or microclimate at the site.

Geology / Hydrogeology

Sands and gravels have been extracted from the entire site and all topsoil has been removed. The remaining materials consist of a mixture of silts, sandy gravels and boulder clay ranging from 9 - 17 metres above the bedrock. The bedrock is a Devonian purple mudstone and sandstone belonging to the Ballytrasna Formation.

The sands and gravels contain groundwater. The water table is approximately 14 metres below ground level in the central part of the site. The bedrock is classified as a locally important aquifer. It is likely that the water in the sands and gravels is connected to the water in the underlying bedrock. All of the residences in the vicinity of the site, including the nearest ones, get their water from wells drilled into the bedrock. The direction of groundwater flow in both the sands and gravels and the bedrock is to the south towards the Dripsey River

Water used in the washing plant is pumped from the hole dug in the southern part of the site. The water in the hole is a combination of groundwater, recirculated wash water and rainwater from the northern part of the site. The estimated pumping rate is 113 cubic metres/hour (25,000 gallons) and the pump can be on for up to 13 hours a day. This pumping rate lowers the water level in the hole by around 3 metres, but the water rises to 0.5 m of the original level 24 hours after pumping stops.

There is a well in the south east of the site that supplies water to the site offices. The water is of good quality and has not been affected by current activities. The location of a groundwater sampling point is shown on Figure 4. There is no evidence that the current pumping rate is having any effect on water supplies in the houses in the vicinity of the site. As it is not proposed to change the current work practices the continued operation of the quarry will not affect the water supplies of nearby houses.

Hydrology

The site is located in the catchment of the Dripsey River, which is approximately 1 km to the south west. An unnamed tributary of the Dripsey forms part of the eastern site boundary. This stream is probably used for drinking water by farm animals. The Dripsey is a tributary of the River Lee, which is an important fishery and also a source of drinking water for Cork City. Testing of the water in the stream, both up and down stream of the site, indicates the water is of good quality and that the current activities are not affecting the quality. The sampling locations are shown on Figure 4.

Settlement ponds and drains have been formed in the northern, central and western areas. Rainwater run-off from the northern area and overflow from the ponds, flows to the hole in the south of the site. Due to the fact the majority of the site is at a lower level than both the surrounding lands and the stream there is no surface water drainage from the site. The current and proposed activities do not and will not give rise to either the entry of surface water from the site to the stream or the abstraction of water from this stream. Therefore, the development will not result in any impacts on off-site streams or rivers.

Ecology

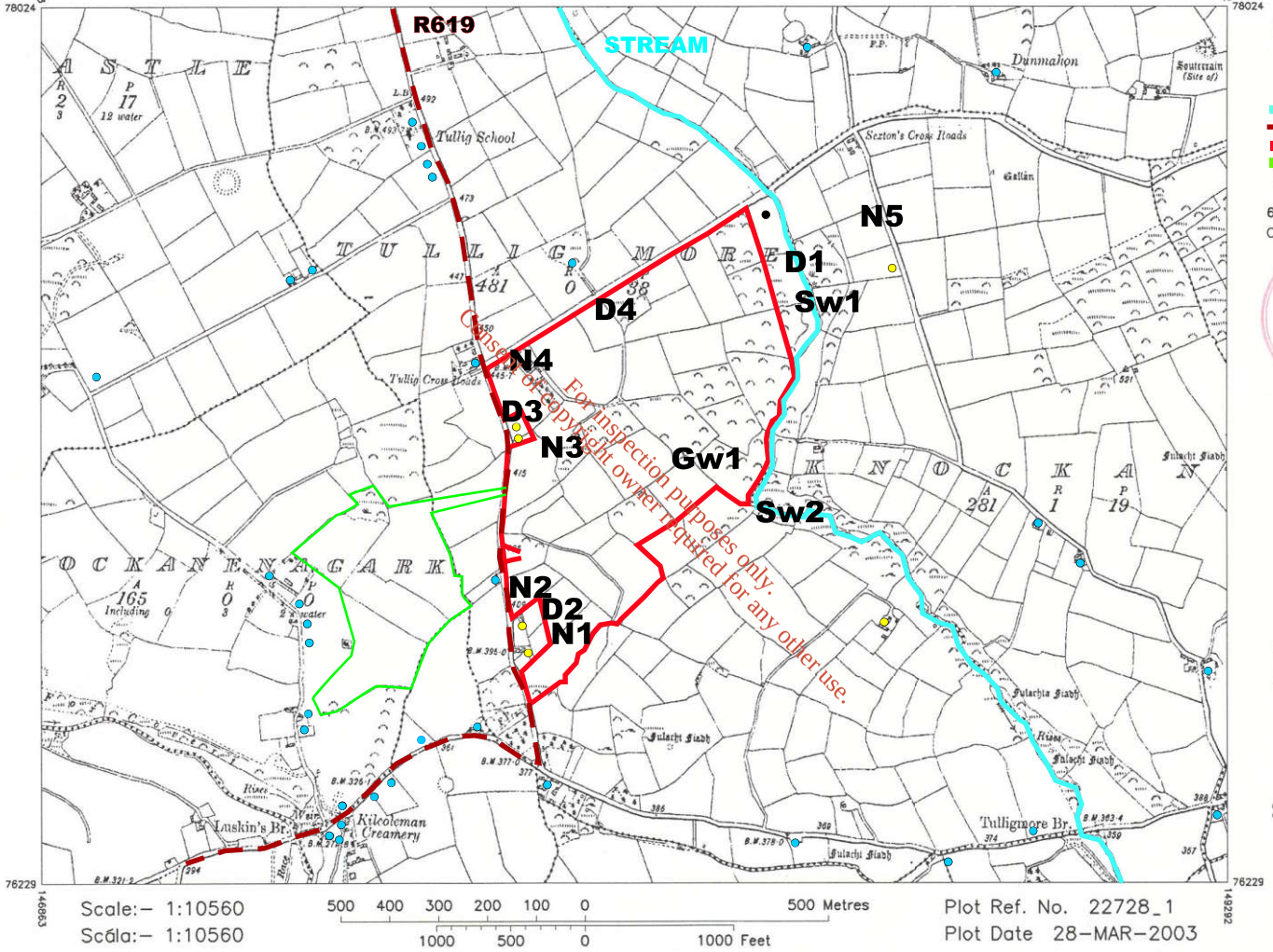
There are no designated habitats on or in the vicinity of the site that could be affected by the proposed development. The habitats within the site are exposed sands and gravels, stockpiles of unsuitable materials, silt ponds and drainage channels. There is some low level scrub (briars and weeds) in the eastern and northern parts of the site. These areas are of low ecological significance and are unlikely to support large numbers of plants, animals, birds and insects. The hedges surrounding the site are semi-natural habitats that may be important as breeding sites for birds.

The stream along the eastern site boundary is a tributary of the River Dripsey, which is itself a tributary of the River Lee. The Lee is a designed salmon river. The water quality in the stream is good and it is considered that the stream is of significant local ecological value. The proposed activities will not result in any abstraction or inflow to the stream and so will not cause any impact.

With the exception of the removal of a small section of hedges at the site entrance, which is required to improve traffic safety, these hedges will not be disturbed by proposed site activities. The proposed recycling and composting will involve the clearance of scrub in the east of the site, but the loss of this habitat is not significant. The recycling and composting activities will not result in any significant environmental emission that might affect any existing off site habitats.

Record PLACE Map

Surveyed 1841
Revised 1934
Levelled 1934



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MAP SCALES

6inch
CK061

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CLIENT: RoadMac Ltd

TITLE: Monitoring Locations
Noise, Dust, Surface Water, Groundwater

Details

O.S. Licence Agreement number AR 0038702

FIGURE NUMBER: 4

Scale: Not To Scale

Revision: A

The proposed reinstatement works will, in the long term, have a positive impact on the local ecology of the site as it is intended to return these areas to agriculture, similar to the surrounding use.

Air Quality

The quarrying can produce dusts. A dust survey was conducted in August - September 2006, which is the time of year when dust is most likely to occur due to dry weather. Four monitoring points were located at the south western, northern and eastern boundary at positions close to occupied houses. The gauge locations are shown on Figure 4.

Occupants of the houses to the south-west, west and north had raised concerns about dusts. The survey established that the current quarrying is not a source of dust at levels that would cause a nuisance outside the site boundaries. This is due to the control measures currently in place which include the spraying of the access road and paved yard. The placing of soils during the reinstatement of the northern area may be a temporary source of dust, however a water tanker and tractor will be kept on-site and used to damp down the work areas during dry weather. Reinstatement soils will not be placed during windy conditions.

The crushing and screening in the recycling area is a source of dust. O'Regans Ltd will use the same dust control measures as those presently applied. Importantly the recycling area is more than 400 m from the nearest house which will minimise the risk of impact from dust. The pre-treatment stage (shredding of wood) of the compost process is a possible source of dusts. The shredder will, if considered necessary, be fitted with a water spray. The moisture in the composting materials prevents the generation of dust during turning, movement and storage. These together with the distance between the composting area and the closest houses minimises the risk of dust impacts.

The green waste composting will generate odours, but these are not offensive. The compost area will be more than 400 m from the nearest house which eliminates the risk of odours affecting residents. Bioaerosols (airborne micro-organisms such as fungi and bacteria) can be formed when composting materials mixed. Bioaerosols are naturally present in rural areas and may occur at levels similar to those found in composting facilities. The highest natural concentrations occur during summer and autumn.

The operational controls that will be used in the composting to reduce the potential for bioaerosol generation include: -

- Regular and thorough mixing of windrows,
- Maintaining optimal moisture content in the windrows,
- Maintaining a clean site, including access roads and storage areas and provision of a damping system to reduce dust generation from dry surfaces,
- Training of operators,
- Construction of windrows as high as possible.

In addition the compost area will be more than 400 m from the nearest house which further reduces the risk.

Noise

The current and proposed activities (diggers, trucks, washing and screening plant, rock crusher and shredder) are a source of noise. In October 2005 O'Regans Ltd received a complaint from the occupant of a house to the north east about noise from the site. The submissions made in the consultation process also raised concerns about noise.

A noise survey was carried out to establish the existing noise levels. Five noise monitoring points were set up along the boundary close to private houses. The locations are shown on Figure 4. Four were on the western and northern boundaries, and the fifth was off-site near the house from which the complaint was received. The points in the south west of the site were selected to assess impacts on the nearest residences whose occupants have raised concerns about noise from the proposed development.

The noise levels at all the locations, including contributions from the various off-site sources, were at or below the limit (55 dB) normally applied at the boundaries of quarries. In all cases the levels attributable to the quarry was significantly below the 55 dB limit. The dominant noise near the south west of the site was a machine, possibly a sawdust extraction system, in a private workshop outside the site boundary.

The Landscape

The existing landscape character of the site is neither distinctive nor of exceptional value in the context of the surrounding landuse. The site has been used as a quarry for more than forty (40) years and therefore the usual sensitivity of the site to change is not considered significant.

The site is visible from the public road and three houses on the western boundary and from a house about 300 m from the eastern boundary. There are earth banks and mature hedges along the western, northern and southern boundary which effectively screen the site from other houses and the roads.

The continued operation of the quarry and the proposed recycling and composting will not change the visibility of the site from the houses to the west of the R619. The construction of an earth bank, which will be planted, will screen the view from the east. The reinstatement of the northern area to the level of the public roads means that this area will not become visible to any new houses. The reinstatement will have a positive impact on the views from the two houses along the north western boundary.

Traffic

A Traffic Impact Assessment was carried out to assess the impact of traffic linked to both the current and proposed operations on the local roads. At present there is approximately 49 truck movements a day to and from the quarry. The other movements are those of employees and customers which are mainly cars.

The introduction of the recycling and composting will result in an increase in daily truck movements to 110. The local roads and junctions have more than enough capacity to handle this increase.

Given the expected increase in truck movements a dedicated right hand turn lane will be provided on the R619, with permanent signs on the approach to the junction. The reduced lane width will act as a traffic-calming device for through traffic. Sight lines in both directions will be cleared to 160 m measured at a set-back of 2.4 m from the road edge to the near-side carriageway.

Cultural Heritage

The entire site has been dug out and it is not proposed to dig in any undisturbed areas either inside or outside the site boundaries. There have been no archaeological finds on the site and there are no features on the lands surrounding the site that could be affected by the proposed operations.

Human Beings

The quarrying and recycling are not activities that affect the health of people living in the vicinity. These operations can be a source of nuisances, such as noise and dust that can affect people. A combination of the site location, the positioning of the various activities inside the site boundaries and proper operational control measures will ensure that noise and dust emissions do not give rise to nuisance.

Green waste is not attractive to flies, rats or other vermin and the proposed recycling and composting activities will not draw these to the site. The health risks to the general public linked to bioaerosols from the composting are minimised by a combination of operational controls and a buffer of more than 400 m between the compost area and the nearest houses.

The continued operation of the quarry will not affect any local business in the area and the development of the recycling and composting may lead to increased employment at the site.

Material Assets

The site is not in any area of high amenity value and the continued operation and introduction of recycling and composting will not impact on the amenity value of the area. The surrounding landuse is predominantly agriculture. The reinstatement programme will see certain areas of the site returned to agricultural use and will therefore have a positive impact in the area.

Interaction of the Foregoing

The continued operation of the quarry and the introduction of recycling and composting will result in emissions (noise, dust and bioaerosols) that may affect quality with consequent affects on nuisance and public health. The site location, design and proposed method of operation incorporate measures to effectively control and mitigate the impact of these emissions from site operations.

The quarrying involves the abstraction of groundwater from the sands and gravels for use in the washing plant. This water is recirculated within the site and current operations are not affecting the wells supplying the houses in the vicinity of the site. As it is not proposed to change the current working methods the future quarrying should not affect any off-site wells.

PREAMBLE

This Environmental Impact Statement (EIS) examines the potential impacts and significant effects on the environment of the proposal to continue sand and gravel extraction at O' Regan's Quarry Products Limited (O'Regans Ltd), formerly Roadmac Transport Ltd, quarry at Tulligmore, Dripsey, County Cork and to develop complementary construction and demolition recycling and green waste composting at the site.

The information contained in the EIS complies with Paragraph 2 of the Second Schedule of the European Communities Environmental Impact Assessment Regulations 1989, as amended by the European Communities (Environmental Impact Assessment) (Amendment) Regulations 2001.

The EIS follows the grouped format structure recommended, in the 'Guidelines on the Information to be Contained in Environmental Impact Statements' (March 2002), published by the Environmental Protection Agency (EPA), and the EPA's Advice Notes to these Guidelines. This structure assesses each relevant topic in a separate section, which describes the existing environment; the impacts associated with the proposed development and, where considered necessary, the proposed mitigation measures.

The assessment of impacts took into consideration the 'Guidelines to Planning Authorities on Quarries and Ancillary Activities' (2005) published by the Department of the Environment, Heritage and Local Government (DEHLG).

Public Consultation

A public advertisement of O'Regans Ltd intention to apply for permission to continue extraction and develop ancillary recycling and composting activities was placed in the Evening Echo newspaper on 25th August 2006 which has a large circulation in the area of the proposed development. The advertisement invited written comments from the general public.

OCM received three submissions from residents who live in the vicinity of the site. The main concerns raised in the submissions relate to traffic, groundwater, noise, dust, litter and vermin. All of the concerns and issues raised in the submissions were taken into consideration during the preparation of the EIS. A copy of the newspaper advertisement and the submissions are included in Appendix 1.

O'Regans Ltd has discussed the proposed reinstatement of the northern part of the site with the occupants of two residences immediately adjoining the north-western site boundary. It is understood that the occupants have expressed their approval of the proposal to reinstate this area.

Difficulties in Compiling the Required Information

OCM did not encounter any particular difficulties in compiling the required information. Given the fact that the entire site has been previously excavated; the absence of undisturbed original ground and that extraction is on-going in the southern parts of the site, specialist ecological and archaeological surveys were not carried out. Based on the site conditions and surrounding land use it is considered that such surveys were not required to allow for an adequate assessment of the likely impacts and the need for mitigation measures.

The topographic survey of the site, which was used as the base map for the EIS, was completed in September 2005.

Project Team

OCM were the prime consultants and prepared the EIS, but were assisted by a number of specialist service providers. The members of the project team were: -

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Capita Symonds Ltd – Consulting Engineers: Site Design & Layout

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Fax: 00 - 44 - 161 - 4280559

MHL & Associates – Traffic Impact Assessment

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Telephone: 021 - 4840214
Fax: 021 - 4840215

Dixon Brosnan Ltd – Baseline Noise Monitoring and Predictive Assessment

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Fax: 021 - 4377947

Alcontrol Geochem Ireland – Surface/Ground Water Quality Analysis

Address: Unit 18A,
Rosemount Business Park,
Ballycoolin,
Dublin 11.

Telephone: 01 - 8829893
Fax: 01 - 8829895

Southern Scientific Services Ltd – Dust Analyses

Address: Dunrine,
Killarney,
Co. Kerry.

Telephone: 064 - 33922
Fax: 064 - 39022

Unless otherwise referenced OCM were responsible for completing the baseline surveys and assessment of impacts.

1. INTRODUCTION

Cork County Council (the Council) issued a Notice under Section 261(7) of the Planning & Development Act 2000 to Roadmac Transport Ltd, now incorporated as O' Regan's Quarry Products Limited (O'Regans Ltd), the quarry operator, to submit an application for planning permission for the continued operation of a quarry at Tulligmore, Dripsey, County Cork (QR041). The application is required as the quarry commenced operations before 1st October 1964; the area exceeds five (5) hectares and there is no existing permission for the quarrying activities.

O'Regans Ltd proposes to continue quarrying at the site. Quarrying will be confined to previously worked areas, where sands and gravels will be extracted from greater depths, and will not involve an extension into previously unworked areas.

It is intended to reinstate the quarry, starting in the north of the site. It is proposed to use unsuitable materials won on-site and imported clean soils and subsoils in the reinstatement works. The intended long term use of the reinstated areas is agriculture and to this end soil conditioners will be required. O'Regans Ltd has identified an opportunity to develop a small scale green waste composting facility at the site, which will generate a high quality compost suitable for use in the reinstatement works.

O'Regans Ltd supplies the major construction companies operating in the Cork Region. All construction projects generate Construction and Demolition (C&D) waste, the majority of which is suitable for recycling. O'Regans Ltd has identified an opportunity to develop a C&D materials recycling facility at the site. This will involve only inert and non-hazardous materials and will be a complementary activity to the main quarrying operation.

