Effective Environmental Consultancy

RPS IRELAND

For inspection purposes only.
Consent of copyright owner required for any other use.

www.rpsplc.com

RPS Ireland
ENVIRONMENTAL SCIENCES

EPA Export 26-02-2016:00:50:21

RPS McHugh
PLANNING & ENVIRONMENT

Authorised for Release by: **Shane Herlihy** **Date: 25th January 2003**
Report Status: FINAL

Kylemore Road
Dublin 12
Tel: +353 -1-450 4922
Fax:+353 -1-450 4929
email: dublin@rpses.ie

ENVIRONMENTAL IMPACT STATEMENT

PROPOSED WASTE RECOVERY & TRANSFER FACILITY EXPANSION AT ATLAS ENVIRONMENTAL IRELAND LTD. IN PORTLAOISE, Co. LAOIS.

PREPARED FOR
ATLAS ENVIRONMENTAL IRELAND LTD.

For inspection purposes only.
Consent of copyright owner required for any other use.

ENVIRONMENTAL PROTECTION AGENCY WASTE LICENSING
RECEIVED
29 JAN 2003
INITIALS.....

Our Ref.: NE0501 / FINAL
Date: 25TH January 2003
Project Manager: Tony Doyle
Senior Environmental Consultant
Project Director: Shane Herlihy
Environmental Director.

EPA Export 26-02-2016:00:50:21

RPS McHugh
PLANNING & ENVIRONMENT

ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED WASTE RECOVERY AND TRANSFER FACILITY EXPANSION AT ATLAS ENVIRONMENTAL IRELAND LTD. PORTLAOISE, Co. LAOIS.

PREPARED FOR
ATLAS ENVIRONMENTAL IRELAND LTD.

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:21

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:21

For inspection purposes only.
Consent of copyright owner required for any other use.

LIST OF APPENDICES

EPA Export 26-02-2016:00:50:21

LIST OF FIGURES

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:21

1.0 INTRODUCTION

1.1. General Introduction

Atlas Environmental Ireland Ltd. are a hazardous waste management and environmental services company, providing a range of services to industry and the public sector in Ireland. The main site activity is currently the refining and reuse of waste oils. The recovery of waste oil filters, treatment of oily solid wastes and bioremediation of contaminated soil is also carried out on site. As part of a planned extension of the range of materials currently transferred, recovered and recycled on the site it is proposed to handle the following additional materials, which derive mainly from the automotive services sector: windscreen glass, batteries, aerosols, tyres, solvents, brake fluids, antifreeze, mixed fuels, windscreen washer ,fluorescent light bulbs, waste cooking oil, end of life vehicles (E.L.V), wastewater sludges, waste acid / base solutions and waste electronic goods.

This Environmental Impact Statement (EIS) has been prepared primarily in support of the Waste Licence Application to the Environmental Protection Agency.

1.2. Format Of Environmental Impact Statement

This Environmental Impact Statement (EIS) has been prepared according to the "Guidelines on the information to be contained in Environmental Impact Statements (EIS) published by the Environmental Protection Agency (2002) and "The Advice Notes On Current Practice In the Preparation of Environmental Impact Statements"(1995). The EIS is contained in 1 Volume containing a detailed description of the proposed development and the environmental impact assessments under the following headings:

For inspection purposes only.
Consent of copyright owner required for any other use.

1.0 INTRODUCTION

2.0. PROJECT DESCRIPTION

3.0. SITE AND LEGISLATIVE CONTEXT

4.0. WASTE MANAGEMENT

5.0. ECOLOGY

6.0. SOILS, GEOLOGY AND HYDROGEOLOGY

7.0. WATER

8.0. AIR

9.0. NOISE

10.0 LANDSCAPE AND VISUAL IMPACT

11.0. ARCHAEOLOGY AND CULTURAL HERITAGE

12.0. HUMAN ENVIRONMENT

13.0. TRAFFIC

14.0. MATERIAL ASSETS

EPA Export 26-02-2016:00:50:21

15.0. INTERACTIONS

Appendices relating to various sections of the EIS are included as follows:

Appendix 1 Ecological Data
Appendix 2 Selected Waste Acceptance Procedures
Appendix 3 Air Data Tables
Appendix 3 Traffic Model Data
Appendix 4 Glossary

A Non Technical Summary of the EIS has also been prepared for submission to The Environmental Protection Agency.

1.3. Consultation

At the outset of the project, preliminary consultations were made with the relevant statutory and non-statutory organisations with responsibilities or interests in the proposed development. The aim of this consultation was to determine the environmental and planning aspects of the project that warranted consideration for the development of the project in conjunction with the Environmental Protection Agency's published guidelines on the preparation of Environmental Impact Statements. A meeting was held at the outset with representatives from the Environmental Protection Agency to scope the EIS. Consultations were made with the following organisations and responses made as indicated in Table 1.1

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 1.1. Organisations Consulted Regarding the Proposed Development

Consultee	Date Consultation Letter Sent	Response
Laois County Council	14th May 2002	No Response
Environmental Protection Agency	14th May 2002	Response
The Department of the Environment and Local Government	14th May 2002	No Response
Bord Failte Eireann	14th May 2002	No Response
Department of Public Enterprise	14th May 2002	No Response
Department of Agriculture, Food and Rural Development	14th May 2002	No Response
Department of the Marine and Natural Resources	14th May 2002	No Response
Midland Health Board	14th May 2002	No Response
National Authority for Occupational Safety and Health	14th May 2002	No Response
The Irish Aviation Authority	14th May 2002	Response
The Arts Council	14th May 2002	No Response
Dúchas The Heritage Service	14th May 2002	Response

EPA Export 26-02-2016:00:50:21

Table 1.1. Organisations Consulted Regarding the Proposed Development – Contd.

Consultee	Date Consultation Letter Sent	Response
National Roads Authority	14th May 2002	Response
The Office of Public Works, Head Quarters	14th May 2002	No Response
The Office of Public Works, District Office, Co. Laois	14th May 2002	No Response
An Taisce	14th May 2002	No Response
The Heritage Council	14th May 2002	Response
Southern Regional Fisheries Board	14th May 2002	No Response

1.4 List of Consultants Involved In Compilation of Environmental Impact Statement

Overall Project Managers: RPS McHugh Planning & Environment

Chapter	Compiled By
Waste Management	Tony Doyle, RPS McHugh Planning and Environment
Ecology	Patrick Cushnell, RPS McHugh Planning and Environment
Soils and Geology	Shane Herlihy, RPS McHugh Planning and Environment
Water	Tony Doyle, RPS McHugh Planning and Environment and Noah E. Kretsch, Chemical and Environmental Engineering Consultant
Air	Paul Chadwick, RPS McHugh Planning and Environment and Brian Sheridan, Independent Odour Consultant.
Noise	Jennifer Harmon, RPS McHugh Planning and Environment
Landscape Visual	Raymond Holbeach, RPS Planning and Environment
Archaeology	Martin Byrne, Byrne, Mullins & Associates Archaeological Consultants
Human Environment	Tony Doyle, RPS McHugh Planning and Environment and Shane Herlihy, RPS McHugh Planning and Environment
Traffic	Michael Looby, Byrne, Looby and Partners.
Material Assets	Tony Doyle, RPS McHugh Planning and Environment
Interactions	Tony Doyle, RPS McHugh Planning and Environment

Contact details of individual contributors are available from RPS McHugh.

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:21

2.0. PROJECT DESCRIPTION

2.1. Development Proposal

The proposed site expansion involves the construction and operation of small scale waste recovery and transfer facilities within the confines of and integrated with the existing Atlas Environmental Ireland (Atlas) waste management facility at Clonminam Industrial Estate, Portlaoise, Co. Laois. The proposed development will also facilitate an increase in the throughput of materials currently processed on the site and again these measures will be integrated into the proposed facilities. This section of the EIS aims to outline the proposed development within the current site, from construction to integration with existing facilities and through to operation and eventual decommissioning.

2.2. Need for the Development

Atlas Ireland provide a number of specialist waste management services to the automotive sector, marine sector, industry and the public sector in Ireland from their integrated waste management facility in Portlaoise. These services include the following;

- The manufacture of fuel from waste oils
- The recovery of waste oil filters
- Collection and Storage of oily solid wastes for off site treatment
- Bioremediation of contaminated soil

For inspection purposes only.
Consent of copyright owner required for any other use.

With the adoption in Ireland of the End of Life Vehicles (ELV) Directive (2000/53/EC) , a number of waste management challenges will arise which must be addressed in a regulated and cost effective manner . The purpose of this legislation is to remove and, over designated time periods, reduce the hazardous components of the ELV waste and also to extract, where possible, any recyclable components and remove them from the waste disposal stream.