1.1 Site History

It is not known precisely when the quarry working commenced, but it appears to have been in the 1950's. OCM understands that Ready Mixed (South West) Ltd acquired the lands from the original land owner, whose private residence and heavy goods vehicle yard is on the north eastern boundary.

Ready Mixed operated the site as a sand and gravel quarry and subsequently developed a concrete block production plant on the site. As the start of quarrying predated 1963 planning permission for this activity was not required, but Ready Mixed did obtain permission for the concrete block plant in 1986 (Ref. 2854/86). A copy of the planning permission is included in Appendix 2.

O'Regans Ltd acquired the site in 2004 and restarted quarrying operations in January 2005. In February 2005 O'Regans Ltd (then trading as Roadmac Transport Ltd) applied to the Council to register the quarry under Section 261 of the Planning and Development Act 2000. The Council subsequently included the site on the Register of Quarries (Reg. No. 41).

1.2 Existing Operations

The site encompasses 32.2 ha (79.5 acres). The entire area has been quarried, with excavations extending up to the site boundaries. There are exposed sand and gravel faces along the northern, western, southern and south eastern boundaries. There are stock piles of subsoils and unsuitable granular material won on-site; settlement ponds in the central, western and south-eastern areas. The central and northern portions have been graded to a generally uniform level.

Sand and gravel extraction is currently on-going in the southern area. The extracted materials are washed and screened in the on-site screening plant, which is located in the south central area. The gravels are stockpiled on-site pending removal using heavy goods vehicles to point of sale. Boulders, which are occasionally encountered during the extraction works, are crushed on-site using a mobile crusher and screened using a mobile screener to produce a saleable product.

Washwater from the screening plant is obtained from a sump excavated in the south western part of the site. The washwater is pumped from the screening plant to ponds in the centre of the site, where solid materials settle out. The clear water from the pond is channelled back to the sump.

1.3 Proposed Development

In addition to continuing the sand and gravel extraction it is proposed to introduce C&D recycling and greenwaste composting at the site.

1.3.1 Sand & Gravel Extraction

The continued operation of the quarry does not require excavation of undisturbed areas. All extraction will be carried out in previously worked areas, but at greater depths. It is proposed to continue the extraction until the economically viable deposits are exhausted. The precise volume available for extraction is unknown. It is estimated that there is approximately 2.3 million tonnes available for extraction and that this will be completed over the next 6 - 10 years.

The worked out areas will be reinstated using unsuitable materials won on-site, imported clean soils and subsoils and processed inert C&D materials that are not suitable for sale. The reinstatement will be carried out in stages, starting in the northern area of the site.

1.3.2 C & D Recycling

The C&D recycling facility will accept only pre-segregated non-hazardous materials - concrete rubble, bricks, tiles, tarmac, timber, soils and stones. The facility will have a processing capacity of ca. 180,000 tonnes per annum and will occupy a footprint of ca. 2.5 ha in the east of the site. The plant and equipment currently employed at the site will be used to process the C&D materials. Suitable recovered material will be sold for use as aggregate in block manufacture; the manufacture of mortar and road construction. The materials will comply with relevant quality standards and specifications that deal with the use of recycled products. Recycled materials, which are not suitable as construction products, will be used in the on-site reinstatement works.

1.3.3 Green Waste Composting

The proposed green waste composting area will be located in the north east of the site adjacent to the C&D recycling area. The green waste will comprise wood wastes generated by tree surgery businesses; garden and park waste produced during improvement and maintenance works by landscape gardeners; grass and shrub trimmings from civic amenity areas, and timber and wood waste recovered during construction and demolition works.

The composting area will occupy approximately 2,000 m^2. It will comprise a waste reception and quarantine area, windrows, maturation area and finished product storage. The operation will involve pre-treatment to shred and mix the green waste, composting in open windrows, maturation and post treatment to remove impurities. The plant used will include a shredder, screener and front end loader. The finished product will be suitable for horticultural, landscaping, restoration and agricultural use. The facility is designed to accept approximately 5,000 tonnes of green waste annually and produce approximately 3,500 tonnes of high quality compost.

1.4 Waste Permits

The C&D recycling and green waste composting will require a Waste Permit from the Council. The Waste Permit will include strict operating conditions, which regulate the amount and types of materials that can be accepted and processed at the site. The Waste Permit will also specify the measures required to prevent environmental pollution. The Council will be responsible for enforcing the conditions of the Waste Permit. The design and proposed method of operation of the recycling and composting activities have taken into consideration the design and operational criteria typically applied by Cork County Council and other local authorities in Waste Permits.

2. PLANNING

2.1 County Council Development Plan (2003 - 2008)

2.1.1 Zoning

The site is not assigned any particular zoning in the County Development Plan 2003 - 2008. The surrounding lands are classified as a Rural Housing Control Zone. There are no land zoning objectives that would prohibit the extension of the lifetime of the quarry or the proposed complementary recycling and composting activities.

It is an objective of the Plan (INF 3-1) to "implement the provisions of the Council's approved Waste Management Plan and in particular to promote the development of facilities for the prevention, minimisation, **re-use/recycling** or disposal with energy recovery of waste material". The Plan recognises that such facilities raise different levels of environmental and social concerns and impacts, and that it is important to ensure that they are located where these impacts are minimised as much as possible.

The Plan recognises the importance of safeguarding essential mineral reserves (such as aggregates), as is the need to ensure that adverse environmental and other impacts of mineral extraction are kept to a minimum. It is recognised that "mineral extraction is a very significant industry serving the construction, industrial and energy sectors, and it is important to facilitate development" (4.5.3). Policy 5 - 4 seeks to minimise the environmental impact of mineral extraction and in particular to have regard to: -

"….visual impacts, methods of extraction, noise levels, dust prevention, protection of rivers, lakes and other water sources, impacts on residential and other amenities, impacts on the road network (particularly with regard to making good any damage to roads), road safety, phasing, re-instatement and landscaping of worked sites."

2.2 Planning and Development Act 2000

Section 261 of the Planning and Development Act, 2000 introduced a once-off system of registration for all quarries, except those for which planning permission was granted in the previous five (5) years. The registration processes is intended to bring these quarries, which were operational before 1964, under the regulatory control of the planning authorities.

The Department of the Environment, Heritage and Local Government (DEHLG) has published 'Guidelines to Planning Authorities on Quarries and Ancillary Activities', which provide guidance on planning for the quarrying industry, including those being dealt with under the Registration process. The Guidelines recommend that progressive restoration should be employed where relevant and practicable e.g. for sand and gravel pits. In relation to waste the Guidelines state that unsuitable materials, such as silt and clay from settlement ponds, should be re-used and recycled as far as possible. They also recommend that quarry operators should consider using inert C&D waste, which do not have the potential to displace natural aggregates, for reinstatement and restoration purposes at the quarry.

2.3 Waste Management Policy

National and regional waste management policy is based on the DEHLG's policy statement of September 1998, "Changing Our Ways". A subsequent policy statement 'Preventing and Recycling Waste - Delivering Change' (2002) sets a target of recycling/re-using 85% of C & D waste by 2013. It also emphasises the objective of developing feasible biological treatment (including composting) facilities.

The most recent government policy statement 'Waste Management - Taking Stock and Moving Forward' 2004, confirmed that Ireland's national policy approach remains *'grounded in the concept of integrated waste management based on the internationally recognised waste hierarchy designed to achieve, by 2013, the ambitious targets set out in Changing Our Ways'.*

2.3.1 Waste Management Plan (2004 - 2009)

Cork County Council policy on the development of waste management facilities is based on the objectives set in the Waste Management Plan for the Cork Region (2004 - 2009). The Council is committed to a system that will see the least possible amount of waste going to landfill. This will be achieved inter alia by the expansion of recycling facilities.

2.3.2 Recycling

It is an objective of the Waste Management Plan (Action 32) that the Council will endeavour to achieve the national recycling targets set in government policy. It is also an objective (Action 39) that Cork County Council 'will attempt to recover, as much as possible of the C&D waste produced in its functional area.'

2.3.3 Green Waste

Action 37 of the Plan identifies the types of green waste which are suitable for composting at a dedicated facility, including bulky garden waste unsuitable for home composting and green waste arising from local authority and private landscaping works.

2.3.4 Private Sector Involvement

The Council recognises that to achieve the objectives of the Plan there is a need for increased participation by the private sector. There is already a significant number of privately operated recycling and recovery activities in the county, which include materials recovery plants, waste transfer stations, industrial waste composting plants and C&D waste recovery operations (land reclamation).

2.4 Conclusions

The proposal to continue sand and gravel extraction and reinstate worked out areas is consistent with existing zoning and DEHLG guidance on quarry operations. The proposal to develop complementary materials recycling/recovery activities is consistent with local and national waste policy objectives.

3. ALTERNATIVES

3.1 Introduction

This Section describes the alternatives to the continued operation of the quarry and the proposed C&D recycling and greenwaste composting. A 'do nothing' scenario is presented in the context of long-term land uses and the achievement of local waste recycling targets.

3.2 Alternative Site

O'Regans Ltd has established a viable business based on the continued use of a site where quarrying has been carried out since the 1950's. It is proposed to continue quarrying within the footprint of the already worked areas. The only alternative to continued operation open to O'Regans Ltd site is also to establish a new quarry at another location. This is not economically viable in the context of the need to continue to supply Roadmac's existing customer base and the commercial availability of such sites. There is no environmental advantage in developing a new quarry at a greenfield site as opposed to the continued operation of the existing site.

The proposed C&D recycling and green waste composting are complementary activities to the main quarry operations. O'Regans Ltd already has an established customer base in the construction industry and has identified an opportunity to incorporate C&D recycling into the overall services it provides to its customers. It is envisaged that the majority of the C&D waste delivered to the site will be transported by O'Regans Ltd delivery vehicles, which currently return empty to the quarry. This will result in an efficient use of the vehicles and minimise the additional traffic movements associated with the recycling activities.

The C&D processing activities are similar to those already carried out at the site (crushing and screening). Therefore, it will not require the provision of any major new equipment, as the existing plant have the required spare capacity. The size and location of the site allows the positioning of the C&D processing area in a location that minimises the environmental impacts on sensitive receptors (in this instance the nearest occupied dwellings). Establishing the C&D recycling activities at another site is not commercially viable for O'Regans Ltd, as this would require the purchase of additional plant and furthermore does not offer any environmental advantages.

The proposed green waste composting is also complementary to the main quarrying activity and will produce a finished product that will be used in the reinstatement works. As is the case with the proposed C&D activities, the site location and size allow the positioning to the compost activities in an area that minimises adverse environmental impacts on sensitive receptors. Given the limited scale of the composting it is not economically viable to develop in an alternative site, nor are there any environmental advantages.

3.3 Alternative Designs

The site layout has been designed to minimise the impacts on sensitive receptors. Sands and gravel will not be extracted from the south western and north western areas. The proposed C&D recycling and green waste composting are sited in the east of the site providing the maximum buffer to the closest sensitive receptors (dwellings) and where ground conditions are most suitable (Ref. Section 6). The proposed site layout is considered to be the most suitable and there are no alternatives that offer better environmental advantages.

3.4 Alternative Processes

3.4.1 Continued Gravel Extraction

The current method of sand and gravel extraction is considered best practice and has been used successfully by O'Regans Ltd since it started quarrying. O'Regans Ltd uses groundwater, abstracted from a sump in the southern part of the site, in the washing plant. The water is recirculated through settling lands and channelled back to the sump. The alternative would be to obtain process water from the stream that runs along the eastern site boundary. The required volumes (ca. 110 m^3/hour) could have a significant impact on flows in the stream and consequent beneficial downstream use. The methodology is described in more detail in Section 4.

The current operational hours are 06.00 - 19.00 Monday to Saturday. O'Regans Ltd successful business model is based on meeting customer demands in relation to delivery times and costs. Construction sites normally begin work at 07:00 and can finish at 19:00 each day. O'Regans Ltd customers typically require early morning/late evening deliveries to avoid delays in the construction programme. The early and late delivery times also avoid peak traffic times in urban areas, where the majority of the construction sites supplied by O'Regans Ltd are located. This allows O'Regans Ltd to deliver materials cost effectively and on time, which are the key customer requirements. It is crucial to the economic viability of the quarry that O'Regans Ltd continues to operate and consign materials from the site from 06.00 to 19.00 Monday to Saturday.

3.4.2 C&D Recycling

The proposed C&D recycling is relatively uncomplicated and will use the same plant as that currently used to process aggregate at the site.

3.4.3 Green Waste Composting

There is a wide range of proven composting systems including: -

- Outdoor systems;
- Hangar systems;
- Continuous flow systems; and
- Tunnel and container systems (In-Vessel).

Outdoor Systems

Outdoor systems are generally simple in design and the two main types are the Windrow and the Static Pile. In the Windrow the material is placed in rows and turned periodically, usually by mechanical equipment. The material is aerated primarily by natural ventilation. In the Static Pile there is no turning of the material and an air distribution system beneath the composting material provides either forced or induced aeration. Process and emission control measures are limited, apart from aerated Static Pile systems, where the process air is collected and treated. Since operations are directly affected by weather conditions, the composting process usually takes several weeks.

Hangar Systems

Hangar systems comprise a static pile system located indoors, with the provision of air control systems and equipment to automatically turn and move the material. The treatment capacity is fixed, since it is not easy to provided modular enlargement. However the operational capacity of the facility is quite flexible, as the height and length of the static pile and rate of aeration can be adjusted according to the volume of waste.

Continuous Flow Systems

In these systems the waste is moved either horizontally, or vertically through a reactor, which is subject to forced aeration. The system allows good control of the process conditions however, since the retention time in the reactor is relatively short (typically 1 - 2 days), an extensive post treatment step is required.

In-Vessel Systems

In-vessel (Tunnel and Container) systems are designed to allow comprehensive process control, as the waste is composted in relatively small fully enclosed units. The process control parameters, e.g. aeration rates, air moisture and oxygen contents can be regulated by a central processing computer. The modular layout means that several units can be operated independently, which allows greater flexibility in treating different organic waste streams at the same time.

3.4.4 Preferred Technology

Given that only green waste will be processed the outdoor Windrow system is considered the most appropriate in terms the site location; producing a quality final product, and minimising environmental impacts.

3.5 "Do Nothing Scenario"

O'Regans Ltd is obliged, under the Section 261(7) Notice served by the Council, to apply for permission for the continued operation of the quarry, so the 'Do Nothing' Scenario does not apply to this aspect of the overall application.

The proposals to develop the C&D recycling and green waste composting are complementary to the main activities and will allow the reinstatement of the worked out areas for long-term productive use (e.g. agricultural) that otherwise would not be economically practical. They will also assist in the achievement of local waste recycling and recovery targets. A 'Do-Nothing scenario' would result in the non-reinstatement for long term beneficial use.

4. PROJECT DESCRIPTION

4.1 Introduction

This Section describes the site location and quarrying operations, and the ancillary materials recycling and recovery activities. It discusses the environmental control measures that will be applied during site operations to eliminate and/or mitigate environmental impacts. Reference is made, where relevant, to more detailed evaluations in other Sections of the EIS.

4.2 Site Location

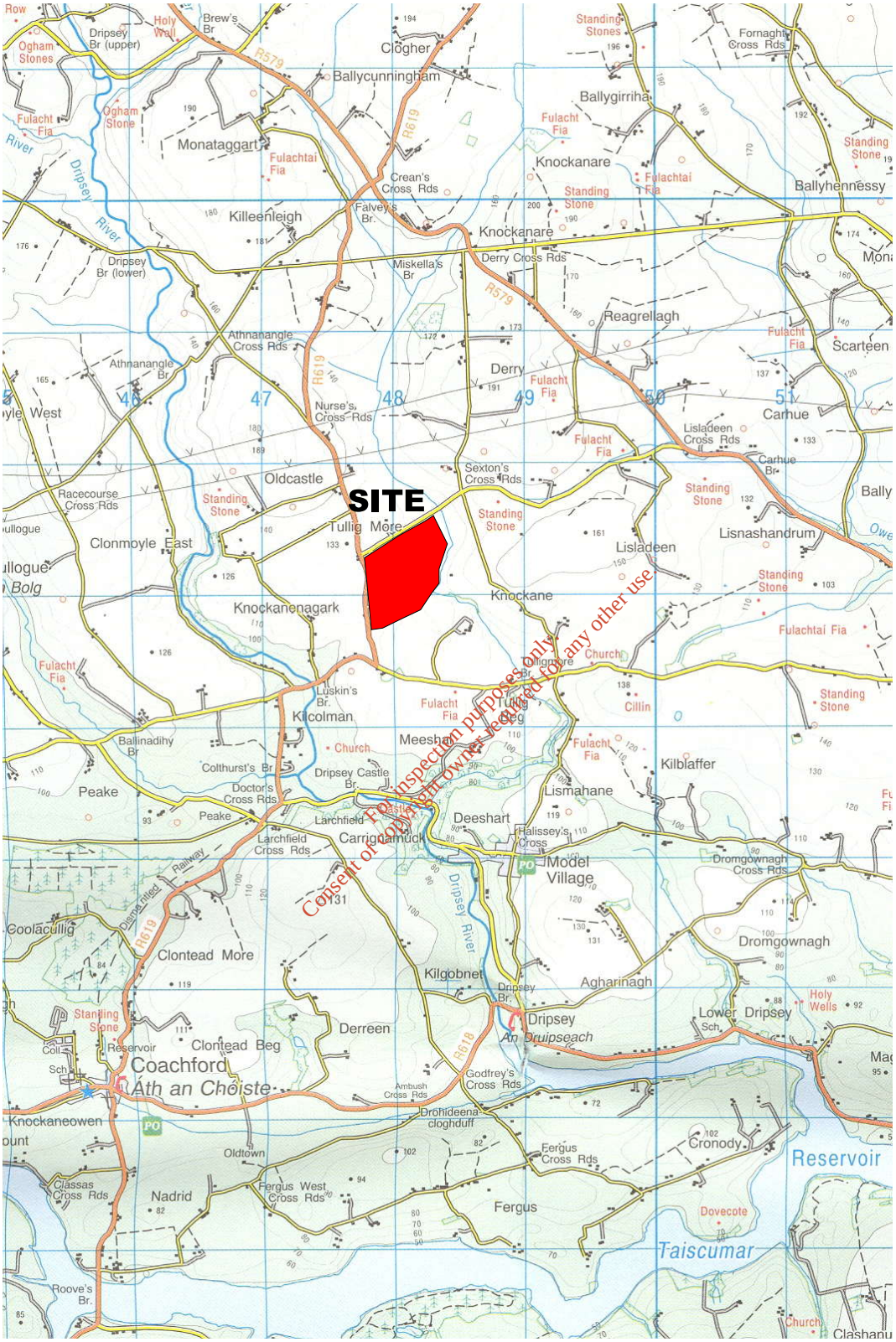
The site, which encompasses approximately 32 ha, is located in the townland of Tulligmore, approximately 3 kilometres north east of Coachford, as shown on Figure 4.1. It is bounded to the west by the R619 Regional Road and to the north by a county road. The southern section of the eastern boundary is formed by a tributary of the Dripsey River, which flows in a southerly direction. To the south the site is bounded by agricultural lands. The north eastern boundary is delineated by a concrete post and link fence. The northern, south eastern and western boundaries are delineated by mature hedgerows.