The challenges arsing from this directive in Ireland relate mainly to the waste generated from the decontamination of vehicles prior to crushing / shredding which will include fuel waste, antifreeze, brake fluid, windscreen washer fluid, windscreen glass, tyres and battery waste. This proposed development at the Atlas site will contribute significantly to ensuring that Ireland has the necessary arrangements, infrastructure and waste facilities required to facilitate the full and timely implementation of this directive. This proposed facility also offers the producers of these new waste streams, many of whom are existing Atlas waste oil customers, a safe, regulated outlet for their wastes in light of increasing restrictions and levies on waste disposal.

In addition to the ELV legislative requirements there is also a growing demand for Atlas' current services and, in response to this, Atlas intend to increase the throughput of waste oils, waste oil filters, oily solid wastes and contaminated soils. These developments come on stream at a time when there is a greater need for a more

EPA Export 26-02-2016:00:50:21

integrated inclusive waste management service for those in the expanding automotive industry. The development also ties in with regional waste planning requirements, the Waste Electrical and Electronic Equipment Directive and increasing restrictions on landfilling as strengthened in the recent adoption of the Landfill Directive . Furthermore with this proposed development Atlas can provide an all-in service which addresses the waste management needs of this industry whilst also ensuring regulatory compliance in this area.

2.3. Alternatives Examined

2.3.1. Alternative Locations

Given that Atlas have centralised their existing waste management services for their clients at their purpose built facility in the Clonminam Industrial Estate, Portlaoise initial consideration was given to this location for the proposed development .

General factors which favoured this location were as follows;

- This is the drop off point for existing garage waste collections
- There is some available space within the existing site
- The site is located within an existing industrial estate
- The site has a certified Environmental Management System in place and is currently regulated under an IPC Licence, Reg. No. 472
- Existing waste oil, oil filters, oily solid wastes and contaminated soil treatment facilities are in place and there is provision for process expansion at this location.

For inspection purposes only.
Consent of copyright owner required for any other use.

Consideration was also given to two further potential locations, these included the development of the proposed facilities in another similar industrial area or on a "Greenfield" site.

The proposed location within an alternative industrial area gave rise to a number of unfavourable factors, particularly with respect to environmental and process management as follows;

- Bringing unnecessary additional traffic to another area
- It would involve bringing proposed facilities out of Atlas' current regulated site management systems to a new site where these systems would need to be set up from scratch.
- This would fragment Atlas' centralised collection, drop off and processing infrastructure which has worked well to date.

Following full evaluation, the "greenfield" site alternative was not found to be a viable option due to the extent of site preparation and infrastructure required to be put in place which could potentially lead to more potential environmental disruption. There would be further anticipated environmental impacts during the operational phase due to increased traffic and the fragmentation of the Atlas centralised materials collection, drop off and processing facilities.

EPA Export 26-02-2016:00:50:21

In summary, the option of integrating the proposed developments within the existing waste management facility was the most favoured as it allows Atlas to link the facilities into their existing site infrastructure and management systems including an accredited Environmental Management System.

2.3.2. Alternative Designs

At the project conceptual stage a number of alternative designs for the proposed expansion were examined. These included the construction of a separate facility within the existing site for all the proposed processes, the full integration of the proposed processes into existing infrastructure on site and a combination of both options. In selecting the most appropriate design for the project, primary consideration was given to the avoidance and minimisation of environmental impacts.

In evaluating the option of establishing a separate dedicated facility for all the proposed new processes a number of issues arose in particular the restricted availability of space on the site, the availability of some reserve space enclosures with secondary containment in parts of the site at present and the preference to build any new processes into existing operations as far as possible in order to;

(i) Bring in any new operating procedures fully into line with existing procedures and site control systems
(ii) Tie in any new processes with existing site services and controls
(iii) The preference to add-on to existing site structures and make full use of all available space on site
(iv) The integration of the proposed facilities into the existing site features with minimised impacts to the landscape character of the area.

For inspection purposes only.
Consent of copyright owner required for any other use.

The option of fully integrating all the proposed new facilities within the existing site was given full consideration and, to a point, was feasible. However due to the size and nature of the sludge drying process it was difficult to find a home for the unit within the existing site facilities so therefore there would need to be some consideration of a separate dedicated building for this plant and associated facilities. Furthermore the storage and operating requirements of the tyre shredder unit did not facilitate ease of integration with the remainder of the site.

Due to the mixed nature of the proposed expansion, with respect to the actual processes and the waste materials involved, a mixture of integration with existing facilities and purpose built, dedicated units within the restricted confines of the existing site was agreed upon. This would allow Atlas to build their proposed new facilities into existing site management systems and also minimise disruption to existing site operations during construction. The proposed development design is also based on enclosing and containing the new facilities as far as possible in order to minimise any potential environmental emissions.

2.3.3 Alternative Processes

In planning for the proposed site expansion consideration was given to a number of waste recovery and treatment processes however environmental risk level, legislative

EPA Export 26-02-2016:00:50:21

trends and waste management market needs were instrumental in dictating the nature and scope of the proposed processes to be established on site.

The overriding consideration in examining alternative processes was in the range of proposed waste types to be handled. Increasing policy and legislative trends towards recycling and recovery of materials in addition to the enforcement of the segregation and separate disposal of hazardous and unacceptable waste types was a primary driver in the selection of waste types for processing at the proposed expanded facility. Atlas were also anxious to build on both their existing client network requirements and sectoral expertise particularly in the automotive industry. Other alternatives such as handling non hazardous waste types such as mixed municipal wastes were considered however it was felt that existing services and collection networks should be built upon, in particular future waste management needs arising from ELV directive requirements.

In terms of the actual processes for recovery and transfer of the wastes types the preference was towards small scale, enclosed operations in order to minimise any environmental emissions arising from the plant. It was decided to employ package style plant processes which could be installed with minimal disruption during the construction phase and would also lend themselves to ease of decommissioning when required. It was also decided to provide a range of different processes in order to fully facilitate the needs of smaller hazardous waste producers , in particular those who don't often have access to costly, large scale outlets.

Particular consideration was given to alternative sludge drying or treatment processes as part of the alternatives explored. These alternatives and comments regarding their suitability are summarised in table 2.3.3 below;

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 2.3.3 Outline of Sludge Drying Alternatives Explored

Technology Explored	Comments
Fluidised Bed Dryer	This type of unit while being compact and energy efficient does generate greater exhaust emissions leading, potentially, to higher mass emissions and increased abatement requirements.
Convective Drying	This was found to be a high energy demanding process with operating temperatures of up to 800^0C. There were also higher costs and space requirements mitigating against the option.
Rotary Dryer	While the system on offer was found to be energy efficient, operate at low air flows and offer good performance criteria there were issue with the space requirements particularly in light of the limited space availability on site at present.
Thin Film Evaporator & Belt Dryer	This system offered the combined benefit of a two stage process with a relatively compact plant which was simple to operate. The plant also employed energy efficiency measures and incorporated a chopper which produced a granular product.

EPA Export 26-02-2016:00:50:21

2.4. Characteristics of the Project

2.4.1 Site Location and Description

The proposed site is located in the Clonminam Industrial Estate, approximately 1 km south west of Portlaoise Town Centre and in an area north of the N6 National Primary Route as illustrated in Figure 2.1. The site is located in an urban area that is dominated by industrial and commercial activities. The northern and eastern sides are dominated mainly by a short section of the Cork – Dublin rail line and an adjacent railway yard. The southern side of the plant is bounded by the EMO fuel storage and office complex whilst the western side is characterised by commercial and industrial activity with a small halting site located further to the north west of the site. The current site occupies a total area of approx. 6 acres, of which the proposed new developments will cover approx. 2 acres.

2.4.2 Development Design Within The Existing Site

The layout of the existing site and the proposed new developments within it are shown in figure 2.2. As stated previously, there are no development works associated with the expansion in the existing services, aside from soil remediation, as this expansion will primarily involve optimisation of existing site facilities or a linking up with the proposed new facilities. The overall construction is expected to be carried out on an intermittent basis and completed over a 6 month period. Whilst there are a number of individual developments as part of the overall expansion these are grouped together for ease of reference and are presented below;

For inspection purposes only.
Consent of copyright owner required for any other use.

a. Establishment of A Mixed Fuel & Solvents Bulk Transfer Facility

This development will entail the installation of 2 new 30,000 l underground tanks under the concrete yard in the south east corner of the site adjacent to an existing underground tank of similar sizing which will become part of this development. Two of the tanks will be used to store solvents (separate chlorinated and non chlorinated tanks) while the third will be used to store mixed fuels. It is intended that the storage of these materials will rotate between each of the tanks. The tanks and associated fixtures will be double contained and of suitable steel construction .

b. Construction of Sludge Drying Facility

This will initially involve the construction of a warehouse type unit in the undeveloped area in the north west of the site as indicated in figure 2.2. This single storey facility will house both the sludge treatment unit and an ancillary electricity generating unit. The wastewater sludge treatment unit will be a thin film evaporator and belt dryer which will be installed as a package type plant . The sludge coming on to the site will be conditioned and there will be a 40,000 l sludge feed tank at the rear of the building with an infeed hopper. The sludge cake (90% solids) will be temporarily stored in a skip for disposal off site. Power for this unit will be provided by a series of four 1.2 MW generators. These generators will be fuelled mainly by reprocessed waste oil from the Atlas site and diesel oil back up fuel. There will be a single exhaust from the units and two 50,000 l oil tanks which will be fully bunded. In unrelated developments there will be 4 x 30,000l bulk storage tanks appended to

EPA Export 26-02-2016:00:50:21

this building within a suitably sized, HDPE lined bund and a tyre shredder unit in the remaining storage are of the building.. The tanks will be used to store water treatment chemicals, namely Ferric Sulphate, Poly Aluminium Chloride, Aluminium Sulphate and Ferric Aluminium Sulphate. The tyre shredder will be housed in a similar enclosed area within this building and will be fed from the waste tyre store in the proposed new soil remediation bay area as described below. The option of using this shredder for the recovery of oil filters will also be explored at a future date following installation.

c. Development and Integration of Waste Recovery And Transfer Facilities

This development will involve a number of small scale installations integrated within the existing site facilities as follows;

(i) The existing stores building will be extended to incorporate an enclosed area on the south end of the stores building which will house a fluorescent tube crusher and an aerosol can degassing unit. A waste battery transfer area and a small acids / bases mixing and conditioning tank, which will be fully bunded, with an agitator and pH probe also will be established within the existing stores building adjacent to the water treatment plant. Furthermore an IBC with secondary containment will be installed in this area also for the storage and transfer of windscreen wash water collections from ELV's. The building will also be extended to incorporate an enclosed area to the north which will cover in an existing bunded hard standing area. This area will be retained mainly for the storage of drummed oily solid wastes awaiting shipment abroad with the option of storing the other waste transfer materials here if required.

Consent of copyright owner required for any other use. For inspection purposes only.

(ii) A bunded yard area directly between the rear of the proposed sludge drying warehouse, and the site boundary on the western side will be developed as outlined in Fig. 2.2. Consideration will also be given to placing a roof over this area as part of the overall project. This area will be used for waste transfer facilities for existing increased throughputs of oily solid wastes and for the following new waste materials; antifreeze, brakefluid and windscreen glass.

(iii) An additional bay will be developed due north of the existing soil remediation bays which will be covered, concreted and fully bunded as outlined in figure 2.2. This facility will also be used for waste transfer of the above recovery materials in addition to the optional use for soil remediation in order to accommodate the proposed increases in the throughput of contaminated soils treated at the site.

(iv) It is also proposed to use an existing bunded storage compartment to the north of the main tank farm for the storage of end of life vehicles. There area may also be used for the temporary storage, prior to off site recovery, of waste electronic goods. In addition, while no specific development works are proposed regarding the existing site operations, it is however proposed to use the existing waste oil processing facilities for reprocessing waste cooking oil in relatively small quantities (1000 MT per annum)

EPA Export 26-02-2016:00:50:21

2.4.3 Use of Natural Resources and Energy

There will be minimal use of natural resources during the project aside from any aggregates used in the foundation and construction of the warehouse, site water usage and construction machinery fuel use during construction activities. In broader terms, the extension to the existing waste oil and oil filters business will help ensure that a finite natural resource, oil , will have a greater, enhanced life cycle.

Existing site energy needs are provided for using the on site natural gas fired boiler. Electricity demand on site is expected to increase following the installation of the proposed package plants however the installation of an electricity generator on site, which will be fuelled by reprocessed waste oil, will meet the demand of the sludge drying unit. As part of the project procurement procedures Atlas will give full consideration to energy efficiency measures.

2.4.4 Production of Waste

Due to the limited and small scale nature of the site developments there will be minimal waste materials arising from the project. The entire project by it's very nature is contributing significantly to the reduction of waste particularly ELV associated waste, through the proposed recovery facilities, and will also ensure that wastes are handled and segregated in accordance with legislative and best practice requirements

Consent of copyright owner required for any other use. For inspection purposes only.

In excavating the area for the installation of the proposed 2 new underground tanks there will be a quantity of concrete rubble waste from the excavation of the concrete yard. There will also be some anticipated earth waste from the excavations. Any construction and demolition (C & D) waste, if deemed suitable, will be reused within the scope of the project works or, where possible, recycled through the nearest available C&D waste recycling scheme. Earth waste will be either retained on site for possible use in landscaping area's affected by the development or sent to a licenced landfill facility where it may be required for capping and other works.

In the construction of the new warehouse, the adjacent new drum store area and the new soil remediation bay there will also be some anticipated clean earth waste from site excavations which will be handled as above. The stores extensions will only involve roofing and enclosure work and are not expected to lead to the generation of any significant quantities of waste other than cladding and construction material off cuts which will be recovered where possible.

It is also possible, given the land use in the vicinity of the development area, that the excavations may uncover some contaminated soil which may lead to the production of hazardous waste from this stage of the project. If such material is encountered a hydrogeological consultant has been appointed to the project team and will advise and assist on how the material should be handled, analysed and treated or disposed of in accordance with Atlas's IPC Licence Reg. No. 472 requirements and their accredited ISO 14001 Environmental Management System (EMS).

EPA Export 26-02-2016:00:50:21

In expanding the throughput of existing materials processed at the site there will be some limited additional waste production. This will include additional scrap metal waste from oil filter treatment, which will be recovered, and additional treated waste soil from the contaminated soil recovery operations which is reused in landscaping or other uses following agreement with the EPA.

2.4.5 Pollution and Nuisances

Due to the low level and small scale nature of construction activities there are unlikely to be any pollution or nuisances arising during this stage of the project work. Dust nuisance will be controlled through covering and damping down of any earth movements within the site while noise emissions from any machinery or generators used in the construction will be controlled through daytime (08.00 Hrs. to 22.00 Hrs.) only operations. All generators will be placed on drip trays in order to prevent any potential fuel spills.

Potential environmental impacts arising from the construction stage of the operation are outlined in detail within Sections 4 to 15 of this Environmental Impact Statement. Where impacts are predicted, mitigation measures have been proposed to minimise impacts to the environment. As all the operating processes within the project will be located in contained area's, pollution and nuisances control measures will be in place.

In any event all construction activities on the Atlas site will be required to conform to the requirements of their accredited Environmental Management System which stipulates procedures to be followed by sub contractor's on site and preventative measures to be taken in the prevention and effective handling of any nuisance issues which arise.

For inspection purposes only.
Consent of copyright owner required for any other use.

2.4.6 Risk of Accidents

The site will be operated under the relevant Health and Safety legislation which includes the Health, Safety and Welfare at Work Act 1989. Section 7 of this act in particular extends the duty of employers to provide safe places and systems of work to include site contractors. Any contractors working on the Atlas site will be required to go through the Atlas contractor induction programme and will be required to adhere to site safety rules while on the Atlas site, in particular they will be required to work under a supervised permit to work system.

The nature of the construction works on the site will primarily be as follows;

- Limited Excavation and earth movements,
- Foundation laying
- Flooring work
- Steelwork,
- Block laying
- Cladding / Roofing

These activities and the associated materials should give rise to little accident risks other than those associated with normal small scale construction activities.

EPA Export 26-02-2016:00:50:21

Additional construction traffic, which is not expected to be significant, is unlikely to give rise to any significant risk of road accidents.

The proposed site facilities, as described in section 2.4.2, when in place will be constructed to the highest safety standards and will be operated within the site's current safety management structure. The plant will be operated by trained operatives wearing the necessary personal protective equipment and there will be little manual input in the processes. Bulk storage and waste packaging is proposed in handling waste materials on site in order to minimize any contact with the waste whilst all equipment procurement will involve consideration of safety features.

In respect to the overall development and the expansion of the existing services at the site Atlas are currently in discussion with the Health and Safety Authority on the status of Seveso II and the outcome is expected in the near future.

2.5 Construction Phase

2.5.1 Site Preparation

As the developments are being integrated into an existing site there will be little or no site preparation works carried out. The only area's requiring any preliminary preparation are the proposed site for the facility housing the sludge treatment unit, the additional soil remediation bay and the new bunded area at the rear of the proposed sludge drying facility.

For inspection purposes only.
Consent of copyright owner required for any other use.