4.3 Access

The site entrance is off the R619 and the main approach routes are along the R619 from the north and south. The R619 junctions with the R618 at Coachford, and with the N22 to the south of Coachford. A county road links the R619 to the R579 approximately 3 km to the north. The main access routes to the site from Cork City are via the R579 or N22 connecting to the R619. The main access from the north and south is the R619 and from the west is the R618.

4.4 Surrounding Landuse

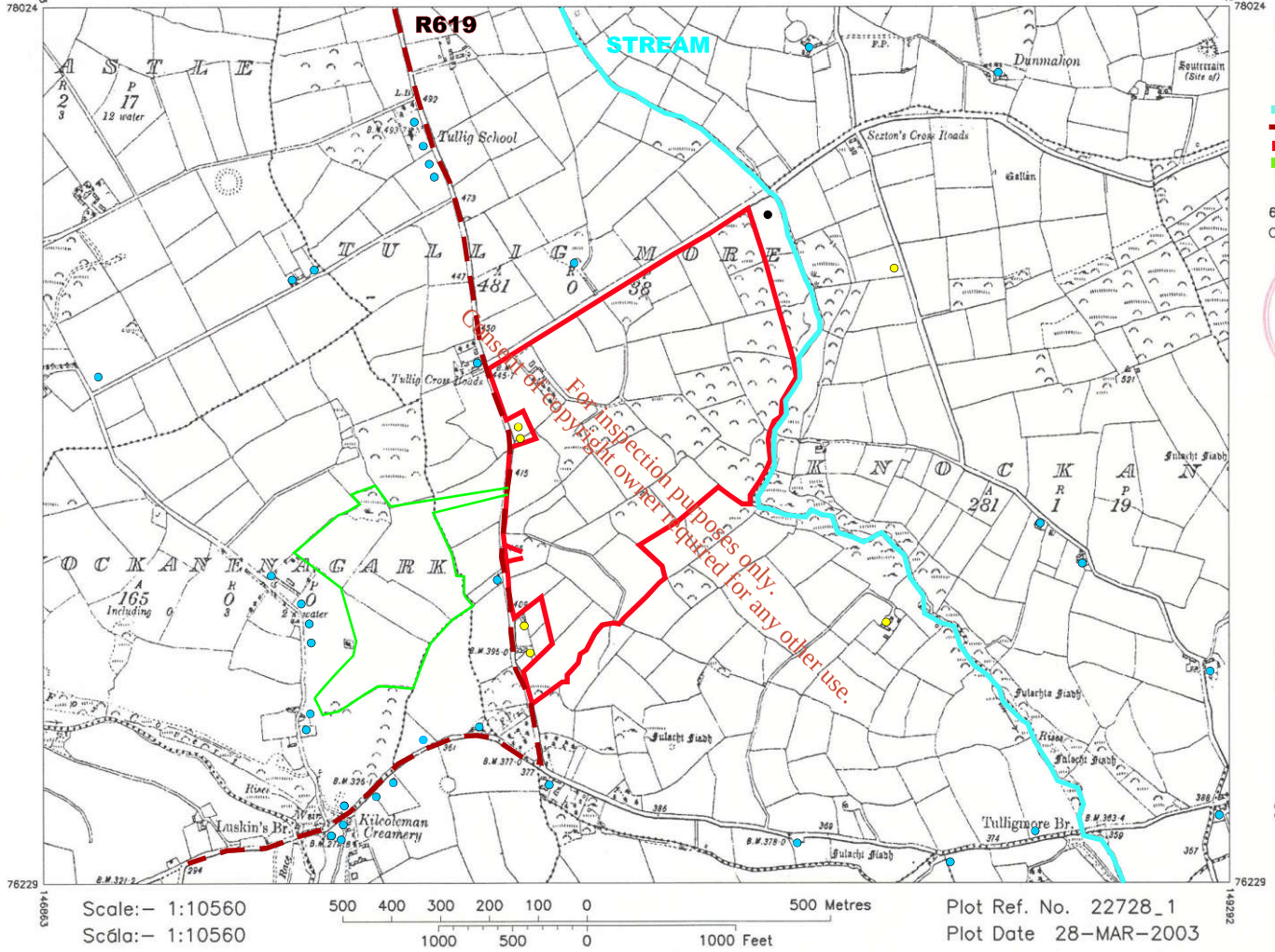
The surrounding landuses are shown on Figure 4.2. The site is located in a rural setting and the surrounding lands are mainly used for agricultural purposes; however there is a sand and gravel quarry, operated by Ducon Concrete Ltd., approximately 100 m to the west of the site.



O' Callaghan Moran & Associates. Granary House, Rutland Street, Cork Ireland. Tel. (021) 4321521 Fax. (021) 4321522 email : info@ocallaghanmoran.com	CLIENT RoadMac Ltd	Details O.S. Licence Agreement Number AR 0038702 Ordnance Survey Ireland. Government of Ireland.	FIG. No 4.1
	TITLE Site Location Map		Scale: NTS Rev.: A

Record PLACE Map

Surveyed 1841
Revised 1934
Levelled 1934



DESCRIPTION
- House - Quarry Visible
- House - Quarry Not Visible
- Heavy Goods Yard
- Stream
- Regional Road
- Site Boundary
- Adjacent Quarry

MAP SCALES
6inch
CK061

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Scale:– 1:10560
Scála:– 1:10560

500 400 300 200 100 0 500 Metres
1000 500 0 1000 Feet

Plot Ref. No. 22728_1
Plot Date 28–MAR–2003

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email : ocm@indigo.ie

CLIENT
RoadMac Ltd

TITLE
Surrounding Landuse

Details
O.S. Licence Agreement number AR 0038702
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FIGURE NUMBER
4.2

Scale
Not To Scale

Revision
A

There are twenty seven (27) private residences within 500 m of the site. Ten (10) of these are within 250 m of the site boundary (Figure 4.2). The nearest dwellings are on the western site boundary, three (3) of which are within 20 m of worked out areas and directly overlook the site. The villages of Coachford and Dripsey are approximately 3 km to the south west and south respectively.

4.5 Site Layout

The existing site layout, which is based on a topographic survey completed in September 2005, is shown on Drawing No. 0513901. The entire area has been quarried, with excavations extending up to the site boundaries. There are exposed sand and gravel faces along the northern, western, southern and south eastern boundaries. There are stock piles of subsoils and unsuitable granular material, and settlement lagoons in the central, western and south-eastern areas. The central and northern portions have been graded to a generally uniform level.

Sand and gravel extraction is currently on-going in the south of the site. Materials are not excavated below the water table. Water is abstracted from a large sump in the south west of the site for use in the on-site washing plant, which is located in the south central area.

The proposed Site Layout Plan is shown on Drawing No. 0513902 Sheets 1 - 4 (Scale 1:500). The layout includes the C&D recycling area, the green waste composting area, the proposed internal access road and a general outline of the proposed reinstatement stages and excavation phases. The layout also shows distances from existing and proposed operational areas to nearest sensitive receptors.

4.6 Site Facilities

The site entrance is off the R619 and there is a paved access road (tarmacadam) leading from the entrance to the site offices and processing plant. The offices (portacabins), toilet and canteen and a weighbridge are located adjacent to the processing plant. Site services include telephone and fax and a three-phase electricity supply. Water for the site offices is obtained from an on-site well, which is located in the south east of the site. Foul sewage from the toilets is treated in an on-site septic tank located adjacent to the offices.

4.7 Sand & Gravel Extraction

4.7.1 Lifetime

The total volume of economically viable reserves on the site has not yet been established. This, in conjunction with possible future changes in market demand, means that overall lifetime of the quarrying activities cannot be defined at this time, but it is expected that it will be between 6 and 10 years.

To minimise the impact on neighbours and off-site surface water courses sand and gravel extraction will not be carried out along the north western, south western and south eastern site boundary. The areas occupied by the settling ponds are also excluded, as it is not practicable to remove the accumulated materials to access the underlying gravels.

A preliminary survey of the aggregate reserves over 10 ha in the south of the site, which includes the current active area, (Phase 1 on Drawing No. 0513902) completed in July 2004 established potential reserves of 762,370 m^3, assuming excavating to depths of 9 m below the existing ground level. This equates to ca 1.5 million tonnes of materials and based on the current demand (ca. 1200 tonnes/week) this could be removed in the next 5 - 6 years. It is possible that further reserves are present at greater extended depths.

A slow down in the construction activities, with associated reduction in demand, and/or the confirmation of further reserves may lead to the extension of the operational life of Phase 1. Depending on market conditions extraction may be extended into the north east of the site (Phase 2). Based on a preliminary investigation there is ca 400,000 m^3 of potentially suitable in this area, which equates to ca. 800,000 tonnes. This could be removed in 3 - 4 years. However, it would be necessary to excavate up to 5 m of silt/sands to access the gravels and market conditions will dictate if this is economical.

4.7.2 Extraction Methodology

The current and proposed quarrying does not involve dewatering and excavation below the water table. The sands and gravels are excavated using mechanical arm loaders. The excavated materials are brought to the screening and washing plant in dump trucks, where they are washed and screened into various sizes. The wash water is obtained from a sump excavated in the southern area of the site. The aggregates are stockpiled on-site pending removal to point of sale using heavy goods vehicles.

Extracted materials that are not suitable for sale e.g. fine silts and clays are currently used in the construction of screening bunds around the exposed boundaries of the site (Drawing No. 0513901). It is proposed to use such materials that arise in the future reinstatement works in the worked out areas in the north of the site.

Boulders encountered during excavation are stockpiled pending processing in a mobile crusher. The crushed material then passes through a mobile mechanical screen and if necessary through the washing plant. The crusher is only brought to the site once a sufficient volume of material has been stockpiled.

A list of the plant currently used is presented in Table 4.1.

Table 4.1 Existing Plant List

Plant Item
3 Excavators
3 Front End Loaders
2 Dumpers
1 Washing/Screening Plant
1 Mobile Screen
1 Mobile Crusher (Occasionally)

4.7.3 Hours of Operation

The current hours of operation are 06:00 - 19:00 Monday to Saturday. No operations are carried out on Sundays or Bank Holidays. For vital commercial reasons it is proposed to continue operating during these hours.

4.7.4 Water Management

Water used in the washing plant is obtained from a sump excavated in the south western part of the site. The wash water from the plant is pumped to settlement ponds in the central part of the site. The overflow from these ponds, along with surface water run-off from the northern areas is channelled back to the sump.

As quarrying progresses it may be necessary to relocate the settlement pond to an area in the east of the site as shown on Drawing No. 0513902.

There is no surface water discharge from the site and there are no plans for any future discharge. Further information on surface water and groundwater are presented in Sections 6 & 7.

4.7.5 Fuel / Oil Storage

Site activities involve the storage and handling of fuel for the site plant and trucks, and engine and lubricating oils used in plant and equipment maintenance. Diesel is stored in unbunded above ground tanks. These will be provided with bunds that have a capacity of 110% of the tank volume and will be water tight. All tank valves and outlets will be inside the bund.

Engine and lubricating oil will be stored in drums in a contained area e.g. bunded pallets, or dedicated storage unit. Waste oils generated during plant maintenance will be stored in drums in a dedicated contained area. Adequate oil spill containment and clean-up equipment are provided and maintained ready for use adjacent to the oil storage areas.

4.7.6 Traffic

The sand and gravel is sent off-site in heavy goods vehicles (HGVs). A description of traffic associated with the existing and proposed operations, including a Traffic Impact Assessment (TIA), is described in Section 12.

4.7.7 Fencing, Signs, Lighting

It is not proposed to alter the existing fencing/security arrangements. The north eastern boundary is delineated by a concrete post and link fence. The northern, south eastern and western boundaries are delineated by mature hedgerows.

The TIA carried out to assess the impacts of the proposed development includes a range of recommendations regarding the main access to the site (Ref Section 12). It is intended to implement all of these recommendations which include erecting warning signs for motorists on either side of the site entrance.

Additional lighting may be required at the C&D recycling and composting areas to allow for safe work practices in Winter months.

4.7.8 Reinstatement

It is considered that, in the context of the surrounding land use, the most appropriate long term end use for the reinstated area is agriculture. It is proposed to progressively re-instate portions of the site starting in the north west (Stage 1) (Drawing No. 0513902). This is an area where it is not intended to extract any further sands and gravels. Subsequent reinstatement will extend along the boundary towards a perimeter screening bund in the north east (Stage 2). The final Stage will be carried out in the south of the site (Stage 3).

The proposed staged programme accommodates the progressive extraction of aggregates and the continued operation of the C&D and green waste composting, which will be located in the east of the site.

It is proposed to reinstate the worked out areas using a combination of un-suitable materials won on-site; inert materials from the on-site C&D recycling that are not suitable for sale; imported clean soils and subsoils, and compost produced in the on-site composting operation. In the northern area it is proposed to raise the levels to those of the road ways that form the western and northern site boundaries. There will be a gentle fall to the south east to encourage field drainage. The proposed final reinstatement profile for Stages 1 and 2 is shown on Drawing No. 0513903 and Sections are shown on Drawing No. 0513904.

The reinstatement materials will be brought to the working area in HGVs, off-loaded and placed using a dozer. The final top 300 mm will comprise topsoils and or subsoils conditioned with compost. The topsoil placement will not be carried out in periods of persistent wet weather to avoid ground compaction. Once this layer has been placed the area will be rolled, top dressed and seeded with a mixture of grasses in accordance with best agricultural practice.

It is estimated that the reinstatement of Stage 1 will require the placement of approximately 100,000 m^3 of materials. The reinstatement time frame will depend on the amount of unsuitable materials produced on-site, the volume of clean soils that can be sourced off-site and amount of materials generated in the on-site recycling facility for which no commercial outlet is found. However, it is expected that the works will be completed in 1 - 2 years from the start date. It is estimated the reinstatement of Stage 2 will require approximately 150,000 m^3 of materials and should be completed within 3 - 4 years of the start date. This is based on the assumption that further aggregate extraction will not take place in this area.

Based on the proposed extraction programme Stage 1 and 2 reinstatement could be completed and the reserves in Phase 1 are exhausted. This southern area will form Stage 3. The final reinstatement profile for Stage 3 has not been finalised, as the overall depth of the excavation is not known. It is the intention that this area will also be reinstated to levels approximating Stages 1 and 2. However, this is dependant on the availability of suitable reinstatement materials and a lower level profile, incorporating water features, may be the final option. A reinstatement plan for this area will be prepared and implemented upon the completion of Stages 1 & 2.

4.8 Proposed C&D Recycling

It is proposed to accept only non-hazardous materials - concrete, bricks, tiles, tarmac, timber, soils and stones. Wastes with the potential to give rise to odour, vermin and pest nuisance will not be accepted.

The recycling activities will require a Waste Permit from the Council issued under the Waste Permit Regulations 1998. The Permit will set conditions that regulate site operations and specify environmental controls.

4.8.1 Location

The proposed location is shown on Drawing No. 0513902. While there are no national guidelines for separation distances for C&D recycling facilities from neighbouring properties, the more remote the location the lower the likelihood of impacts. Locating the activity in the east of the site provides a buffer of more than 400 m between the processing area and the nearest neighbour. This will minimise the potential impacts of emissions (noise, dust) on the nearest neighbours and also facilitate the progressive reinstatement of the site.

4.8.2 Layout

The projected maximum recycling capacity is ca. 180,000 tonnes per annum. This will require a footprint of ca 2.5 ha to include plant and stockpile areas. The recycling will involve the use of the same plant currently used on-site. This will include front loading shovels, screen(s), crusher and dumper trucks. Additional plant may include a mechanical grab. A flow chart of the main processes is shown on Figure 4.3. An internal access road to the facility will be provided. (See Drawing No. 0513907).

4.8.3 Acceptance Procedures

It is expected that the majority of the materials accepted at the site will have been pre-segregated at the point of generation, in line with best practice in the construction industry. However, it is probable that occasional stray wastes (gas cylinders, empty paint tins, plastic), not suitable for processing, will be present.

It is anticipated that the majority of the C&D materials delivered to the facility will be in O'Regans Ltd vehicles. The remainder of the materials will be delivered either by waste contractors with a valid waste collection permit, or those exempt from the permit process (i.e. producers). Casual deliveries from householders will not be accepted. This will minimise the risk of the delivery of unsuitable material.

The delivery vehicles will be weighed on the weighbridge and the materials inspected by the weighbridge operator. Any deliveries which, upon inspection, is found to contain large quantities of unsuitable materials e.g. domestic waste, paper and plastics, will not be accepted. In such events the weighbridge operator will record the name of the waste delivery contractor, the driver, the registration number of the vehicle and the nature and origin of the waste. The operator will instruct the vehicle driver to return the waste to the producer. Records of any such incidents will be maintained on-site and reported to the Council.

Clean soils and stones will be directed to the active reinstatement areas, where the materials will be off-loaded and graded using a dozer. The dozer operator will inspect the soils and any stray contaminants e.g. timber, plastic will be manually removed and brought to the quarantine area. All other materials will be off-loaded at the C&D recycling area, where a further inspection will be carried out. Any further materials identified as not suitable will be immediately removed and, where practical, returned to the delivery vehicle. If this is not practical the material will, depending on its nature (e.g. gas canisters, metal), either be stored in a quarantine area or placed in the containers used to store stray contaminant.

In the event of the producer or contractor refusing to remove the unsuitable materials O'Regans Ltd will ensure that they are removed off-site and disposed of at an appropriate facility as soon as practical. O'Regans Ltd will also ensure that the stray contaminants removed from the incoming materials are sent to appropriate off-site recovery/disposal facilities. O'Regans Ltd will maintain records of the waste type, quantity and destination of the materials.

4.8.4 Materials Handling

Timber, which may present, will be separated out manually and transferred to the green waste composting area. The material will then pass through a mechanical screen to remove the fine fraction e.g. subsoil and topsoil. This fine fraction will be used on-site for reinstatement purposes. The larger faction from containing concrete, brick etc will pass through a crusher to produce an inert recycled aggregate.

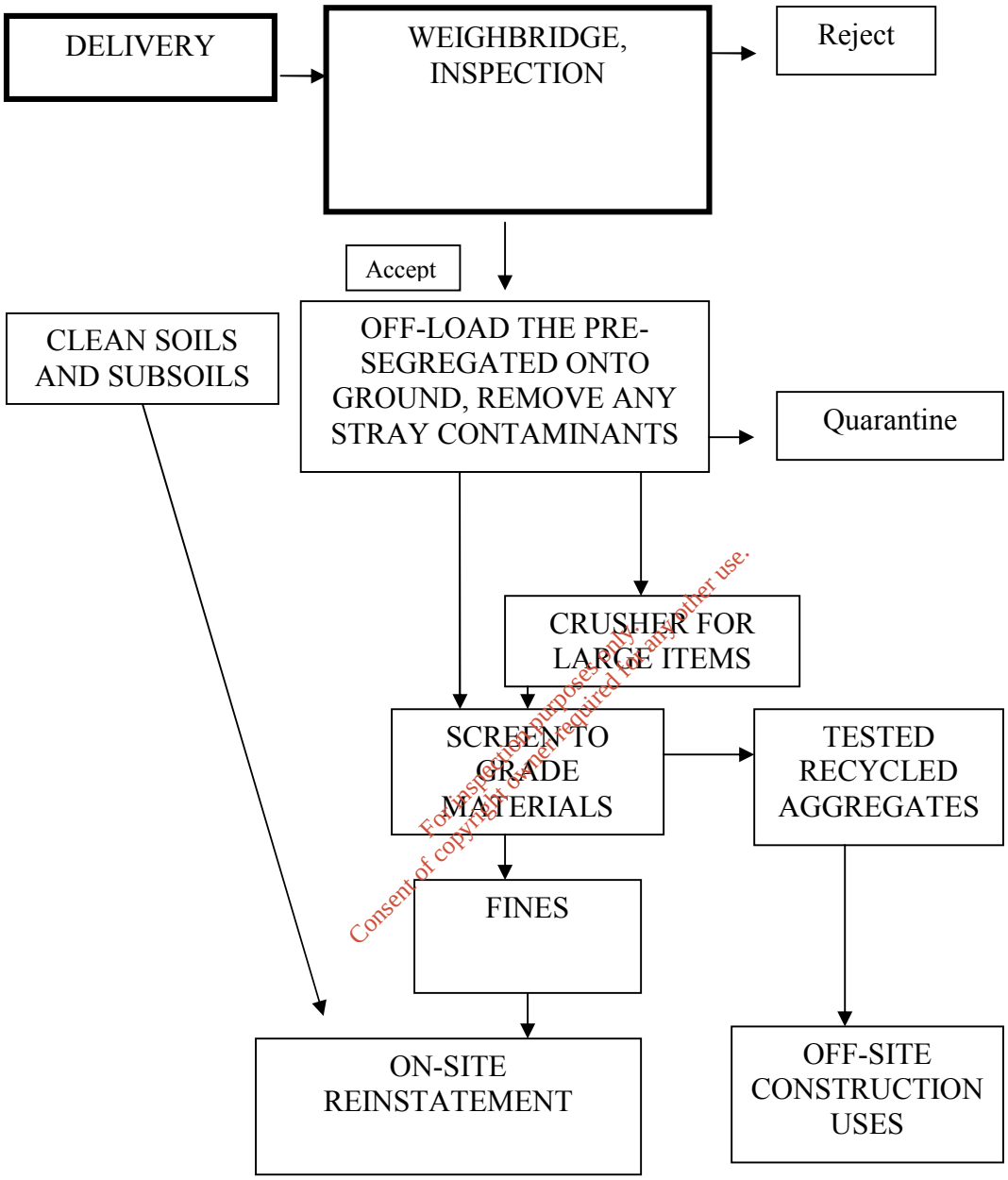
It is expected that the majority of the recycled aggregate will meet the relevant construction quality standards and will be sold as products. The residual inert materials that do not meet these standards will be used on site in the reinstatement works.

4.8.5 Quality Control Standards

It is intended to sell the recycled materials as building products. These, depending on the quality, can be used in concrete and mortar products, roads construction and earthworks. Recycled aggregates (RA) comprise crushed, graded inorganic particles processed from materials that have been previously used in construction, e.g. crushed concrete and masonry. RA are graded into the same sizes as natural aggregates and used in exactly the same way.

A specific sub-set of recycled aggregates is recycled concrete aggregates (RCA) where the masonry content is limited to not more than 5%. The performance characteristics of RCA are better than RA and consequently there are fewer restrictions on the use of RCA in concrete. In addition to their use in concrete and mortar, RA can be used as structural fill for roads, unbound pavements and earthworks. The type of aggregate produced at the site will to a certain extent be determined by the C&D inputs. The final end use will be determined by the quality of the RA produced and this will be categorised according to Irish and internationally recognised quality standards.

Figure 4.3 General Process Flow Diagram – C&D



The British Cement Association document '*Mix Design Specification For Low Strength Concretes Containing Recycled And Secondary Aggregates'* provides guidance on the standards to be applied in determining RA used in concrete production. A copy of the report is included in Appendix 3. The DEHLG document *'C&D Waste Management: Implementation of International Best Practice in Ireland'* describes the potential uses of C&D recycled aggregates in Ireland and the specifications and standards which must be applied. A copy of the report is also included in Appendix 3.

The RA will be sampled and sent for testing at an Irish National Accreditation Board Construction Materials Testing Laboratory in order to identify suitable markets. The specification for RA use in concrete are set out in IS EN 206-1 Concrete - Part 1: Specification, Performance, Production and Conformity. I.S. EN 13139 Aggregates For Mortar: describes the properties of RA for use in mortar.

4.9 Proposed Green Waste Composting

The green waste accepted at the site will comprise wood wastes generated by tree surgery businesses; garden and park waste produced during improvement and maintenance works by landscape gardeners; possible grass and shrub trimmings from civic amenity areas and timber and wood waste recovered from the C&D materials. The proposed composting facility will require a Waste Permit from the Council.

The composting area will encompass approximately 2,000 m^2, all of which will be occupied by an impermeable concrete slab (Details shown on Drawing 0513906). The facility is designed to process up to 5,000 tonnes of material annually and produce ca. 3,500 tonnes of compost. The operation will involve pre-treatment to shred and mix the green waste, composting in open windrows, maturation and post treatment to remove impurities. The finished product will be suitable for horticultural and landscaping use and will either be used in the on-site reinstatement works or sold for horticulture/landscaping.

4.9.1 Location

The proposed location and layout of the composting area is shown on Drawing No. 0513905. There are no national or EU guidelines on minimum separation distances between composting operations and the boundary of nearest dwellings. The Compost Association of Ireland (Cre) recommend a minimum distance of 200 m. The Environment Agency in the United Kingdom recommend 250 m. The proposed location is 400 m from the nearest residential dwelling. Further information on buffer/separation is in Section 9.

4.9.2 Layout

A flow chart of the process is shown on Figure 4.2.

4.9.2.1 Waste Reception

The waste reception and quarantine area will encompass approximately 300 m^2. The area is designed to provide storage for up to 5 days intake at maximum production and to accommodate pre-treatment. It is estimated that the peak delivery will be 15 tonnes per day, which is likely to occur in the spring, summer and autumn (April - October). This requires a storage capacity of 75 tonnes. The density of the waste will vary from 200 to 600 kg/m^3, depending on the type and whether it is shredded or not. Assuming an average density of 400 kg/m^3 and a maximum storage height of 3 m, 1 $tonne/m^2$ can be stored. Therefore, the required daily storage area is approximately 75 m^2. An area of approximately 100 m^2 is allowed for pre-treatment and green waste inspection.

Stray contaminants found in the incoming deliveries will be removed to the waste quarantine area. The quarantine area will also be available for storage of stray contaminants removed from the C&D materials. While it is considered unlikely that there will be significant volumes of contaminants in either waste stream, it is prudent to provide adequate space for the quarantine area (approximately 200 m^2).

4.9.2.2 Windrow

The Windrow Area will encompass approximately 400 m^2 and will accommodate two windrows. Each windrow will be approximately 5 m wide, 2.5 m high and approximately 25 m long. Allowing for space between the windrows the whole Windrow Area will be approximately 400 m^2.

4.9.2.3 Screening & Maturation Area

The Screening and Maturation area will encompass 300 m^2 at maximum capacity and is designed to accommodate 6 weeks storage.

4.9.2.4 Finished Product Storage Area

The finished product storage area will encompass ca. 200 m^2. It is designed to accommodate 300 tonnes of product, assuming a maximum of 60 tonne of product is produced weekly and a maximum stockpile height of 2.5 m.

4.9.3 Surface Water Infrastructure

All run-off from incident rainfall on the composting area will be collected and directed to a leachate storage tank, as shown on Drawing No. 0513905. There will be no surface water discharges to ground or surface water courses.

4.9.4 Leachate

To avoid the contamination of surface water, soil and groundwater leachate and contaminated surface run-off from all paved areas will be collected and stored in an underground leachate storage tank. Some of the liquid will be added to the windrows to maintain the optimum moisture content. Surplus liquid will be removed off-site and treated/disposed in an off-site local authority municipal wastewater treatment plant or landspread.

4.9.4.1 Leachate Volumes

The volume of leachate/contaminated run-off generated that will require removal off-site is significantly influenced by seasonal factors. The majority will be generated in the wetter winter months and little or none in the drier summer months, when it is envisaged that leachate will be recirculated to the compost piles to maintain optimum moisture content.

Water balance calculations were prepared to estimate the likely volumes of leachate that will be generated. It was assumed that all incident rainfall on the paved area will result in contaminated run-off (leachate) and that zero amounts will either be absorbed by the materials or lost to evaporation. The calculations are based on monthly rainfall figures for the metrological station at Cork Airport derived from data for the period 1961 - 1990.

The predicted annual average, maximum and minimum quantities of leachate/contaminated run-off when operating at maximum capacity are presented in Table 4.2.

Table 4.2 Leachate Volumes

Rainfall – Cork Airport	**Rainfall Volumes**	**Leachate Volumes**
Average maximum month (Jan)	138.3 mm	276 m^3
Average minimum month (July)	66.4 mm	132 m^3

The long term storage of leachate is not intended and the liquid will be removed from the facility at frequent intervals. It is considered that one week storage capacity is adequate and provides for a factor of safety to allow for any down time at the off-site wastewater treatment plant. The highest monthly rainfall occurs in January, the wettest month and at a time of the year when little or no leachate will be recirculated. One weeks storage in January therefore requires a capacity of approximately 69 m^3.

Storage capacity should also deal with storm events. For the purpose of the assessment of storage capacity a 2 day rainfall event with 5 year return period was used (58.3 mm). Such an event would generate approximately 116 m^3 additional leachate/contaminated run-off, giving a total storage capacity requirement of 185 m^3 in the winter period. This assumes that no leachate is removed from the tank in the one week storage period and that there are no evaporative losses.

4.9.4.2 Leachate Collection & Storage

The layout of the collection system is shown on Drawing No. 0513905. The tank will have a capacity of 185 m^3. The base and sides of the tank will be constructed of concrete. A high level alarm will be fitted to prevent over topping. A vacuum taker will be used to extract leachate for use in the windrows as required.

4.9.4.3 Leachate Disposal / Treatment

Surplus leachate will be removed off-site either for treatment at a local authority wastewater treatment plant or landspreading of farm lands in accordance with an approved Nutrient Management Plan. It is not proposed to provide any on-site treatment.

4.9.5 Waste Acceptance Procedures

The facility will only accept green waste from waste contractors with a valid waste collection permit or those exempt from the permit process e.g. landscape gardeners. O'Regans Ltd will not accept waste from individual householders.

All delivery vehicles will be weighed on the weighbridge, where the waste will be inspected by the operator. Any deliveries which, upon inspection, is deemed not to be suitable will not be accepted. In such events the weighbridge operator will record the name of the waste delivery contractor, the driver, the registration number of the vehicle and the nature and origin of the waste. The operator will instruct the vehicle driver to return the waste to the producer. Records of any such incidents will be maintained on-site and reported to Cork County Council.

4.9.6 Waste Reception

Green waste may contain a small percentage of contaminants, e.g. glass, metal and plastic. Large items will be removed from the waste manually and placed in a container for subsequent removal to a licensed landfill, or if the material is suitable for recovery, to a permitted recovery/recycling facility.

Proper mixing of the material is important to achieve the suitable composting conditions and the production of compost with a consistent quality. As a rule of thumb the mixture should have a dry solids content of at least 30 - 40%. Some green waste streams can contain relatively high or low concentrations of certain elements, e.g. nitrogen, sulphur. To prevent process disturbances (e.g. high Carbon/Nitrogen ratio), excessive emissions (e.g. ammonia, H_2S) and bad quality compost, proper mixing is essential. To achieve this mixing certain waste streams (e.g. branches, timber, stumps) will be chipped/shredded.

4.9.7 Windrow

The green waste will be placed on the ground at the front of the Windrow using a front-end loader. In the early stages of the process the windrow will be turned two to three times a week using a loading shovel. The turning loosens and homogenises the composting material, while at the same time water can be added (if necessary) to further enhance the process.

The machine will work through the composting section from the back-end to the front-end: it starts by removing the mature compost (at the back-end) to the maturation area, and subsequently turns the material along the windrow. Once it has turned the whole composting section, the area at the front-end will be empty and ready for the intake of fresh green waste.

The height of each windrow will be kept constant over the total composting period, so that the area occupied by a charge of green waste decreases as the composting period advances. It is envisaged that the composting cycle will be 8 - 12 weeks.

During the process, the material will be dried to approximately 60 - 70% dry solids and the quantity of finished product compost will be approximately 60% of the green waste input (approximately 3,500 tonnes at full capacity).

4.9.8 Screening & Maturation

After the Windrows the material will be transferred to the maturation area using the front loading shovel. Here it will be screened to remove impurities. The equipment used will comprise a mobile hopper/trommel system, with adjustable sieving plates in the trommel. The compost will initially be screened over a diameter between 15 and 25 mm.

The material retained in the trommel will be either returned to the composting cycle, or if it contains mainly non-biodegradable impurities, transported off-site to an appropriately licensed landfill.

The compost will remain in the maturation area for approximately 8 weeks to allow for proper maturation, following which it will be moved to the finished product storage area.

4.9.9 Finished Product Storage

The finished product will be stored on site in the dedicated product storage area. This is designed to accommodate seasonal changes to the reinstatement programme and/or horticultural markets.

4.9.10 Process Control

Primary process control will be achieved by temperature sensors placed at different locations and depths in the Windrows. These will be monitored on a daily basis to ensure that optimum temperatures are maintained. The Windrows will be visually inspected on a daily basis to confirm the moisture level is in the optimum range. Leachate/contaminated run-off from the on-site leachate storage tank will be added to the windrow as required to maintain optimum moisture conditions.

4.9.11 Compost Quality Requirements

There are no national standards for compost quality, however the EPA has set quality standards for different categories of compost in Waste Licences. These limits are derived from a draft EU Working Paper on Biowaste, which defines three environmental quality classes, as shown in Table 4.3.

In order to achieve these standards the composting process must be carried out in such a way that a thermophilic temperature range, a high level of biological activity under favourable conditions with regard to humidity and nutrients, as well as an optimum structure and optimum air conduction are guaranteed over the composting period.

Figure 4.4 General Process Flow Diagram

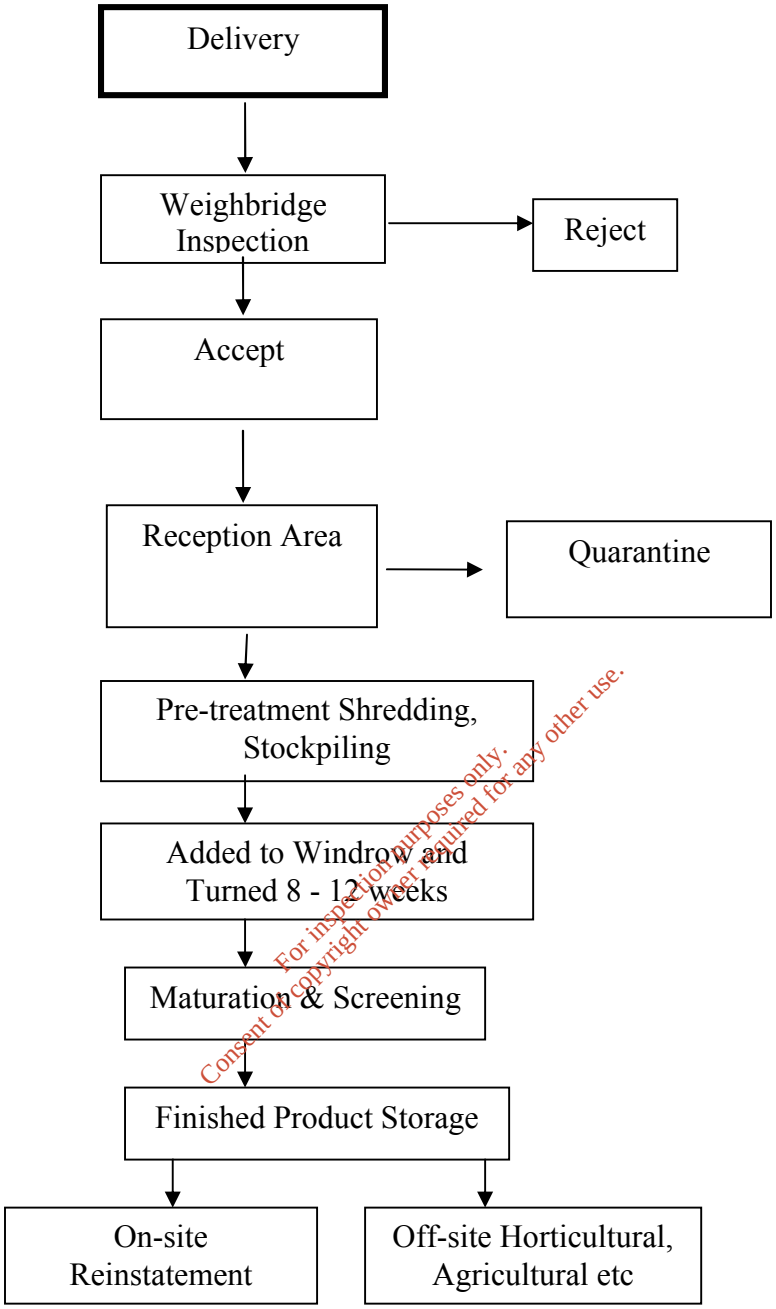


Table 4.3 Class of Compost

Parameter	Class 1	Class 2	Stabilised Biowaste
Cd (mg/kg dm)	0.7	1.5	5
Cr (mg/kg dm)	100	150	600
Cu (mg/kg dm)	100	150	600
Hg (mg/kg dm)	0.5	1	5
Ni (mg/kg dm)	50	75	150
Pb (mg/kg dm)	100	150	500
Zn (mg/kg dm)	200	400	1,500
PCBs (mg/kg dm)	-	-	0.4
PAHs (mg/kg dm)	-	-	3
Impurities > 2 mm	< 0.5%	< 0.5%	< 3%
Gravel and stones > 5 mm	< 5%	< 5%	-

Whether the compost meets the quality standards of Class 1, Class 2 or Stabilised Biowaste, depends on the waste composition, in particular heavy metal concentrations. Clean green waste normally allow the production of Class 1 or Class 2 compost and it is the objective to produce a Class 1 and 2 product.