2.5.2 Construction Techniques and Machinery Used

a. Establishment of A Mixed Fuel & Solvents Bulk Transfer Facility

The concreted ground area will initially be broken using mechanical breakers and the ground underneath will be excavated using mechanical diggers fitted with a toothless grading/ditching bucket. Lifting equipment and other accessories will be used in the laying of the tanks into position following the preparation of the area around the tanks.

b. Construction of Sludge Drying Facility

The ground will initially be prepared using mechanical excavators, trucks and associated equipment. The top soil and shallow subsoil material will be stripped using a mechanical excavator fitted with a toothless grading/ditching bucket. General construction equipment such as cement mixers and aggregate delivery trucks will be used on the site during the laying of the foundation and floor. Steelwork and block laying will be carried out mainly using manual labour with some mechanical help. Once the housing is in place the plant will be laid in position. The bunded area appended to the building will be laid out using 35N mass concrete and tested to prevailing standards.

EPA Export 26-02-2016:00:50:21

c. Development and Integration of Waste Recovery And Transfer Facilities

The only construction works involved in this individual project are;

(i)The extension of the enclosed area on to local hard standing area's to the east of the stores building which will primarily involve steelwork and block work.

(ii)The creation of a roofed enclosure on the hard standing area to the north of the stores which will involve steelwork and roofing / cladding work only.

(iii) The creation of a new drum store at the rear of the sludge drying warehouse which will involve excavation, foundation laying, flooring, steelwork and roofing / cladding work.

(iv) The construction of an extra soil remediation bay which will involve excavation, foundation laying, flooring, steelwork , cladding and roofing.

2.5.3 Transportation

There will be little transportation during the construction phase other than deliveries of steelwork, cladding, construction materials and readymix for foundations and flooring. The tanks will also be delivered in addition to the package plants namely the sludge drying plant with ancillary electricity generator, tube crusher, tyre shredder and aerosol degasser. This traffic increase which will entail small volumes (10-20 trucks per week at peak), will occur primarily along the industrial estate arterial road and slip road to the site.

For inspection purposes only.
Consent of copyright owner required for any other use.

2.5.4 Potential Environmental Effects During Construction

Due to the generally low level and extent of construction activities the potential environmental effects or impacts are expected to be minimal. Any potential noise emissions arising from the operation of plant will be kept to a minimum and there will be no activity on the site outside of day time hours (08.00 Hrs. to 22.00 Hrs.) which will reduce the nuisance component. Modern plant and equipment will be used in all cases in order to minimise vehicular air and noise emissions. In all cases the contractors will be operating under the sub contractor site rules (SOP No.14) of Atlas' ISO 14001 EMS which specifies that;

- Only approved subcontractors who meet Atlas stipulations are allowed to work on site
- They will receive Environmental Awareness training before they commence work
- All contractor's will be supervised by a member of staff
- All contractor's will be responsible for disposing of their waste and for carrying out their operations in an environmentally responsible manner
- Any wastes to be handled in a regulated manner and collected and disposed of under authorisation with relevant records retained.

EPA Export 26-02-2016:00:50:21

2.5.5 Environmental Protection Measures

Detailed mitigation measures are included in each section of the environmental impact assessment sections of this EIS. However, general features will include the following;

- Construction vehicles will have access to the existing site truck wash facilities
- Selection of modern plant and machinery with low emission control and energy efficiency features where possible
- Availability of a qualified Archaeological consultant to the project team in order to ensure the protection of potentially buried artefacts
- All construction activities to be carried out between daytime hours (08.00 Hrs. to 22.00 Hrs.).
- All contractor's will operate under the requirements of the Atlas ISO 14001 accredited Environmental Management System

2.6 Project Commissioning

For inspection purposes only.
Consent of copyright owner required for any other use.

a. Establishment of A Mixed Fuel & Solvents Bulk Transfer Facility

The proposed new double contained underground tanks will be factory tested which will involve pressure testing and integrity testing of both the tanks prior to installation on site. The tanks will only be accepted at the site with the relevant certification to prove that this testing has been carried out and that they are of suitable construction material for the proposed storage materials. The containment compartment will also be checked during commissioning. Care will be taken upon installation of the tanks in order to ensure that their integrity is not affected in any way through damage and that they are positioned in a manner which ensures their safety and integrity. All the relevant fixtures associated with the tank will be pressure tested also including the overspill protection valve and the tank dip level meter will be checked and calibrated. The other existing tank has been in use already and will not require any commissioning works.

b. Construction And Installation of Sludge Drying Facility

The main commissioning works associated with the warehouse construction will involve the sludge drying unit and ancillary equipment.

The sludge drying unit will be purchased as a turnkey package plant and it is not expected that any extensive commissioning will be carried out on site other than some testing to determine the optimum operating conditions for the particular types of sludges to be processed on site. This work will be carried out on a small scale initially in order to minimise any potential odours or wastes from commissioning work and priority will be given to commissioning the biological odour abatement system. Any wastes generated from the commissioning work will be handled and disposed of in a regulated manner in particular to avoid any potential odours or

EPA Export 26-02-2016:00:50:21

nuisance. There will however be extensive commissioning of the associated electricity generating plant and each of the four generators will be individually tested prior to use. Every effort will be made during commissioning to reduce black smoke and any inefficient combustion. There will also be extensive commissioning works associated with the power up and diversion of potential waste heat to the sludge drying unit in order to optimise operating conditions. The oil feed tanks for the generators will also be certified including the secondary containment. The bunds and tanks appended to the building for bulk water chemicals storage will be integrity tested and certified, respectively, prior to use in accordance with prevailing standards. The tyre shredder unit is essentially a turn-key package plant and little commissioning works are anticipated.

c. Development and Integration of Waste Recovery And Transfer Facilities

There are few commissioning activities associated with this area as all the main plant to be installed namely the fluorescent tube breaker and aerosol degassing unit are turnkey package plant which will be capable of full operation upon installation at the plant. The acid/base conditioning tank and bund will be factory tested for integrity, in particular the bund, and the pH probe will be installed and calibrated. These units are all internally housed and there is not expected to be any adverse effects from their initial operation on the site.

Other spill containment facilities will be either certified or checked for integrity and water tightness in accordance with Atlas' environmental management system standard operating procedures and Work instructions.

There may also be an element of commissioning associated with the processing of the cooking oil however there is expected to be little variation from the current waste oil reprocessing system.

For inspection purposes only.
Consent of copyright owner required for any other use.

2.7 Operational Phase

The Atlas site is currently regulated under the EPA IPC Licensing System, through IPC Licence Register No.472, and is also independently accredited to the international environmental management system standard ISO14001. Under the IPC licence and accredited EMS there are detailed procedures and systems governing all operations including checking and auditing of existing measures. All new operations on the site including the waste transfer facility, tyre shredding, fluorescent tube recovery, aerosol recovery, battery transfer, glass collection for recycling and the sludge drying unit will be brought under this system and this will operate under prescriptive work instructions and a system of continuous improvement.

2.7.1 Site Operations

In addition to the existing site operations carried out as outlined in section 2.2 further operations are proposed. The throughput of these operations is outlined in Table 2.7.1 while the general operations will be as follows;

EPA Export 26-02-2016:00:50:21

a. Establishment of A Mixed Fuel & Solvents Bulk Transfer Facility

This wastes will be stored in the 3 x 30,000 l underground tanks each with three separate 10,000 l compartments and the main activities around this process will be the unloading of mixed fuels and solvents from collection IBC's into tanks, monitoring and management of tank levels, regular maintenance of tanks, tanker loading, ensuring tank safety, ensuring and responding effectively to any tank bund leakages. Overspill protection valves on each tank will ensure that spillage incidents are avoided.

b. Construction of Sludge Drying Facility

The main operations arising from this project are the sludge drying and electricity generation, tyre shredding and bulk water treatment chemicals storage which are described in detail in section 2.7.2.

c. Development and Integration of Waste Recovery And Transfer Facilities

The main processes involved here are the allocation of dedicated IBC's for each waste stream, the filling of IBC's from nationwide collection runs, temporary storage on site and the removal of IBC's by forklift and loading onto curtain siders for shipment for disposal. In the case of oily solid wastes the material will be packaged in steel open top UN approved drums placed on pallets. Additional waste recovery facilities as part of this development are outlined in detail in section 2.7.1 below.