4.9.11.1 Compost Quality Testing

The compost quality will be checked on a regular basis. Samples will be taken during the post treatment screening and sent to an accredited laboratory for analysis for the following parameters: -

- Dry solids content and organic solids content (expressed as % dry solids and % volatile solids);
- Heavy metals (cadmium, chromium, copper, nickel, lead, zinc and mercury);
- Microbiological parameters (E-coli, Salmonella spp and Clostridium perfringens);
- Respiration Activity;
- Dynamic Respiration Index.

Additional samples will be taken as required, to monitor the composition of input material and process performance. These samples will typically be analysed for dry solids, volatile solids and Carbon/Nitrogn ratio.

4.10 Growth

It is proposed at a future date to construct new site offices at the site entrance. This will be subject to a separate planning application. It is not anticipated that sand and gravel working will require any additional infrastructure. There may, depending on market conditions, be an opportunity to expand the C&D and green waste composting to treatment capacity. It is not anticipated that there will be any significant additional infrastructure required during the operational lifetime of the facility.

4.11 Associated Developments

It is not envisaged that the development will be directly or indirectly responsible for any associated developments.

4.12 Environmental Management System (EMS)

O'Regans Ltd will develop an Environmental Management System (EMS) for the site in accordance with the EPA Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non-Scheduled Minerals). The EMS will include an Environmental Management Plan (EMP). The EMP will serve as a guidance document for facility staff. It will describe the operational control and management practices that are applied at the facility. It is intended to guide the management of site activities to achieve compliance with regulatory requirements and best operational practice.

The EMS will as a minimum include:-

- Organisational commitment,
- Environmental policy statement,
- Environmental audits and site assessments,
- Environmental monitoring,
- Operational and emergency procedures,
- Responsibility and reporting
- Training and awareness.

5. CLIMATE

5.1 Introduction

This Section describes the local climatological conditions and presents an assessment of the impacts of the proposed development on the local climate.

5.2 Meteorological Data

The Cork Airport Meteorological Station is located approximately 25 km to the south east of the site and the data from this Station are considered as representative of the climatic conditions in the local area. The average annual rainfall is 1194 mm. The effective rainfall (rainfall minus evapotranspiration) is 516 mm. The winds are predominantly from the south west sector.

5.3 Impact Assessment

The development will not result in any impacts on the climate or microclimate at the site. The greenwaste composting will produce carbon dioxide, which is a green house gas. Under the Kyoto protocol the European Union aims to reduce the emissions of greenhouse gases by 8% below 1990 levels by the period 2008 - 2012. As a result Ireland has agreed to limit the increase in its net greenhouse emissions to 13% above 1990 levels.

Carbon dioxide resulting from the bioconversion of organic waste is not considered a net contributor to greenhouse gas emissions, since the carbon is stored in the biomass for a limited number of years (short carbon cycle), whereas in the case of fossil fuels the carbon is stored for millions of years (long carbon cycle). Therefore, there will be no net contribution to greenhouse gas emissions.

6. GEOLOGY & HYDROGEOLOGY

6.1 Introduction

This Section describes the local and regional geology and hydrogeology conditions. It assesses the impacts of the current and proposed activities. The assessment included a desk study of the available hydrogeological information, a site and local area reconnaissance and groundwater quality monitoring.

6.2 Methodology

The desk study included a review of information on the site and regional geology and hydrogeology. Information on soil and subsoil permeability, bedrock type, aquifer classification and vulnerability and groundwater well locations was obtained from databases maintained by the GSI. Information on groundwater well locations was also obtained from a review of GSI, Cork County Council and the Environmental Protection Agency databases. Additional information on the nature and thickness of the subsoils and groundwater quality was obtained from thefindings of a site investigations carried out in 1996 and 2004.

6.3 Existing Environment

6.3.1 Soils

Materials have been extracted from the entire site and all topsoils have been removed. The *in-situ* subsoils are fluvio-glacial in origin and consist of a mixture of silts, sandy gravels and boulder clay. The 1996 site investigation established that, at that time, the subsoils thickness across the site ranged from 9 - 17 m above the bedrock.

A trial pit investigation proved a subsoils thickness of at least 7 m in the central and northern area. In this area there is a layer of sandy silt, up to 6 m thick, overlying a zone of sands and gravels that vary from 0 m to 6.7 m below ground level. The on-going extraction in the south of the site has revealed that sands and gravels extend to more than 9 m below ground level. Cross-sections through the central and northern area are included in Appendix 4.

6.3.2 Bedrock

The GSI Bedrock Map Sheet 25 indicates the bedrock locally comprises Devonian purple mudstone and sandstone of the Ballytrasna Formation. The 1996 site investigation data confirms the presence of a red, brown, weathered sandstone beneath the site.

6.3.3 Hydrogeology

The sands and gravels are water bearing. In the central and northern area water was encountered at depths between 1.5 and 7 m below ground level . The water strikes at depth (>5 m) in the sands and gravels quickly rose in the trial pits to approximately 3 m below ground level, indicating that the overlying sandy/silts were acting as a confining layer.

Groundwater movement is from north to south towards the River Dripsey. A tributary of the Dripsey flows from north to south along part of the eastern site boundary. The stream bed is at a higher elevation (ca. 126 m OD) than the base of the excavated area to the west (ca. 124 m OD), which indicates that the bed is underlain by low permeability soils (probably sandy silts). Groundwater level in the southern part of the site is approximately 109 m OD, but this fluctuates seasonally in response to rainfall recharge.

Incident rainfall in the northern and central parts of the site, which are underlain by the silt sands flows to the sump in the south of the site. Rainfall on other areas infiltrates to ground.

6.3.3.1 Aquifer Classification

There is no site specific data (e.g. borehole logs) on the hydrogeological characteristics of the bedrock aquifer beneath the site. The GSI indicates it is a locally important (**Ll**) aquifer that is productive in local zones. There is no mains supply in the area and it appears that all of the houses in the vicinity of the site have their own individual wells.

The data on wells in the vicinity of the site, obtained from the GSI (Appendix 4), indicates that the wells are located in the bedrock aquifer. It is considered that the sands and gravels are not an important local source of groundwater supply but may supply additional storage to the underlying bedrock aquifer locally. The production well, in the southern part of the site adjacent to the processing plant, is located in the bedrock.

Based on the available information it is considered that the sands and gravels in the southern part of the site may be in continuity with sand and gravel deposits outside the site boundary and, as indicated by GSI, provide additional storage capacity to the underlying bedrock aquifer.

6.3.3.2 Vulnerability

Vulnerability is defined by the GSI as the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. The GSI uses four groundwater vulnerability categories - extreme, high, moderate and low - in the assessment of risk to groundwater.

In the central and northern area the silts overlying the gravels are likely to have a moderate to poor permeability (between 10^{-6} and 10^{-8}m/s) and control the vulnerability rating. A thickness of 3 to 5 m of moderate to low permeability subsoil indicates a High vulnerability rating.

In the southern area the gravels are considered to provide additional storage capacity to the underlying bedrock. The vulnerability is defined by the depth to the water table from surface. The available information indicates that the gravel aquifer in this area has an Extreme vulnerability rating.

6.4 Groundwater Quality

OCM collected a water sample from the on-site well. The sample was submitted to an accredited laboratory for analyses, which included pH, electrical conductivity, alkalinity, hardness, ammonia, chloride, total organic carbon, nitrate, volatile organic compounds, petroleum hydrocarbons and metals. The laboratory test report is included in Appendix 5 and the results are summarised in Table 6.1. The table includes only those parameters that were detected and, for comparative purposes, the limits set in the European Communities (Drinking Water) Regulations 2000.

The results indicate that the water is of good quality and suitable for potable purposes. The on-site well is adjacent to the processing area and is within 100 m of the current working area.

6.5 Impact Assessment

The occupants of dwellings to the south west (2 No.) and the north west of the site (1 No.) have expressed concerns that the continued operation of the quarry will impact on the yield and quality of the groundwater in their wells. The available information indicates that these wells are located in the bedrock. It is understood from the submissions that the concerns relate to possible future impacts. The dwellings to the south west are approximately 80 m downgradient from the sump used to abstract water for the washing plant and the dwelling to the north west is approximately 600 m from the active area.

Table 6.1 Groundwater Test Results

Parameter	Units	MW-1	IGV*
pH	pH units	7.72	6 – 9
Dissolved Oxygen	%	4.6	-
Conductivity	mS/cm	234	1000
Chloride	mg/l	18	250
Ammonia	mg/l	<0.2	0.3
Nitrate	mg/l	17.3	50
Total Oxidise Nitrogen	mg/l	4	-
Sulphate	mg/l	13	250
OrthoPhosphate	mg/l	0.1	0.03
Calcium	mg/l	284	200
Magnesium	mg/l	4.3	50
Potassium	mg/l	2.4	5
Sodium		9	200-
Total Organic Carbon	mg/l	2	-
Total Hardness	mg/l	89	200
Alkalinity	mg/l	180	-
Aluminium	ug/l	236	200
Chromium	ug/l	10	50
Copper	ug/l	16	30
Iron	ug/l	60	200
Manganese	ug/l	1	50
Nickel	ug/l	3	20
Zinc	ug/l	20	100

- No Abnormal Change
**EPA-Interim Guideline Values*

It is not proposed to extract sands and gravels from below the water table and therefore dewatering of the working areas will not be required.

The current pumping rate to the washing plant is approximately 113 m^3/hour (25,000 gallons/hour). The plant operates for approximately 13 hours a day. The wash water is pumped to settling ponds in the central area of the site and the overflow is channelled back to the sump. Rainfall from the northern areas of the site, which are underlain by low permeability silty sands, also flows to the sump.

The current pumping rate maintains a drawdown of approximately 3 m in the sump. It is understood that the levels recover to approximately 0.5 m below the original standing level within 24 hours of pumping ceasing. Given the recirculation of the water from the washing plant to the sump via the settling lagoons, and the inflow of surface run-off from the northern part of the site it is considered that sump is acting as a reservoir collecting surface water and some of the groundwater locally in the sand and gravels. For this reason it is considered that the pumping of this reservoir does not result in the abstraction of large amounts of groundwater.

The current working area is the closest the excavations will ever be to the residences close to the south west boundary during the quarry lifetime. To minimise the risk of impacts on the groundwater supply to these dwellings excavations will not be carried out to the south west of the current active area.

The monitoring of the on-site well, which is located within 100 m of the current working area, indicates that the water is of good quality and that there is no evidence that current site operations are impacting groundwater quality.

There is no evidence that current activities have impacted on either the yields or water quality in the wells supplying the dwellings nearest to the working area. As future extraction works will move away from these dwellings, and there will be no significant change in either the working methodologies or dewatering rates, it is considered that the future works will not result in any impacts.

Although the extraction will move northwards the active area will be a minimum of 400 m from the residence to the north west of the site. Given the distance from the working area and the fact that this location is up hydraulic gradient of the site and there will be no change to the current abstraction rates, there is no significant risk of impact on either the yield, or quality at the wells for supplying dwellings north of the site.

It is proposed to continue the current method of groundwater management until all the viable reserves in the southern portion of the site are exhausted. As the extraction extends northwards it may be necessary to relocate the settlement pond to the eastern part of the site, as shown on Drawing No. 0513902. If this new lagoon is constructed the overflow will be channelled back to the sump, as is currently the case.

The materials processed at the C&D recycling plant will be inert, comprising concrete; bricks tiles; ceramics, soils and stones and tarmacadam. The recycling plant will be located in the north-eastern area of the site, which is underlain by up to 5 m of low permeability silty sands, that protect and confine the lower water bearing sands and gravels. The processing and stockpiling will not generate any direct emissions to groundwater. Surface water run-off from the processing and stockpile areas will enter the internal surface water drainage system.

The reinstatement of the northern area of the site will be carried out using natural materials won on-site, imported clean soils and subsoils, processed inert C&D materials that have no market outlet and compost from the proposed on-site compost facility. None of these materials presents a risk to groundwater.

The green waste composting system will generate leachate/contaminated surface water run-off that has the potential to impact on groundwater quality in the event of an uncontrolled release. The composting operation will be located in the north east of the site which is underlain by up to 5 m of low permeability silty sands.

All of the composting activities will be carried out on an impermeable concrete slab. Leachate and contaminated run-off from the slab will be collected and directed to an underground concrete leachate storage tank. The tank will be underlain by up to 2 m of low permeability silty sands. The leachate will be recirculated to the windrows and surplus liquid will be removed off-site for treatment/disposal either at a wastewater treatment plant or by landspreading in accordance with an approved Nutrient Management Plan. In the unlikely event of the uncontrolled release of leachate the confining layer of low permeability silty sands will inhibit the percolation of the leachate to the water table.

6.6 Mitigation Measures

As the bedrock aquifer is an important local groundwater resource, measures to protect groundwater quality and prevent any impact on the resource outside the site boundary have been incorporated into the development plans.

The C&D recycling and green waste composting operations will be located in the north east of the site where the current ground conditions (silty sands) provide protection to the underlying water bearing sands and gravels. The green waste composting will be on an impermeable concrete slab with leachate directed to a leachate storage tank. An external perimeter kerb will be provided around the composting and materials storage areas to prevent the entry of run-off from off-site upgradient areas and to contain contaminated run-off/leachate.

All fuel oil will be stored in bunded above ground tanks. The bunds will have a capacity of 110% of the tank volume and will be water tight. Integrity tests will be carried out on bunds to ensure their water tightness. Spill control kits will be maintained on-site and relevant staff members will be trained in there use.

6.7 Monitoring

Annual ground water monitoring will be carried out in the existing groundwater well. The analysis will include pH, electrical conductivity, dissolved oxygen, Total Organic Carbon, chloride, ammonia, alkalinity and hardness, nitrate, potassium, sodium, sulphate and coliforms.

7. HYDROLOGY

7.1 Introduction

This Section describes the site and local hydrology. It assesses the impacts associated with the current and proposed activities on the internal drainage and adjoining water courses. Although there are no current surface water discharges from the site, and the proposed development will not result in any new discharges, the assessment included monitoring in the stream that forms a section of the eastern site boundary.

7.2 Drainage Pattern

The lands are located in the catchment of the Dripsey River, which is a sub-catchment of the River Lee. The main channel of the Dripsey is approximately 1 km to the south west. An unnamed tributary of the Dripsey forms part of the eastern site boundary. It is understood that historically water was abstracted from the stream for use in the concrete block plant. Water is not currently abstracted from this stream and it is not proposed to do so in the future.

Much of the northern and eastern area of the site has been graded to a relatively uniform level. Ponds and drainage channels have been formed in the central and western areas. Surface water run-off from the northern and central areas, which are underlain by the silty sands, including the settlement ponds, flows via a series of drainage channels to the sump in the south of the site. There are no surface water discharge points from the site and none are proposed.

As extraction continues northwards it may be necessary to construct a new settling pond in the east of the site, as shown on Drawing No. 0513902. There will be no direct discharge from the pond to the nearby stream, and overflow of settled water will be channelled to the abstraction sump in the south of the site.

7.3 Surface Water Quality Monitoring

OCM conducted water quality monitoring at two locations (SW-1 and SW-2) on the stream along the eastern boundary in August 2006. The location of the sampling points is shown on Figure 7.1. SW-1 is upstream of the site and SW-2 is downstream.

The sampling was carried out in accordance with OCM sampling protocols and the samples were submitted to an accredited laboratory for analysis of a comprehensive range of organic and inorganic parameters. The full laboratory report is included in Appendix 5 and the results are summarised in Table 7.1. The table includes, for comparative purposes, draft Environmental Quality Standards (EQSs) published by the EPA. The EQSs are not statutory guidelines, but are intended to assist in the assessment of impacts on surface water quality in the context of the implementation of the EU Water Framework Directive.

All of the parameters were below the relevant EQS. The quality of the water in the stream is good and there is no evidence that the existing activities at the site have had any negative impacts.

Table 7.1 Surface Water Quality Results

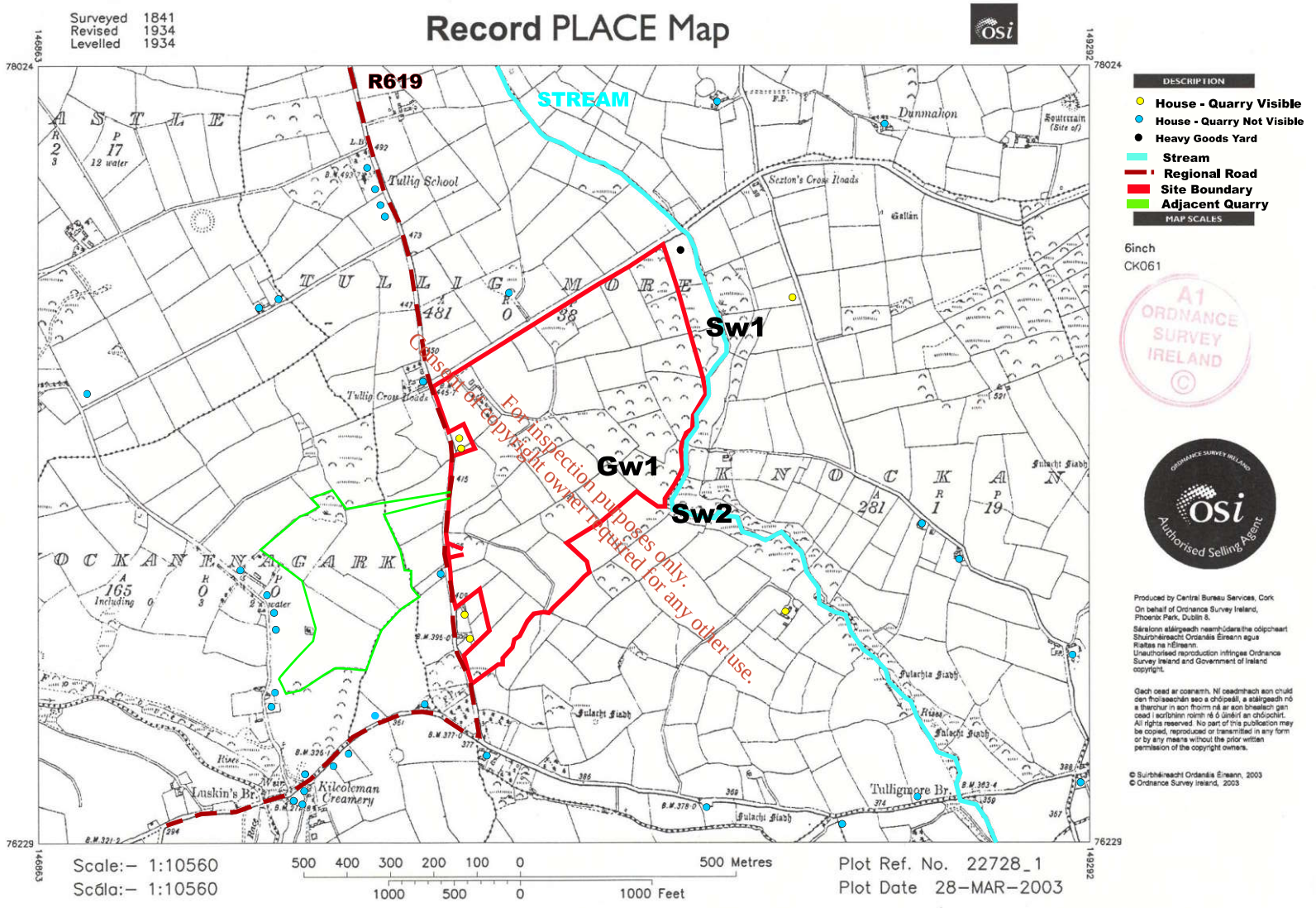
Parameter	Units	SW-1	SW-2	EQS
pH	pH units	7.72	7.85	6 – 9
Conductivity	mS/cm	213	211	1000
Chloride	mg/l	21	20	250
Ammoniacal Nitrogen	mg/l	0.1	<0.1	0.02
COD	mg/l	<15	<15	-
BOD	mg/l	2	<2	-
Dissolved Oxygen	mg/l	6.9	5.7	-
Alkalinity	mg/l	60	50	-
Nitrate	mg/l	18.7	17.9	50
Total Hardness	mg/l	67	67	-

EQS – EPA Environmental Quality Standards
- No EQS Set

7.4 Impact Assessment

7.4.1 Surface Water

The Dripsey discharges to the River Lee, which is classified as a salmonid river by the South Western Regional Fisheries Board. There is a major water abstraction and treatment works on the Lee in Cork City.



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It is a policy objective in the County Development Plan to conserve sources of drinking water and to minimise threats to either the quality, or quantity of drinking water reserves that might result from different forms of development.

The current gravel extraction activities are not impacting on either the flows or quality of the stream. The base of the quarry is below the level of the stream and run-off from the site is confined within the site and not contributing to flow in the stream.

The current and proposed activities do not require any abstraction from the stream. Groundwater is and will continue to be abstracted from the sump in the south of the site for use in the screening and washing plant. However, this is essentially recirculated within the site (Ref. Section 6). There are no direct or indirect emissions from the site to adjoining water courses and it is not proposed to discharge to the stream at any time in the future.

As the proposed C&D recycling activities are similar in nature to the gravel extraction activities it is not anticipated that there will be any impacts on the stream from this source. The green waste composting operations will be located on an impermeable concrete pad provided with an appropriate leachate/contaminated water collection system and there will be no direct or indirect discharges to the surface waters from this activity.

7.5 Mitigation Measures

There is a vegetated earthen bund along the boundary between the site and the stream. Rainfall on the site and on the western side of the earthen bund infiltrates to ground and is not directed towards the stream. The vegetation on the bund prevents rapid surface water runoff from the eastern side and reduces the potential for suspended solids entering the stream. It is not proposed to carry out any re-instatement works adjacent the stream.

Both the C&D and green waste composting operations will be at a lower level than the stream, which will prevent the entry of contaminated run-off in the unlikely event of an uncontrolled release. As there are no discharges from the site to the stream no further mitigation measures are necessary.

7.6 Monitoring

As there are no existing or proposed direct or indirect discharges to the stream it is considered that routine monitoring is not required.

8. ECOLOGY

8.1 Introduction

This Section describes the site ecological conditions. The entire site has been disturbed by previous and on-going quarrying. The site consists of exposed subsoil deposits, settlement ponds and low lying scrub that has encroached on previously excavated areas. Given that the proposed development will not impact on undisturbed habitats either within, or outside the site boundaries a specialist ecological survey was not carried out.

8.2 Designated Sites

OCM reviewed the list of designated Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Natural Heritage Areas (NHA) maintained by DEHLG, and the Areas of Scientific interest identified in the County Development Plan. The SACs and SPAs are regulated under the European Communities (Natural Habitats) Regulations, 1997.

There are no protected areas on or in the surrounding area of the site. The nearest designated site (The Gearagh) is located approximately 15 km away, close to Macroom. The Gearagh, which is both an SAC and SPA, is a former alluvial woodland. The closest NHA (Boggeragh Mountains Blanket Bog NHA) is near Mallow, approximately 15 km away.

8.3 Habitats, Flora & Fauna

The habitats within the site boundary include exposed sands and gravels, stockpiles of unsuitable materials, silt ponds and drainage channels. Low level scrub has revegetated the eastern and northern parts of the site. These areas are of low ecological significance and unlikely to support significant populations of flora and fauna.

The mature hedgerows that surround the site are semi-natural habitats, which may be important as breeding sites for birds. With the exception of the removal of a small section of hedgerows at the site entrance, which is required to improve sight lines, the hedgerows will not be disturbed by proposed site activities.

The site is surrounded by agricultural lands, primarily grazing, which will not be affected by the development. It is intended to reinstate the northern portion of the site for agricultural use.

The stream that forms a portion of the eastern site boundary is a tributary of the River Dripsey, which is itself a tributary of the River Lee. The Lee is a designed salmonid river. The water quality in the stream is good and it is considered that the stream is of significant local ecological value.

8.4 Impact Assessment

The continued operation of the quarry will alter the ecological conditions within the site, but will not affect the surrounds. However, as the ecological value of the areas that will be worked is low, the disturbance of this habitat is not significant.

The proposed recycling and recovery activities will involve the clearance of scrub in the east of the site, but the loss of this habitat is not significant. There are no designated habitats in the vicinity of the site that could be affected by the proposed development. The recovery/recycling activities will not result in any significant environmental emission that might affect any existing off site habitats.

The proposed reinstatement works will, in the long term, have a positive impact on the ecology of the site as it is intended to return these areas to agriculture, similar to the surrounding use.

The current and proposed site activities do not and will not result in any abstraction from a direct or indirect emission to the stream along the eastern boundary. Potential sources of emissions e.g. washing plant, the green waste composting and C&D recycling areas are all at a lower level than the stream, which eliminates the risk of uncontrolled run-off from these areas to the stream.

With the exception of the hedgerows along the site boundaries the site is currently of low ecological value and therefore the impact of the proposed development is considered to be imperceptible in the near term and positive in the longer term.

8.5 Mitigation Measures

As the site is considered to be of low ecological value and it is not proposed to remove hedgerows, with the exception of a section at the site entrance to improve sight lines mitigation measures are not considered necessary.

9. AIR

9.1 Introduction

This Section describes actual and potential emissions to air from current and proposed activities and assesses their impact. The potential emissions include noise, dust, odour and bioaerosols. Noise is dealt with separately in Section 10. The assessment included a dust deposition survey.

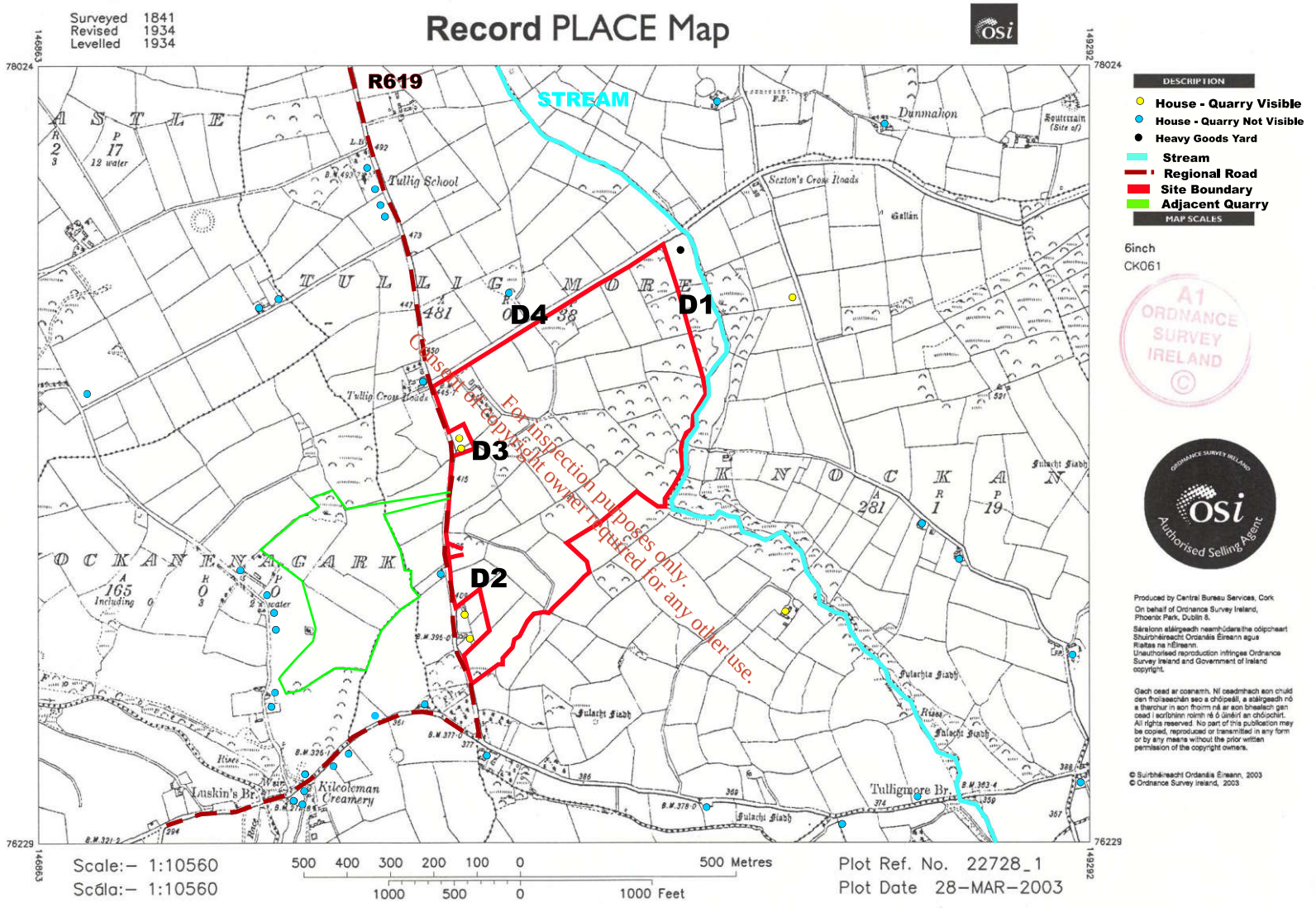
9.2 Existing Environment

9.2.1 Dust

A baseline assessment of dust emissions from current site activities was completed in August-September 2006. This is normally the driest period of the year, when dust emissions from materials processing and vehicles movements are most likely to occur. The survey was carried using Bergerhoff gauges specified in the German Engineering Institute VDI 2119 document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)". The gauges were sent to Southern Scientific Laboratories in Killarney County Kerry for analysis.

Four (4) gauges were positioned on the site boundaries at points nearest to potential sensitive receptors: the eastern boundary (D1 - 275 m from a single house to the east), the south west boundary (D2 - 30 m from a house to the south west), the north west boundary (D3 - 30 m from a house to the west) and the northern boundary (D4 - 75 m from a house to the north). Gauge D3 was close to the active extraction area and paved access road. The locations of the gauges are shown on Figure 9.1.

Due to the ground conditions along majority of the southern boundary, which has steep exposed sides, it was not possible to safely erect a gauge on this boundary. However, the nearest sensitive receptor to this boundary is approximately 400 m away.



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On the day the gauges were erected OCM noted farm machinery spreading topsoil in the heavy goods yard adjacent the eastern site boundary (approximately 40 m from location D1). At this time, this activity was generating significant volumes of dust and it was considered likely that this could impact on the dust gauge in location D1.

The full laboratory test report is included in Appendix 5 and a summary of the results are presented in Table 9.1.

Table 9.1 Dust Deposition Results

Sample Location	August – September 2006 Dust Deposition (mg/m^2/day)
D1	1,610
D2	210
D3	188
D4	178

Under the Air Pollution Act 1987 dust is considered a nuisance if it is injurious to public health, deleterious to ecology, or impairs or interferes with amenity or the environment. There are no Irish or EPA statutary standards or limits for the control of dust nuisance. Typically waste licences and permits issued by the EPA and local authorities specify dust deposition limits of 350 mg/m^2/day.

The levels measured at gauges at the nearest sensitive receptors (D2, D3 and D4) were all significantly below 350 mg/m^2/day. The levels measured at D1 exceeded 350 mg/m^2/day, but this is most likely due to off-site topsoil placement. This gauge was approximately 300 m from the sand and gravel extraction area and screening plant.

9.2.2 Bioaerosols

Bioaerosols (airborne microorganisms typically <5 um in diameter) are formed when composting materials (green waste, windrows and final product) are agitated. Bioaerosols are naturally present in the environment and may occur naturally at levels similar to those found in composting facilities (UK Environment Agency 2002). The highest natural concentrations occur during summer and autumn (Composting Association of Ireland (Cre) 2004). As there are no bioaerosols generating activities at the site it is likely that concentrations are at ambient levels.

9.3 Impact Assessment

9.3.1 Dust

Sand and Gravel Extraction

There is a paved access road from the processing plant to the site entrance which is used by all vehicles entering and leaving the site. Travelling along the access road removes mud, which can be a source of dust, from the vehicle wheels before they reach the public road. This reduces the potential for dust emissions on the public road caused by vehicles in dry weather.

O'Regans Ltd has installed a dust suppression system along the access road and some of the paved areas that are used for vehicle manoeuvring. The system consists of water sprinkler heads at a height of approximately 500 mm and approximately 10 m apart. These are connected to the on-site well. The system is activated in times of dry weather and as deemed necessary by site management.

A water bowser and tractor are used to damp down unpaved areas of the site in dry weather. These also act as a backup in the event of a problem with the fixed dust suppression system on the access road. They will also be used for dust suppression during the reinstatement of the northern part of the site.

The dust monitoring indicates that the existing extraction activities are not a significant source of off-site dust deposition especially at the sensitive receptors to the site along the western and northern boundaries. The continued operation and extension of the sand and gravel extraction is therefore unlikely to have a significant impact.

Extraction and processing is currently on-going in the south of the site. In the longer term excavations will move further north and towards the centre of the site and further away from the nearest sensitive receptors. It is not proposed to relocate the processing plant.

The reinstatement of the northern portion of the site will involve the placement of materials close to sensitive receptors on the north western and northern site boundaries. At present there is the potential for windblow to generated dusts from the exposed subsoils in these areas in dry weather. There is the potential for dust generation during the reinstatement works, which may result in short term impacts. The water bowser will be used to damp down the reinstated areas in periods dry weather. In the longer term the revegetation of the reinstated areas will eliminate the risk of dust generation from this area.

C&D Recycling

The C&D recycling activities will be similar in nature to the existing sand and gravel processing activities. O'Regans Ltd will employ the same dust suppression measures as those used in the current operations. Furthermore, the location of the C&D facility away from sensitive receptors (the nearest will be approximately 400m) will minimise the risk of impact from dust.

Green Waste Composting

The moisture content of the composting material during all stages of the process, that reduces the risk of dust generation. The finished product has a relatively high moisture content that minimises the potential for dust emissions during the final screening and wind blow from the finished product stockpiles. However, there is the potential for dusts generation during the pre-treatment (shredding) stage. The shredder will, if considered necessary, be fitted with a water spray suppression system.

9.3.2 Bioaerosols

The Composting Association of Ireland (Cre) has published a literature evaluation of bioaerosol impacts from composting facilities. (Bioaerosols and Composting: A Literature Evaluation, 2004). The report is intended as a reference document for bioaerosol emission management at composting facilities in Ireland. Its conclusions are based on a comprehensive review of international literature on bioaerosol concentrations from composting facilities in Europe, the United States and elsewhere.

The report, which cites extensively from the published literature, includes an assessment of the potential health risks associated with bioaerosols and makes recommendations on measures to minimise bioaerosol generation. The report indicates that the potential health risks associated with bioaerosol generation at composting facilities to the general public are minimal and can be managed if the proper operational controls are applied. The risks to facility personnel can be minimised by the provision of appropriate training, personnel protective equipment and operational control measures. A copy of the report is included in Appendix 6.