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 2.7.1 Annual Throughput for Proposed Site Operations

Waste Material	***Annual Throughput** MT Per Annum
1. UNDERGROUND TANKS	
Bulk Solvent & Mixed Fuel Storage	
Solvents – Chlorinated & Non Chlorinated	300
Mixed Fuels – Petrol / Diesel	250
2. SLUDGE DRYING BUILDING	
Sludge Treatment	
Industrial Sludges	30,000
Tyres	4,000
Water Treatment Chemicals (Storage Only)	4 x 30,000 L Tanks – Throughput will be based on demand which may fluctuate
3. WASTE TRANSFER AREA'S	
Waste Transfer Facility	
Brakefluid	25,000 (Litres p.a)
Antifreeze	25,000 (Litres p.a)
Windscreen Washwater	70
Oily Solid Wastes including greases	5,025
ELV's	1200
Waste Electronic Goods	6,000
Waste Recovery Facility	
Acids/Bases Blending and Reconditioning	100
Fluorescent Tubes	50
Aerosol cans	20
Windscreen Glass	7,000
Waste Batteries	3,000

EPA Export 26-02-2016:00:50:21

Table 2.7.1 Annual Throughput for Proposed Site Operations – Continued

Waste Material	*Annual Throughput MT Per Annum
4.EXISTING SERVICES EXPANSION	
Waste Oil	25,000
Waste Cooking Oil	1,000
Waste Oil Filters	800
Contaminated Soil	30,000
Oily Solid Wastes	5,000

**It is expected that these annualised throughputs will be achieved gradually when the new facilities are fully operational i.e between 2002 and 2007*

2.7.2 Processes Conducted on Site

The main proposed new processes to be conducted on site will be as follows;

2.7.2 (a). Bulk Solvent & Mixed Fuel Storage

Unloading of collection IBC's into underground tanks and loading of shipment tankers from underground tanks will be undertaken in line with site solvent acceptance procedures (See Appendix 2). Tank level control, overspill protection and safety precautions will be in place.

Consent of copyright owner required for any other use. For inspection purposes only.

2.7.2 (b). Waste Transfer Facilities

3 new fully bunded facilities will be provided at the site for the temporary storage of materials collected by the Atlas garage services unit. Dedicated plastic UN approved Intermediate Bulk Container's (IBC's) will be provided in these area's for brakefluid, anti-freeze and windscreen washer. Collections will be poured into the IBC's which will be fully bunded using suitable funnels to avoid splashes or spills. Each IBC will be labelled and each label will show the proper shipping name of the material, the UN number, the waste producers name and if applicable a hazard diamond including a sub risk diamond if necessary. When ready for shipment off site the IBC's lid will be tightly closed and it's condition will be assessed in order to ensure that it is clean and dry and that there is allowance for any expansion room as required. The material will then be loaded in a safe manner using a trained forklift driver. The material will be shipped off the site using a Hazchem licensed haulier and in accordance with the Movement of Hazardous Waste Regulations or the Transfrontier Shipment of Waste (TFS) Regulations which will entail preparing the necessary paperwork to accompany the shipment and maintaining records of all paperwork generated as a result of the shipment.

There will also be an area within the waste transfer units for 205 l UN approved steel, open top drums of oily solid wastes. This is an existing service provided by Atlas which will be better facilitated and expanded upon by virtue of the new facilities. This material will be retained until a sufficient volume is available for a shipment abroad to a licensed waste treatment facility. Again the same labelling and shipment procedures will apply as outlined above.

EPA Export 26-02-2016:00:50:21

2.7.2 (c) Waste Recovery Facilities

c (i) Tyres / Oil Filters

Waste tyres will be collected as part of Atlas's current garage service collection rounds and temporarily stored in a dedicated area adjacent to the soil remediation bays. In the tyre shredding bay located within the sludge drying building , the tyres will be metered into the shredding unit via the input conveyor. The tyre shredder consists of a stand alone unit where they are initially put through feeder rollers which align the tyre for cutting. The tyres then pass through high alloy steel cutting knives on a roller bar which shreds the tyres into rubber chips. Any oversized chips are recirculated through the process for further shredding while shredded chips are conveyed to a dedicated container for off site recovery. The feasibility of using this unit for shredding oil filters is also being evaluated. This process could reduce any mixed waste issues associated with the recovery or disposal of the metal component.

c (ii)Fluorescent Tubes

Waste fluorescent tubes will be collected as part of Atlas' current waste collection services with the necessary hazardous waste controls. When unloaded on site they will be stored in Lampbank units which are essentially upright secure containers which allow the lamps to be stored upright. The lamps are then individually fed into the lamp crusher unit. The lamps are placed in the breaking chamber initially. Once left in the unit the chamber door is closed and the water spray is activated. The crushing roller is then applied and crushes the fluorescent tubes while the water spray ensures that dust generation is contained. The debris and water fall into a specialist dedicated container which will packed into UN approved open top drums for waste disposal abroad.

Consent of copyright owner required for any other use.
For inspection purposes only.

c (iii) Sludge Drying Facility

Wastewater sludge will be accepted on to the site through the proposed site sludge acceptance procedures (See Appendix 2) by tanker and is expected to derive from industrial producers. The sludge will be delivered to the site by tanker and transferred to a 50,000 l ground level accessible holding tank which will have level control and act as the feed tank to the sludge unit. The sludge will be treated using a thin film evaporator and belt dryer consisting of a two stage evaporation and drying system which creates a finished product with a solids content of 90%. The plant will be operated from a local control panel by a dedicated plant operator . The sludge cake arising from the process will be metered into a covered skip and will be removed off site for disposal following each batch. The unit will be operated on a continuous basis in order to keep the sludge from standing in the tank for excessive periods of time and the holding tank access hatch and sludge drying unit emissions will be drawn through an odour abatement unit. The electricity generator, which will be housed within a dedicated acoustic enclosure, powering the dryer will consist of 4 x 1.2 MW units feeding to a single stack and will be fuelled by Atlas own 11LS oil product in addition to normal light fuel oil when required. It will be fed by 2 x 50,000 l diesel oil and 11

EPA Export 26-02-2016:00:50:21

LS storage tanks which will be located externally within a dedicated, integrity tested bund adjacent to the unit.

c (iv) Aerosol Cans

Aerosol cans will be collected from Atlas garage service collection rounds stored in dedicated bins in a safe manner on site prior to degassing. The proposed unit is an "Aerosolv" aerosol can recycling system. This unit consists of a puncturing unit which threads directly into the bung of a 205 l steel UN Approved drum. The opposite bung on the drum will be fitted with a combination activated carbon filter in order to prevent fugitive VOC emissions from the process. The aerosol can to be degassed is placed in the housing of the puncturing unit and when the safety cap is closed a handle is pressed which causes a carbide tipped puncture pin to pierce the dome of the can. Residual liquid in the can falls into the drum while any vapour release is passed through the activated carbon filter for treatment. The degassed can is then placed in a dedicated scrap metal skip for collection by an authorised metal waste recovery agent. When sufficient residual chemicals build up in the drum the material will be sent for hazardous waste disposal using an authorised facility.

c (v)Windscreen Glass

Windscreen glass deriving mainly from ELV waste vehicles will be collected as part of Atlas's garage service in a dedicated contained truck compartment and delivered to the Atlas site. On site it is placed in a covered dedicated skip in a careful manner ensuring that no noise or debris is generated by the process. The skip will then be collected and replaced as it fills and will be taken away by an authorised glass recycling agent. The skips will be located in one of the 3 proposed waste transfer area's.

Consent of copyright owner required for any other use.
For inspection purposes only.

c (vi) Waste Batteries

Waste batteries will be collected by Atlas' existing garage services vehicles and stored on site in dedicated acid resistant boxes. The batteries will then be accumulated until a sufficient quantity is available for a shipment off to site to an authorised battery recovery agent. The battery boxes will be held in the fully bunded stores building adjacent to the water treatment plant. In future it is intended to examine the feasibility of installing a bunded tank with a platform where the battery contents can be drained off and packaged for safe disposal off site while the battery housing will then be processed by an authorised recovery agent.

c (vii) End of Life Vehicles (ELV)

It is also proposed to store ELV's in an existing cordoned off, fully bunded area of the site appended to the main tank farm. No processing or other activities will be carried out on the vehicles whilst on site as this area will act primarily as a transfer compound. Unloading and loading of the ELV's will take place within the compound.

EPA Export 26-02-2016:00:50:21

c (viii) Waste Electronic Goods

Waste electronic goods will be collected by Atlas' collection service and stored on site for collection by authorised electronic recycling firms, preferably those locally based or based in Ireland. Where possible, depending on the size of the goods, they will be packaged and protected from potential damage during transit. The materials will be held in a designated, contained area and stored in an orderly manner. All deliveries and collections of the stored materials will be carried out within this contained area.

c (ix) Acid and Bases Wastes

Small quantities of acid and base wastes will be accepted on site through the routine collection runs and offloaded on site in UN Approved IBC's. The materials will be held in a bunded area within the existing stores building and analysed prior to metering into the main mixing / blending tank which will have an agitator and pH probe attached.