The EPA have not, as yet, specified minimum buffer distances that should be maintained between composting facilities and potentially sensitive receptors. The UK Environment Agency (EA) has published a document outlining its position in relation to health effects from composting. The statement is based on research conducted by the EA and the UK Department of the Environment Transport and the Regions and includes recommendations on buffer zones between composting facilities and workplaces and dwellings.

The UK Environment Agency (EA) position on siting composting facilities is *"There will be a presumption against permitting [and to object to any planning application] of any new composting process [or any modification to an existing process] where the boundary of the facility is within 250 metres of a workplace or the boundary of a dwelling, unless the application is accompanied by a site-specific risk assessment, based on clear, independent scientific evidence which shows that the bioaerosol levels are and can be maintained at appropriate levels at the dwelling or workplace:"* (EA, 2001).

The Cre report review indicates that bioaerosols are reduced to background levels within 200 metres of composting facilities where source operational controls and the influence of barriers to air flow are not taken into account. Cre suggest that a 200 m distance would be particularly applicable to 'benign' feedstocks, e.g. greenwaste composting, but that this could be further reduced depending on control measures.

There are ten (10) private residences within 300 m of the site boundary, as shown on Figure 4.2. There are five (5) residences along the R619 on the western boundary. There are three (3) from 125 m to 275 m at the south west corner. There is one residence approximately 75 m from the northern boundary and one residence approximately 275 m from the eastern boundary. The residences to the east and north are the nearest sensitive receptors and both are more than 400 m from the proposed compost location.

9.3.3 Odours

The waste that will be accepted and processed at the site will comprise green waste and timber only, which is not malodorous. Food bearing waste or sludges will not be accepted at the facility. The proposed waste acceptance procedures will ensure that any malodorous or unsuitable waste delivered to the facility will not be processed, but removed off-site as soon as practical.

While the finished product has a characteristic odour, this is not offensive and odours from the maturation and finished product storage typically do not cause odour problems. The location of the composting area is remote (>400 m) from any sensitive receptors such as the nearest occupied residences.

9.4 Mitigation Measures

9.4.1 Dust

The dust control measures currently employed by O'Regans Ltd are effective. These measures will be extended to the proposed C&D and green waste composting locations.

It is also proposed to plant the screening berms on the periphery of the site to minimise the potential for windblow. The reinstatement and planting of the northern part of the site will eliminate this area as a potential source of wind blown dust.

9.4.2 Bioaerosols

The proposed operational controls will reduce the potential for bioaerosol generation.

These controls include: -

- Maintaining a proper composting environment. Regular and thorough mixing of windrows (2 - 3 times per week) to minimise the presence of *Aspergillus fumigatus*.
- Maintaining optimal moisture content in the windrows (50 - 60%).
- Maintaining a clean site, including access roads and storage areas and provision of a damping system to reduce dust generation from dry surfaces.
- Proper training of all facility operators in methods of dust and bioaerosol control.
- Arranging work rosters to ensure facility exposure to potentially high bioaerosol generating activities is minimized.
- Construction of windrows as high as possible, but not so as to reduce the efficacy of the composting process. The increased height of release of bioaerosols enhances dispersion. The windrows can also be used to create an effective barrier and to increase turbulence.

In addition, the proposed location of the composting facility, which is more than 400 meters from the nearest off-site sensitive receptor, minimises any potential risk associated with bioaerosols.

9.4.3 Odours

In the unlikely event that odours from the operations present a nuisance abatement measures will be applied. Such measures may include covering the windrows with a layer of finished product and the use of odour neutralising or masking agents.

9.4.4 Conclusion

Concerns have been raised by local residence regarding dust emissions from the facility. The dust survey shows however that existing operations are not a significant source of dust that will impact on off-site receptors. The proposed development has the potential to generate dust emissions but the location of the potential sources within the site and the proposed mitigation measures reduces this risk significantly. It is also proposed to implement a dust monitoring programme at the facility in order to ensure that any adverse impact can be detected.

9.5 Monitoring

It is intended to conduct an annual dust deposition survey at the site boundaries. As the proposed green waste composting facility is remote from sensitive receptors it is considered bioaerosol monitoring is not required.

10. NOISE

10.1 Introduction

This Section describes the existing noise environment and assesses the impacts of the current and proposed activities. Potential noise sources include gravel excavation and processing, C&D processing, greenwaste screening and shredding and vehicle movements. In October 2005 O'Regans Ltd received a complaint about noise from current site activities from a resident to the north-east of the site.

The existing noise environment at the site and surrounds was determined by a noise survey carried out in August 2006. Predictive modelling was also carried out to assess the potential impacts of the proposed activities at the nearest noise sensitive receptors.

10.2 Existing Environment

The full details of the complete noise survey and the predictive assessment of the impact of the proposed facility is presented in the Dixon Brosnan reports in Appendix 7 and is summarised in this Section. The monitoring was carried out over two days (15th and 22nd August), as rain disrupted the first day.

Five noise monitoring stations were located at the nearest sensitive receptors (private residences) as shown on Figure 10.1. Four of the stations were set along the western and northern boundaries. The fifth was located off-site, near the residence to the northeast of the site, from which the noise complaint was received in October 2005. N1 and N2, which are located in the south west of the site, were selected to assess impacts on the nearest residences whose occupants have raised concerns about impacts associated with the proposed development.

The levels recorded at the stations are presented in Table 10.1. The Table includes comments on the sources of the noise recorded at each location, including both on and off-site sources and recommendations for corrective actions.

Record PLACE Map

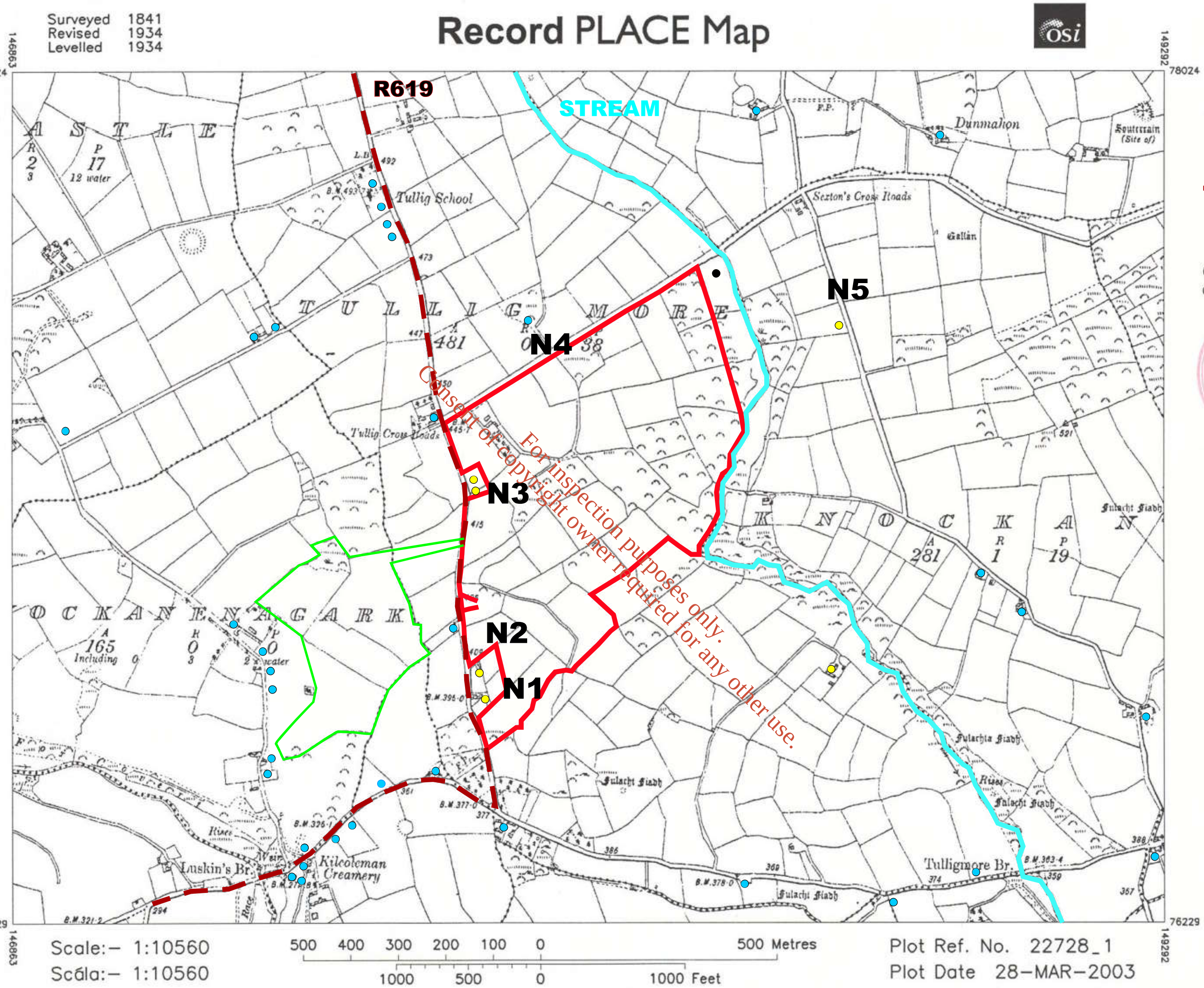

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Table 10.1 Noise Levels Recorded 15.08.06 and 22.08.06

STATION	TIME	L_{Aeq} (dB)	L_{A10} (dB)	L_{A90} (dB)	COMMENT
N1	1327-1427 15.08.06	55	58	44	Noise dominated by sawdust extraction system at the adjacent premises. No noise audible over this, apart from trucks on quarry access road and processing plant slightly audible. Extraction system shut down at 1400. Thereafter quarry traffic and processing plant audible at low level. Road traffic, birdsong and Ducon processing plant also audible at low level.
N2	1139-1239 15.08.06	49	52	44	Quarry processing plant, mobile plant and access road traffic slightly audible. Not significant. However squeaking conveyor roller on sand plant near site office annoying and tonal near 1000 Hz. Repair recommended. Dominant noise source here: sawdust extraction system at premises to SE. Ducon processing plant becoming more prominent during interval. Birdsong. Intermittent road traffic significant here.
N3	1028-1128 15.08.06	45	47	38	Quarry processing plant audible at low level (downwind and screened by site topography). Dumper climbing ramp clearly audible occasionally. Ducon plant slightly audible. Birdsong.
N4	1324-1424 22.08.06	50	53	45	Processing plant at study site and Ducon site codominant but not significant. Occasional climbing dumper audible. Intermittent road traffic through nearby junction significant. Rustling vegetation and birdsong not significant.
N5	1158-1248 22.08.06	45	47	39	Quarry audible at low level, chiefly processing plant but also dumper on occasion. Emissions generally sound steady and continuous. Loading of primary hopper audible but not impulsive (>1s). Unclear if Ducon contribute to noise. Crows significant and intrusive for first 10 min.

The noise recorded at all stations, including contributions from the various off-site sources, were at or below the 55 dB limit specified in the EPA document Integrated Pollution Control Licensing – Guidance note for noise in relation to scheduled activities (1995). This limit is normally specified by local authorities in planning permission for quarry developments.

In all cases the noise emissions attributable to the O'Regans Ltd operations was significantly below the 55 dB limit. The dominant noise source near the south west of the site was a machine, possibly a sawdust extraction system, located in a private workshop outside the site boundary.

No impulsive components were noted in noise emissions over both survey dates. One tonal component was identified, which was a squeaking conveyor roller in the sand plant near the site office. Dixon Brosnan recommended that the faulty component be either replaced or repaired. The part was replaced in September 2006.

10.3 Predictive Impact Assessment

The predictive assessment of noise impacts associated with the proposed C&D and composting activities was carried out by Dixon Brosnan. The complete report is included in Appendix 7 and summarised below.

The assessment was based on predicted noise outputs from plant and equipment obtained from equipment suppliers and similar facilities. Predictions were made at seven noise sensitive locations, which are shown on Figure 10.2. It was assumed that screening berms will be constructed along the northern, eastern and southern sides of the C&D and green waste composting area, and on the reinstated area in the northern part of the site.

The prediction model indicates that noise impacts from the proposed activities will be negligible, and that noise emissions will generally not be audible off-site.

10.4 Mitigation Measures

The landscaped berms and mature hedgerows, which already surround the majority of the site boundary, provide a mitigation against noise emissions from site activities. The existing noise environment at the sensitive receptors is not being affected by existing operations and this is not predicted to change assuming effective mitigation measures are employed. Dixon Brosnan recommended the following measures to further mitigate the impacts of noise emissions: -

- The new plant provided at the site should not be a source of tonal emissions,
- All plant should be maintained in accordance with manufacturers requirements. Defective or worn parts should be replaced or repaired immediately,
- External phone bells and tannoys should be avoided,
- Facility personnel should be instructed on measures to minimise potentially noisy activities,
- Noise levels should be assessed in the vicinity of the site following commissioning of the plant.

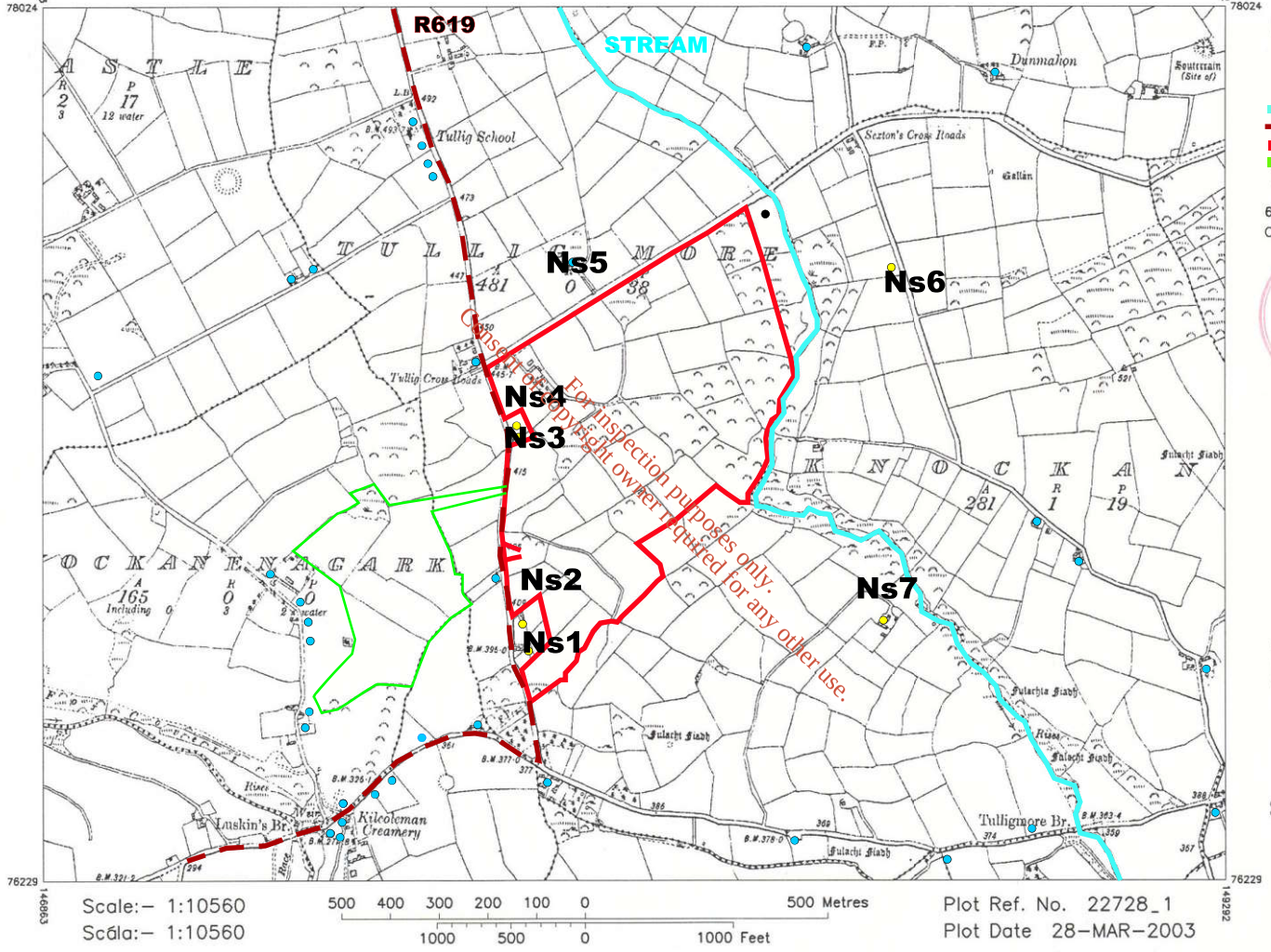
O'Regans Ltd will implement all these recommendations.

10.5 Monitoring

It is proposed to conduct an annual noise survey at the site in order to asses the impact of the proposed operations on the nearest noise sensitive locations.

Record PLACE Map

Surveyed 1841
Revised 1934
Levelled 1934



DESCRIPTION
- House - Quarry Visible
- House - Quarry Not Visible
- Heavy Goods Yard
- Stream
- Regional Road
- Site Boundary
- Adjacent Quarry

MAP SCALES
6inch
CK061

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Scale:– 1:10560
Scála:– 1:10560

500 400 300 200 100 0 500 Metres
1000 500 0 1000 Feet

Plot Ref. No. 22728_1
Plot Date 28–MAR–2003

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11. LANDSCAPE

11.1 Introduction

This Section describes the landscape and visual amenity of the site and the assessment of the potential impacts of the proposed activities. It comprises a landscape character assessment and a viewpoint analysis.

11.2 Methodology

An assessment of the landscape was made using guidelines in the document 'Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities' published by the DEHLG (June 2002). The assessment was based on site inspections carried out in the summer of 2005, analysis of aerial and site photographs and a review of Ordnance Survey Ireland (OSI) maps.

The study area, which was confined to the site, was defined based on the predicted visibility of site activities and an analysis of public viewpoints. The latter included the roadway along the western site boundary and the nearest private residences.

11.3 Landscape Character

11.3.1 Landform

The existing contours are shown on Drawing No. 0513901 and reflect the use of the site, with a low lying worked out quarry floor, settlement ponds and stockpiles of unsuitable subsoils. Quarrying has significantly reduced the original ground levels. Based on OSI maps it appears that originally there was a hillock close to the western boundary at an elevation of approximately 158 m OD, with a second smaller hillock in the north western corner of the site. The remainder of the site ranged from 147 to 149 m OD.