2.7.2 (d.) Existing Processes To Be Expanded

For inspection purposes only.
Consent of copyright owner required for any other use.

d(i) Waste Oil

Atlas currently receives waste oil for reprocessing into fuel. This is essentially a five step process involving the following main steps;

The first step involves the separation of free water from oil. The oil/water mixtures are delivered to the plant by road tanker and are initially pumped to the waste oil reception tank. Depending on the water content the oil is then pumped to a storage tank or a sump. Free water is drawn off from the mixture and is passed through the effluent treatment system which consists of a plate separator, absorbents and a holding tank for controlled release of the effluent. Waste oil from which free water has been removed is transferred to the waste oil processing tanks, where the waste oil is heated up to 80^0C, which encourages oil and water layer separation. Following this the waste oil is filtered to remove solids which are drummed and shipped for off site disposal. Finally the waste oil is dried by a process of heating and air blowing to remove any final residual water following which the oil is pumped to storage. The proposed site expansion provides for a 10% increase in the quantity of oil processed at the site. As part of this proposed development it is intended to extend the scope of this existing process for waste oils to include waste cooking oil which will be treated using the same process steps as outlined above. It is intended to introduce the new waste gradually up to a maximum of 1000 MT p.a over the next five years.

d(ii) Waste Oil Filters

Waste oil filters are collected by the Atlas garage services unit and are stored in a contained area on site upon receipt. The filters are then placed in a compaction units

EPA Export 26-02-2016:00:50:21

which drains the oil from the filters and compacts the remaining metal. The oil generated from this process is treated as outline in d (i) above whilst the remaining metal is sent to an approved metal recovery agent. The proposed site expansion provides for a doubling in the quantity of oil filters processed at the site and allows for a future evaluation of the feasibility of shredding of the filters in the tyre shredder unit in order to improve the quality of metal sent off site for recovery by reducing the level of contaminants present.

d(iii) Contaminated Soil

Contaminated soil is weighed in upon receipt at the site. It is then allocated a soil treatment pad where is placed for bioremediation. Bioremediation is achieved by providing a measured quantity of air and nutrients to the soil which promote accelerated breakdown of the products which cause soil contamination. The soil is regularly tested and when the test results are below agreed thresholds the treated soil is released for use in landscaping or other approved uses in agreement with the EPA. The proposed site expansion allows for an increase in the quantity of material being processed due in order to meet the overall demand for this service.

d(iv) Oily Solid Wastes

Oily solid wastes are generated from both on site waste oil reprocessing and as a waste product from spill clean up work. They are packaged on-site for off site disposal which involves putting the material in 205 l open top UN approved drums and placing the correct shipping labels on the drums. The proposed site expansion allows for a substantial increase in the quantity of oily solids transferred through the site for eventual disposal at a hazardous waste treatment facility abroad.

Consent of copyright owner required for any other use. For inspection purposes only.

d (v) Additional Bulk Material Storage On Site

A fully bunded area to the north of the proposed sludge drying building will be established for the bulk storage of water treatment chemicals for distribution to clients. All deliveries and unloading will be conducted within the HDPE lined bund associated with this facility and the necessary precautions will be in place to prevent any spillages. The water treatment chemicals in question are: Ferric Sulphate, Poly Aluminium Chloride, Aluminium Sulphate and Ferric Aluminium Sulphate which will be held in 4 x 30,000 l suitably constructed tanks. The only operations associated with this facility will be loading and unloading of chemicals from tanker and these operations will be fully contained in order to prevent any releases.

2.7.3 Off Site Operations

A key component of Atlas' services is the provision of a regular, affordable and reliable collection service to it's clients. Where possible, and in order to minimise any

EPA Export 26-02-2016:00:50:21

additional traffic, Atlas will integrate a number of the new waste materials it proposes to transfer and recover into it's existing collection rounds.

In addition to the extra collections due to the expansion of existing processes there will be additional bulk tanker collections of waste industrial sludge, waste cooking oil collections and delivery / distribution of water treatment chemicals from the site.

Traffic impact assessment including anticipated impacts and mitigation measures are fully considered under Section 13 of this EIS.

2.7.4 Materials Used And Natural Resources

The materials used in the processes on site are primarily waste materials, many of which could potentially end up in landfill or might lead to disposal problems for small producers who may not actually be able to fund the proper disposal of hazardous materials. The processes employed at Atlas will ensure that wastes have some added recovery value, that landfill space will be increased and also ensuring that there is a convenient, reliable and cost effective outlet for the smaller scale production of hazardous wastes. There is little use of natural resources within the process other than additional vehicular transport and a low discharge water spray which is built into the fluorescent tube breaker unit. Due to the use of reprocessed oil in the on site electricity generator there will be reduced demand on virgin fuel such as light fuel oil and the waste cooking oil treatment facility will ensure a prolonged life for such natural resources.

Consent of copyright owner required for any other use.
For inspection purposes only.

2.7.5 Environmental Protection Measures

Environmental protection was a fundamental consideration at the onset of the project and the project by it's very nature of waste recovery and safe disposal of wastes will ensure that Atlas continue to play a fundamental role in ensuring hazardous wastes management and reduced landfill disposal particularly for smaller producers. The primary environmental protection features of the project are summarised overleaf in table 2.7.5

EPA Export 26-02-2016:00:50:21

Table 2.7.5 Summary of Environmental Protection Measures

Waste Material	Primary Environmental Protection Measures
1. UNDERGROUND TANKS	
Bulk Solvent & Mixed Fuel Storage	Tanks and ancillaries are double contained Level control, safety features and overspill protection in the tanks
Solvents – Chlorinated & Non Chlorinated Mixed Fuels – Petrol / Diesel	
2. SLUDGE DRYING FACILITY	
Sludge Treatment	• Sludge is received on –site at 20% solids and reduced to 90% solids • Process is within a contained building • On site electricity generation using reprocessed waste oils from bunded feed tanks • Energy efficiency measures built into unit design
Sludges Tyres	
Water Treatment Chemical Storage	• Fully bunded area with tank level control
3. WASTE TRANSFER FACILITIES	
Waste Transfer Facility	
Brakefluid Antifreeze Windscreen Washwater Oily Solid Wastes including greases ELV's Waste Electronic Goods	• Materials stored in UN Approved IBC's • IBC's kept in a covered, bunded area • Waste handling and shipment procedures • ELV's and Waste Electronics held in bunded enclosure
Waste Recovery Facility	
Acids/Bases Blending & Reconditioning Fluorescent Tubes Aerosol cans Windscreen Glass Waste Batteries	• All facilities within enclosed, bunded buildings • Small scale operations • Agitation and pH monitoring on Mixing tank for the acids and bases • Acid resistant containers for batteries stored in a bunded area.
4.EXISTING SERVICES EXPANSION	
Waste Oil Waste Cooking Oil Waste Oil Filters Contaminated Soil Oily Solid Wastes	• Existing site Environmental Management System (ISO 14001 certified) • Site Wastewater Management • IPC Licence Programmes • Bunded Storage Facilities

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:21

2.8 Decommissioning

2.8.1 Establishment of A Mixed Fuel & Solvents Bulk Transfer Facility

The underground tanks will be fully emptied and any wastes within will be disposed of in accordance with prevailing best practice and regulatory requirements. The tanks (including containment compartments) and fixtures will be decontaminated using specialist hazardous waste cleaning contractors and any wastewater or waste generated from this process will be disposed of in accordance with prevailing best practice and regulatory requirements. The tanks will then be sent to a metal recovery agent for recycling. Once the area is cleared a site investigation encompassing soil and hydrogeological aspects will be conducted in order to ensure that there are no environmental liabilities associated with the installation.

2.8.2 Construction of Sludge Drying Facility

The wastewater sludge drying unit facility was designed for ease of decommissioning due to the turnkey nature of this package plant . Any waste will be removed from the unit and the unit will then be decontaminated prior to resale or stripping down for scrap value. The electricity generators will be removed and decontaminated prior to onward re-sale as there is expected to be a demand for such equipment. The associated oil tanks will be emptied out and any wastes generated will be disposed of in accordance with the prevailing hazardous waste regulations and best practice. The tanks will then be cleaned down and again wastes will be disposed of in a similar manner. Once decontaminated, the tanks will be sent for scrap metal recovery and the bund will be assessed for contamination and disposed of through a hazardous disposal contractor if necessary . All associated pipework and fixtures will be treated in a similar manner. The water treatment storage tanks will treated in a similar manner to the storage tanks above while the tyre shredder, as a package plant, will be removed from the site and sold if possible.

Consent of copyright owner required for any other use.
For inspection purposes only.

2.8.3 Development and Integration of Waste Recovery And Transfer Facilities

The waste recovery facilities proposed for this development include turnkey package plant which has been selected and designed for ease of decommissioning. In respect of the waste transfer area all wastes will be disposed of using specialist contractors and funding from this will be gained from the sale or scrap value of the package plant items. The structures in place namely the covered area can easily be decommissioned be removing the cladding panels and breaking up the paved area. Any uncontained construction and demolition (C & D) waste will be recycled where possible through a local authority scheme. If there is any evidence of contaminated C & D waste it will be packed in UN approved containers and shipped for specialist disposal or decontamination. Once the area is cleared a site investigation encompassing soil and hydrogeological investigations will be conducted in order to ensure that there are no environmental liabilities associated with the facility.

EPA Export 26-02-2016:00:50:21

2.9 Description Of Other Developments

2.9.1 Establishment of A Mixed Fuel & Solvents Bulk Transfer Facility

There are not expected to be any secondary developments associated with the installation of the underground tanks given the relatively low quantities of material involved. It is expected that Atlas' waste disposal agent will be able to deal adequately with this additional quantity of solvent and mixed fuels at their facility. There will be some additional tanker collection activity arising from this development and resultant traffic measures are considered in more detail in section 13.

2.9.2 Construction of Sludge Drying Facility

Due to the relatively low quantities of most of these materials it is not expected that there will be any off site developments required to facility recovery and disposal options as these wastes from Atlas will merely feed into existing waste stream infrastructure and services through a number of different authorised contractors already engaged in these area's.

Consent of copyright owner required for any other use.
For inspection purposes only.

2.9.3 Development and Integration of Waste Recovery And Transfer Facilities

These facilities are generally small scale in nature and again will feed into existing infrastructure and services with the necessary carrying capacity without necessitating any off site developments. The additional traffic arising from the processing of wastewater sludge's and any potential developments required are considered in more detail in section 13.

EPA Export 26-02-2016:00:50:21

3.0. SITE AND LEGISLATIVE CONTEXT

3.1 Introduction

This section of the EIS outlines the legislation pertaining to the site. As a hazardous waste management facility the Atlas facility is subject to a number of regulatory requirements which shall be broadly outlined in this section

3.2 European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1999.

The proposed facility falls within Part II Section 2 (b) of the European Communities (Environmental Impact Assessment)(Amendment) Regulations, 1999 and it's activities are currently covered under the first schedule of the EPA Act, 1992 (11.4 The use of heat for the manufacture of fuel from waste). This class of activity is however no longer contained in the EPA act since the amendment of the Waste Management Act in 2001 and Atlas are now required to apply for a Waste Licence under the Waste Management Act, 1996. This EIS will be submitted in support of this application as required by the Environmental Protection Agency.

The scope of work and the environmental impacts addressed in this EIS have been based on the nature of the proposed development and the existing environment and in consultation primarily with The Environmental Protection Agency .

For inspection purposes only.
Consent of copyright owner required for any other use.

3.3. Planning and Development Act 2000

The proposed development falls within the terms of the Planning and Development Act 2000 and the Planning and Development Regulations, 2001. The Planning and Development Act 2000, revises and consolidates planning legislation and introduces a sustainable development philosophy to the Irish planning system.

Part III covers the Control of Development and sets out the rules and regulations required for obtaining planning approval. This section also covers appeals to the Board, Judicial review of appeals, revocation or modification of permission and development contributions

Part X incorporates primary legislation provisions on environmental impact assessment, which were previously contained in European Communities Regulations. Major changes include the transfer to An Bord Pleanala of the Minister's powers to approve local authority development subject to EIA.

EPA Export 26-02-2016:00:50:21

3.4 Site Environmental Legislation

3.4.1 Environmental Protection Agency Act, 1992 & Environmental Protection Agency (Licensing) Regulations, 1994.

The Environmental Protection Agency Act is a framework act, which has implications relating to all areas of environmental protection. The requirements of the Act are implemented by specific regulations. When this act and the subsequent regulations were enacted Atlas' activities were covered under the first schedule of the EPA Act, 1992 (11.4 The use of heat for the manufacture of fuel from waste). Atlas subsequently applied for an IPC licence and were granted a licence in February 2000. The proposed site expansion. This class of activity is no longer contained in the EPA act since the amendment of the Waste Management Act in 2001 however until Atlas are granted a waste licence which will be applied for and submitted with this EIS, their IPC Licence, Register number 472, will remain in effect at the site and conditions therein must be adhered to.

3.4.2 Access to Information on The Environment Regulations, 1994

This body of law establishes the general right of, and enunciates the procedures for, public access to information relating to the environment, which is held by public authorities, without having to show why such information is requested. This complements the legislative trend in planning and pollution law, of increasing public access to environmental information. The main implications for Atlas Environmental Ireland Ltd are that any member of the public, including local interest groups, may gain access to environmental monitoring information, relating to the plant, held by the local authority, without stating what the information will be used for or why it is required.

Consent of copyright owner required for any other use.
For inspection purposes only.

3.5 Waste Management Legislation

Given the nature of the company service and site activities there are a number of waste regulatory instruments that apply to the site.

3.5.1 Waste Management Act , 1996.

The main Implications arising from the general requirements under the act are that Atlas Environmental Ireland Ltd may need to;

- Should examine all possibilities for waste reduction, particularly waste reduction at source
- May be required to carry out waste audits and implement a waste reduction programme
- May be eligible to receive financial assistance in relation to waste minimisation measures being carried out
- Should consider participating in a voluntary waste recovery programme, approved by the Minister

EPA Export 26-02-2016:00:50:21

- May be required to publish reports on compliance with waste prevention requirements
- May be required to use a certain proportion of recovered or recoverable materials in their process
- May be required to design their products with consideration for ease of dismantling in order to facilitate recovery
- May be required to maintain an insurance policy to cover for damages arising from the production or holding of waste.
- If Atlas Environmental Ireland Ltd is carrying out waste disposal, recovery or transport activities, a licence or permit for such an activity may have to be obtained.

There are also a number of more specific regulations and amendments emanating from the act which outline further requirements for Atlas.

3.5.2 Waste Management (Amendment) Act, 2001

Under this act a number of new measures were introduced including a landfill levy of €15 per tonne which will affect any non hazardous wastes disposed of by Atlas. More importantly for Atlas however the enactment of this legislation means that the class of activity for which Atlas held an IPC licence (11.4 The use of heat for the manufacture of fuel from waste) is no longer contained in the first schedule of the EPA Act. This will require Atlas to apply for a waste licence and come within the waste management licensing structure. As a result the following regulations under the original 1996 Act will be relevant to the activities of Atlas;

Consent of copyright owner required for any other use.
For inspection purposes only.

Waste Management (Licencing) Regulations, 1997 (S.I No. 133 of 1997)
Waste Management (Licencing) (Amendment) Regulations,1998 (S.I No. 162 of 1998)
Waste Management Licencing (Amendment) Regs., 2002 & E.C
(Amendment of Waste Management (Licencing) Regulations 2000) 2002

3.5.3 Waste Management Regulations

There are also a number of other regulations which have arisen from the waste management act and apply to Atlas due to their collection, storage, in the case of oily solid wastes their export of waste abroad and waste treatment through the proposed sludge drying plant. These regulations are as follows;

Waste Management (Movement of Hazardous Waste) Regulations, 1998. (S.I No. 147 of 1998)
Waste Management (Transfrontier Shipment of Hazardous Waste) Regulations, 1998 (S.I No. 149 of 1998)
Waste Management (Hazardous Waste Regulations),1998 (S.I No. 163 of 1998)
Waste Management (Collection Permit) Regulations, 2001 (S.I No.
Waste Management (Permit) Regulations, 1998. (S.I No. 165 of 1998)

EPA Export 26-02-2016:00:50:21

3.6 Air, Water, Noise

3.6.1 Air

Under the Air Pollution Act, 1987 there are a number of obligations which Atlas must adhere to which can be summarised as follows;

- Ensure that emissions from the Atlas Environmental Ireland Ltd site do not cause a nuisance.
- An emissions monitoring programme may be required by the regulatory authority.
- Boiler stack emissions should be monitored to ensure that boilers are operating at an optimum level.
- All accidental polluting air emissions must be reported to the regulatory authority.
- Plant extensions or alterations that increase emission levels or cause new emissions may not be commissioned until a review by the regulatory authority has taken place and licensing arrangements have been made.

Atlas main regulatory requirements are currently met under their IPC Licence which entails a monitoring programme; environmental management system and reporting requirements all under the authority of the EPA.

Consent of copyright owner required for any other use.
For inspection purposes only.

As a company who operate a fleet of vehicles Atlas are also required to pay attention to a number of vehicular emissions regulations as follows;
European Communities (mechanically propelled vehicle emission control) regulations, 1993
European Communities (mechanically propelled vehicle emission control regulations, 1994
Air Pollution Act, 1987 (sulphur content of gas oil) regulations, 1994
European Communities (mechanically propelled vehicle emission control) regulations, 1997
Air Pollution Act, 1987 (marketing, sale and distribution of fuels) regulations, 1998
European Communities (mechanically propelled vehicle entry into service) (amendment) regulations 1998
Environmental Protection Agency Act, 1992 (ambient air quality and management) regulations, 1999

Council Directive 70/220/eec on the approximation of the laws of the member states relating to measures to be taken against air pollution by emissions from motor vehicles

3.6.2 Water

As a facility generating wastewaters and emitting to the foul sewer and associated municipal Sewage Treatment Works operated by Laois County Council the main water pollution legislation instruments applies, namely the Water Pollution Act 1977 to 1990 and associated regulations. The EPA (Urban Waste Water Treatment)

EPA Export 26-02-2016:00:50:21

Regulations, 1994 would also apply indirectly given that the plant has emissions to the local authority sewer.