11.3.2 Landcover

The entire area has been quarried, with excavations extending up to the site boundaries. There are exposed sand and gravel faces along the northern, western, southern and south eastern boundaries. There are stock piles of subsoils and unsuitable granular material, and settlement ponds in the central, western and south-eastern areas. The central and northern portions have been graded to a generally uniform level and low level scrub has encroached on this area.

11.3.3 Landscape Value

The County Development Plan was reviewed to identify any amenity, recreational, or scenic areas in the vicinity that could be impacted by development at the site. The landscape character of the surrounding area is designated as a Broad Shallow Patchwork Valley. The site is not in an area designated as being of special amenity, recreational or scenic value. The nearest designated scenic route is approximately 3 km to the west.

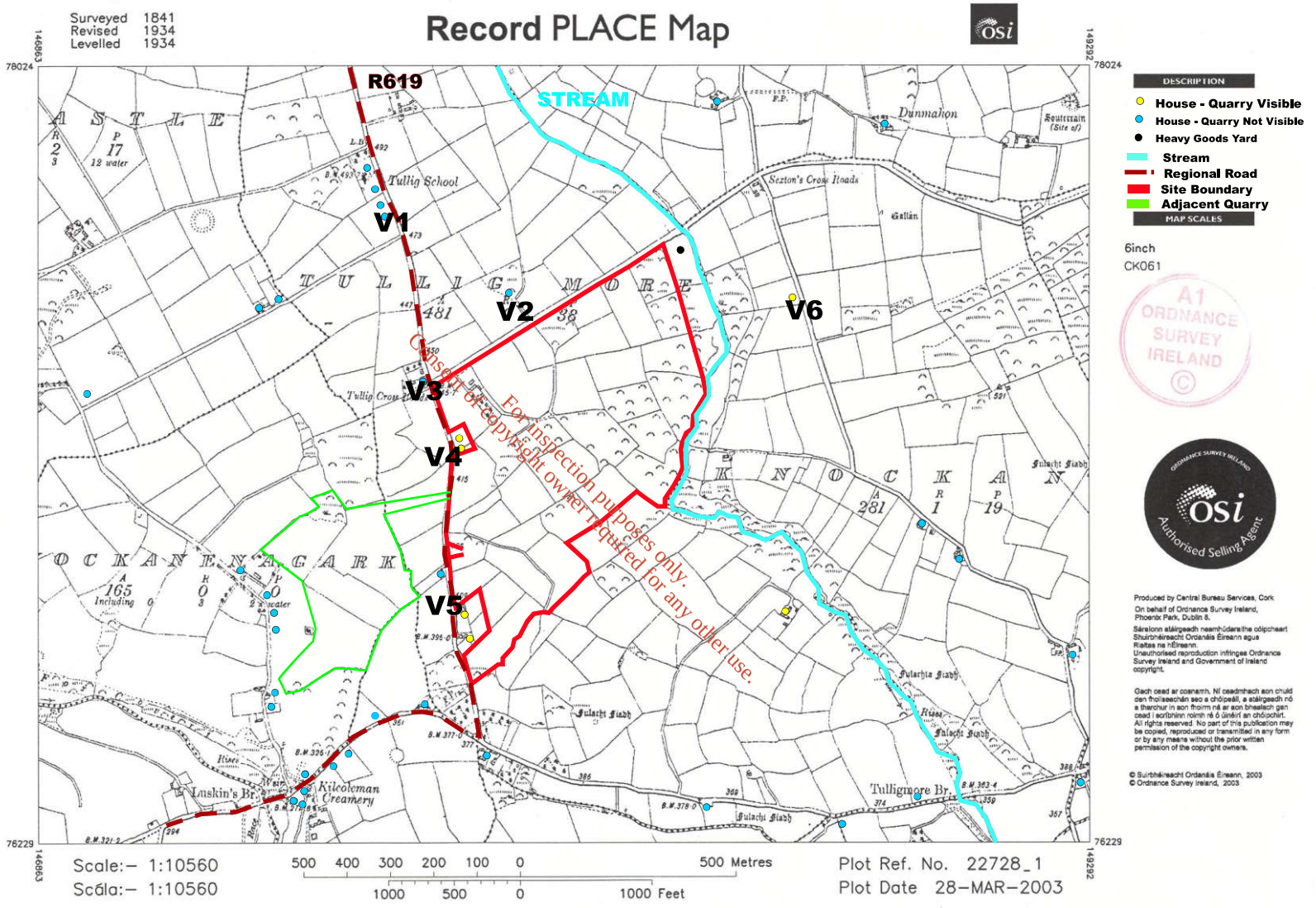
OCM reviewed the list of designated Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Natural Heritage Areas (NHA) maintained by DEHLG and Areas of Scientific interest identified in the County Development Plan. The SACs and SPAs are regulated under the European Communities (Natural Habitats) Regulations, 1997. The review did not identify any protected area on or in the vicinity of the site. The nearest protected structures are in Dripsey.

11.4 Landscape Sensitivity

The existing landscape character is not considered to be either distinctive, or of exceptional value in the context of the surrounding landuse, including quarrying operations to the west. The O'Regans Ltd quarry has been in operation for more than forty (40) years and therefore the sensitivity of the site to change is not considered significant.

11.5 View Points

The site is visible from three residences on the R619 and from a residence ca. 300 m from the eastern boundary. There are earthern mounds and mature hedgerows along the R619 (western boundary), the northern boundary and the southern boundary which effectively screen the site from other residences and the public roadway. The location of public viewpoints, where photographs were taken, are shown on Figure 11.1. The residences from which the site is visible are also shown on Figure 11.1. Photographs are included in Appendix 8.



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CLIENT
RoadMac Ltd

TITLE
Viewpoint Locations

Details
O.S. Licence Agreement number AR 0038702
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FIGURE NUMBER
11.1

Scale
Not To Scale

Revision
A

11.6 Impact Assessment

11.6.1 Receptors to the West

There are six (6) residences along the R619, four (4) of which are within 20 m of the excavated area and directly overlook the site. Two (2) are on the western side of the R619 and mature hedgerows at the boundary screen the site from these residences (Photos 1, 2, 3, 4 and 5). There are also a number of residences located further west and south west of the quarry, but the site is not visible from these.

The continued operation of the quarry and the proposed developments will not alter the visibility of the site from the residences on the western side of the R619. The reinstatement of the northern area to levels approximating those of the public roadways means that the reinstated areas will not be visible at any other residences. Of the four (4) residences from which the site is visible, two (2) are located close to the north west boundary and two (2) are located close to the south west boundary.

The proposed Stage 1 reinstatement area is adjacent to the two (2) residences near to the north west boundary. It is proposed to reinstate this area to levels approximate to the existing road level, which should have a positive visual impact when the work is complete.

It is not proposed to excavate up to the boundaries of the residences located close to the south west boundary. An earthen mound and landscaping consisting of trees has already been provided between these residences and the quarry. Once these trees mature the site will be invisible from these houses.

11.6.2 Receptors to the East

The site is visible from one occupied residence located approximately 275 m and one property under construction approximately 300 m from the eastern boundary (Photo 6). A large vegetated earthen mound along the eastern boundary which will screen the site from these receptors is currently under construction.

11.6.3 Receptors to the North

There is one residence approximately 100 m from the northern boundary and a number of residences further north and north west. There are existing mature hedgerows on top of earthen mounds along the northern boundary, which effectively screen the site from these receptors. The continued operation of the quarry and the proposed future activities will not alter the existing views of the site to these receptors.

11.6.4 Receptors to the South

There is one residence approximately 400 m south of the site. The site is not visible from this location and the proposed development will not result in any visual impacts.

11.7 Mitigation Measures

Most of the site is already effectively screened by mature hedgerows and vegetated berms. A landscaped berm is currently under construction along the eastern boundary. This will, when completed, effectively mitigate visual impacts to the two sensitive receptors to the east of the site.

The reinstatement of the northern area will have a positive impact on the visual amenity for the closest receptors at the north west boundary. O'Regans Ltd has discussed the proposed reinstatement measures with the residents and it is understood that they are in favour of the proposed reinstatement proposals.

12. TRAFFIC

12.1 Introduction

This Section describes the existing traffic conditions and includes an assessment of the impact the proposed development on the local road network. Measures to address the management of both the existing and future traffic on the local road network are presented. The assessment included a Traffic Impact Study, completed by M.H.L & Associates.

12.2 Existing Conditions

The full MHL Report is included in Appendix 9 and the findings summarised below. A one-hour manual classified traffic count was undertaken on the 19th September 2006, the busiest day of the week, at the R619/R618 cross roads junction. All vehicular and pedestrian traffic movements were recorded between the hours of 8:00 am and 9:00 am. The traffic movements were used to determine the Annual Average Daily Traffic (AADT) using the R619, as well as the percentage of HGVs present on the route in the vicinity of the site.

The R619 has an average width of 5.5 m, with a realigned area in the vicinity of the site giving a road width in excess of 8.0 m. In general the road has a better horizontal alignment to the north of the site entrance in the direction of Mallow and the R579 than in the direction of Coachford and the R618. A peak hour traffic count was carried out to determine the existing AADT on the R619 and the current HGV content. This count was carried out at the Coachford junction and indicates an AADT of 2,000 vehicles with 7% HGV content.

There is approximately 25 thirty tonne trucks and 24 twenty tonne truck movements associated with current activities. The remaining vehicle movements are those of employees and customers, of which the vast majority are by private car.

12.3 Impact Assessment

The overall trip generation by both the existing and proposed activities are as follows: -

Existing Quarry	50 HGVs
Proposed Recycling Plant	45 HGVs
Proposed Green Waste Composting	16 HGVs

The equates to a 55% increase in HGVs using the site.

The TIA finds that the low volumes of traffic generated by the proposed development and the low AADT on the existing road means that the capacity of the entrance junction is not an issue. The TIA modelling of the existing junction using the PICADY software package, which indicates that a 99% spare capacity at the junction currently exists. The local road network has ample capacity of the continued operation of the quarry and the proposed development.

The only issue of significance raised by the TIA is one of safety. The speed limit on the approaches to the junction is 80 kph on a relatively wide section of road, 8.3 m surveyed. On the day of the site visit the road had been recently surfaced and was without road markings. The observed speed was in excess of 80 kph, and the sight lines to the north were considered inadequate to cater for this speed.

12.4 Mitigation Measures

The recommended mitigation measures required for the existing road network to cater for the development are described in detail in the TIA and are summarised herein. It is proposed to implement all of the mitigation measures described in the TIA, which will improve existing road safety.

Given the nature of the development and the expected rise in HGVs entering and leaving the site a dedicated right hand turn lane will be provided on the R619, with advanced permanent signage in place on the approach to the junction. In addition to providing storage the reduced lane widths will act as a traffic-calming device for through traffic. Sight lines in both directions will be cleared to the required 160 m measured at a set-back of 2.4 m from the road edge to the near-side carriageway. The proposed layout is shown on Drawing No. DQ-TIA-P01 in the TIA.

13. CULTURAL HERITAGE

13.1 Introduction

This Section describes the Cultural Heritage value of the site and assesses the significance of the proposed activities. Given that the entire site has been worked out and that the proposed development will not involve excavation in any undisturbed ground, a specialist archaeological survey was not carried out.

13.2 Study Methodology

A number of sources were consulted in the preparation of the assessment which include: -

- The sites and Monuments records (SMR) for Co. Cork.
- The Ordnance Survey of Ireland 6" maps for Co. Cork.
- The County Development Plan prepared by Cork County Council.

13.3 Development Works

All areas of the site have been worked and no artefacts, or remains of cultural or archaeological significance have been discovered. The continued operation of the quarry and the proposed recycling/recovery activities will not require either the excavation of previously undisturbed land, or the stripping of previously undisturbed topsoil.

13.4 Archaeological and Historical Background

There are no archaeological monuments recorded within the site. There are a number of monuments within the vicinity of the site, which are listed below (Table 13.1).

Table 13.1 Monuments in the Vicinity of the Site

SMR No.	Townland	Monument Type
SMR: 103	Tulligmore	Levelled Circular Enclosure
SMR: 104	Tulligmore	Saints Stone
SMR: 105	Tulligmore	Ring Fort

13.5 Impact Assessment

13.5.1 Archaeological Impact

There will be no direct impact on any of the known archaeological sites listed in Table 13.1.

13.6 Mitigation Measures

Since there are no archaeological features at the site and it is not proposed to either excavate previously undisturbed ground, or expand the site no mitigation measures are required.

14. HUMAN BEINGS

14.1 Introduction

This Section assesses the impacts of the facility on the human population in the area. It describes the economic activity, social consideration, land uses, health and safety and assesses the impact of the existing and proposed activities.

14.2 Human Health

There are no human health issues associated with the continued operation of the sand and gravel extraction or the acceptance and processing of C&D materials. No wastes containing foodstuffs, which may be attractive to flies, vermin or birds will be accepted at the facility. Only non-hazardous inert C&D waste and greenwastes which have little attraction for flies, birds and vermin will be accepted. The development will not impact on groundwater, which is an important local supply source (Section 6).

The greenwaste compost operation will be located on part of the site remote from dwellings. Composting has the potential to generate bioaerosols, which can present a health risk. The location and method of operation will minimise the risk from bioaerosols (Section 9). The nearest occupied dwelling will be more than 400 m from the compost area, which is well in excess of the 250 m buffer recommended in international studies. Facility personnel will be provided with appropriate personal protective equipment to minimise the risk of health impacts.

A number of residents in the locality have raised concerns over potential impacts, which while not directly affecting health, could be a nuisance. Such concerns relate to noise, dust and traffic. These are dealt with in Sections 9, 10 and 12.

14.3 Socio-economic Activity

The facility will not adversely influence the existing economic activities in the surrounding area, nor will it reduce the potential for the expansion of economic activities in the area. The facility is in keeping with existing and proposed land use patterns and will not result in the loss of amenities or rights of way.

The stream that forms a section of the eastern site boundary may be used for animal watering downstream. As water will not be abstracted from the stream and there will be no direct or indirect discharge from the site, the proposed activities will not result in any impact that could affect this use.

O'Regans Ltd currently employs fifteen people at the site. The proposed recycling and composting may lead to an increase in employees.

14.4 Amenity

The site is located in a rural setting and the surrounding land use us mainly agricultural. There is another sand and gravel quarry to the west. The site and its immediate environs do not have a significant leisure amenity potential. It is considered, based on the nature of the proposed development, the existing land use of the site and its environs that the potential for diminution of amenities and leisure land use arising from the proposed development is negligible.

14.5 Impact Assessment

It is considered that the proposed development will have a neutral impact with imperceptible consequences for Human Beings.

15. MATERIAL ASSESTS

15.1 Introduction

This Section describes the material assets on and in the environs of the site and assesses the impacts of the current and proposed activities.

15.2 Amenity

The site is an extensively worked out quarry which has been in operation for more than forty years. The site and its immediate environs do not have a significant leisure or amenity potential. It is considered, based on the nature of the development, the existing land use and its environs that the potential for diminution of amenities and leisure land use arising from the operation of the facility is negligible.

15.3 Roads Infrastructure

The impact of the proposed development on the local and regional road network is described in Section 12. The local road network has ample capacity to cater for the continued operation of the quarry and the proposed development. The provision of a dedicated turning lane, enhanced sight lines and new signage will lead to an improvement in the safety of the approach road.

15.4 Agriculture

The surrounding landuse is predominantly agriculture. The proposed reinstatement programme will see areas of the site returned to agricultural use. The proposed development will therefore have a positive impact on the agricultural assets in the area.

15.5 Natural Resource Consumption / Energy

Site operations involve the consumption of water, diesel, oil products and electricity. The main source of energy for the facility will be diesel, which will be used by the delivery and on-site plant and equipment.

The compost process will require process water, as heat production during microbiological activity causes evaporation of moisture in the compost. It is not possible to precisely predict the amount of water required, as a minimum, as this will depend on the exact composition of the incoming green wastes (dry solids content, characteristics of organic matter, etc). Water collected in the leachate storage tank will be re-used in the composting process.

The screening plant does use water but this is obtained from a sump in the south of the site. The water used in the washing process is directed to a settlement pond and is essentially recirculated within the site.

Table 15.1 Expected Non-Renewable Resource Consumption Per Annum

Resource	
Hydraulic Oil	1500 litres
Engine Oil	1500 litres
Agricultural Oil	250,000 litres
Electricity	1,000Kw
Road Diesel	375,000 litres

16. INTERACTION OF THE FOREGOING

16.1 Introduction

Earlier Sections have described the impacts associated with the development and the proposed mitigation measures on individual sensitive receptors. This Section discusses the significance of the actual and potential effects of the development due to interaction between relevant receptors. Only those receptors between which there is an identifiable actual or potential relationship are addressed.

16.2 Human Beings / Groundwater

The sands and gravels are not an important local water supply source to residents in the vicinity of the site. The existing quarrying activities have not impacted on groundwater yield or quality. It is not proposed to alter the current working methodologies as the quarrying extends northwards with the site and away from the nearest dwellings.

The materials processed in the C&D recycling plant will be inert and will not be the source of any contaminants that could impact on groundwater quality. The C&D plant will be located in an area underlain by up to 5 m of low permeability silts that protect the lower water bearing sand and gravel layer from infiltration of contaminants from the ground surface.

The proposed green waste composting will produce a leachate that is a potential groundwater/surface water contaminant. The entire composting area will be located on an impermeable concrete slab provided with a leachate/contaminated run-off collection and storage system to prevent the release of this liquid to ground. This, in conjunction with the ground conditions, will provide effective protection against groundwater contamination.

The water quality in the stream which falls past portion of the sites eastern boundary has not been impacted by existing site operations. It is not proposed to discharge directly or indirectly to the stream.

16.3 Human Beings / Air

Quarrying activities and composting operations have the potential to impact on human beings arising from noise, dust, odour and bioaerosols. The location, design and proposed method of the current and future activities has taken account of these emissions and effective mitigation measures have been adopted.

16.4 Human Beings / Landscape

The majority of the site is already effectively screened by mature hedgerows and vegetated berms. It is proposed to construct additional screening berms along the eastern and northern boundaries. The reinstatement of certain areas to agricultural use will have a positive impact on the landscape value of the site.

16.5 Human Beings / Material Assets / Traffic

The existing road infrastructure has the capacity to handle the increased traffic associated with the proposed future activities. However, the impact assessment identified a number of measures which will improve the road safety of all users of the local road network.