Due to the potential risks associated with the materials stored at Atlas the prevailing groundwater legislation must also be adhered to including the following;
Directive on the protection of Groundwater against Pollution caused by Certain Dangerous Substances (80/68/EEC).
Protection of Groundwater Regulations, 1999 (SI No. 41 of 1999)

3.6.3 Noise

Under the Local Government (Planning & Development) Act 1963 and The Environmental Protection Agency Act , 1992 (Noise) Regulations Atlas are required to conduct their actives without giving rise to noise nuisance or breaching predetermined levels by the EPA which is currently enforced through the site's IPC Licence Reg. No. 472.

3.7 Health & Safety Legislation

The site will be subject to the Safety, Health and Welfare at Work Act 1989 during all stages of the project. Specifically, Section 6(1) of the Act states

It shall be the duty of every employer to ensure, so far as is reasonably practicable, the safety, health and welfare at work of all his employees.

Section 7(1) of the Act states

It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their safety or health.

Consent of copyright owner required for any other use.
For inspection purposes only.

The site and it's employees operate under a Health and Safety system which includes a safety statement, safety procedures, permit to work system and dedicated personnel responsible for the safety function. Safety is also of the utmost importance due to the risks associated with the materials handled by Atlas particularly during transport and storage. The Dangerous Substances Acts and DGSA regulations in particular are relevant.

3.8 Local And Regional Plans

3.8.1 Laois County Council

Laois County Council have prepared a development plan for the Portlaoise area within which where the proposed site is to be developed:

- Laois County Development Plan (May 2000)

EPA Export 26-02-2016:00:50:21

The development plan has been consulted by RPS in this assessment and the context of the development as it relates to the plan is covered in detail within Section 12.0.

3.8.2 Midlands Regional Waste Plan

The midlands regional waste plan, which covers counties Laois, Longford, Offaly, Tipperary (N.R) County Council and Westmeath, was formally adopted by Laois County Council in September 2001. The plan was prepared in accordance with the Waste Management Act, 1996 and the Waste Management (Planning) Regulations, 1997. All municipal non hazardous wastes generated within the functional area's of the five local authorities are considered under the plan. The main purpose of the plan is to provide a framework for the management of these wastes in the Midlands Region in accordance with current national and EU waste legislation and policy. The Atlas proposed expansion involves the processing of 2 waste streams which come under the plan namely waste tyres and wastewater treatment plant sludges. The measures proposed by Atlas will contribute positively to the overall plan and indeed, due to the geographical spread of Atlas' services , to similar regional plans around the country.

3.9 ISO14001 Accredited Environmental Management System

The company have also voluntarily adopted an accredited ISO 14001 Environmental Management System which ensure that all environmental management functions are carried out in accordance with standard procedures and using standard forms. There is also a system of continuous internal auditing to ensure that procedures and being complied with and where non compliance is detected then there is a system of corrective action in order to rectify any issues that arise. The system is also independently audited by the National Standards Authority of Ireland on a periodic basis thus ensuring independent third party verification. Atlas have also developed an Environmental Policy which includes a commitment, through senior management, to continuous improvement in environmental performance, legislative compliance and pollution prevention. Furthermore any construction works which are undertaken on site will be carried out in accordance with this environmental management system which will ensure that all wastes are properly disposed of and that any incidents are dealt with in a structured manner and that measures are taken to ensure their prevention in future.

Consent of copyright owner required for any other use. For inspection purposes only.

EPA Export 26-02-2016:00:50:21

4.0. WASTE MANAGEMENT

4.1 Introduction

This section provides an assessment of the potential impacts of the proposed development on broader waste management issues including consideration of energy efficiency and was prepared in accordance with the Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Statements* (EPA, 2002).

4.2 Methodology

This assessment has been carried out with reference to current available data on wastes acceptance and energy consumption on the Atlas site which was mainly acquired through reference to reports compiled in part fulfilment of the requirements of Atlas' IPC Licence Register No. 472. Details of the proposed expansion of the site as outlined in the project description section of this EIS were consulted in evaluating the impacts in addition to regional and national waste management plans and policies. In the case of energy efficiency particular attention was paid to the nature and type of equipment being installed in terms of it's energy consumption and any proposed energy efficiency measures

For inspection purposes only.
Consent of copyright owner required for any other use.

4.3 Existing Conditions

4.3.1 Wastes Management

The current activities conducted at the Atlas site, by their very nature, contribute significantly to national hazardous waste management efforts and indeed energy efficiency. This is achieved mainly through the provision of an accessible and broadly affordable service for the proper handling and disposal of waste oils, waste oil filters and waste oily rags. These materials, in particular the oily filters and rags, have in the past often ended up being disposed of by landfill through poor regulation of landfill waste acceptance practices and a lack of awareness regarding hazardous waste segregation and disposal. The provision of the Atlas facility ensures that these wastes are not improperly disposed of and that the energy value of any residual waste oils contained within them is extended to the provision of a low sulphur fuel for use in boiler operation thus contributing to a reduction in demand for existing, finite fuel reserves. The on site treatment facilities for contaminated soils also ensures that there is a facility within this country which can deal with such hazardous wastes and also allows the soil, following treatment, to be reused for landscaping and other purposes thus avoiding potential wastes. Table 4.3.1 overleaf outlines the quantities of these materials currently accepted at Atlas for treatment.

EPA Export 26-02-2016:00:50:21

Table 4.3.1 Details of Waste Types and Quantities Presently Accepted at Atlas

Waste Type	EWC Code	Annual Quantities MT	Method of Recovery / Disposal
Oil Filters	130601	400	On Site Recovery of oil and off site metal recovery
Waste Oil	130000	23,000	On site Recovery of oil
Oily Rags	130601	25	Off Site Disposal
Contaminated Soils	170503	8,000	On Site Recovery
Oily solid Wastes	1300	1,000	Off Site Disposal

Waste generation at the site arising from these processes is relatively low with respect to the quantities of waste accepted at the site for treatment. This would include oily sludges, paper/ cardboard waste, general non hazardous waste and laboratory waste which is treated using a specialist contractor.

4.3.2 Energy Consumption

The main on site process involving significant energy consumption is the oil / water separation stage where the waste oil is heated, often to 80^0C and this enables the water and oil layers to separate. The main heating requirements are met by an on site natural gas fired boiler which was installed within the last 12 months. Natural gas was selected as the preferred fuel due to it's mains availability, i.e. reducing boiler fuel storage requirements and associated risks, and it's high combustion efficiency.

Consent of copyright owner required for any other use.
For inspection purposes only.

The current process and site buildings also incorporate a number of energy efficiency measures including the following;

- Boiler is controlled by a temperature set point controller
- Temperature controllers linked to a steam shut off valve
- An alarm system to ensure that all controllers are operating effectively
- Lagging and insulation on all relevant pipework and tanks
- 20% extra insulation in cavity walls of new office building to maximise thermal insulation
- The heating system in the new office building is supplemented by a heat exchanger which uses waste heat from oil processing to heat the offices through an underfloor system
- There is a high percentage of glass to maximise natural light and thus reduce lighting costs

Current energy demand levels are outlined in Table 4.3.2 overleaf.

EPA Export 26-02-2016:00:50:21

Table 4.3.2 Existing Energy Consumption Data For The Atlas Site

Energy Consumption		Usage		
		1999	2000	2001
Light Fuel Oil (< 1% Sulphur)	M^3	35667	453.5	348
Natural Gas	MWhr	†-	†-	3740
*Electricity	MWhr	N.A	510	656

*EMO oil offices and yard electrical consumption included in this figure.
† Natural Gas boiler was installed in 2001.

4.4 Impact Assessment

4.4.1 Wastes Management

Wastes management during the construction stage is not expected to generate any impacts as any waste earth and C&D waste will be retained on site for use in landscaping or site development or disposed of to a licensed landfill facility . Therefore attention in this section of the E.I.S will be focussed primarily on operational wastes management issues.

Consent of copyright owner required for any other use.
For inspection purposes only.

Broadly speaking the proposed expansion at Atlas provides for an extension in the scope of materials which are currently recovered on site or disposed off site in a regulated manner through authorised waste disposal contractors. These materials primarily emanate from End-of-Life Vehicle (ELV) waste streams which are currently taking on increasing importance in light of the imminent adoption of the ELV and Landfill Directives. Table 4.4.1 outlines the proposed range of materials to be processed or transferred on site including projected disposal quantities, EWC codes and the ultimate fate of the wastes.

EPA Export 26-02-2016:00:50:21

Table 4.4.1 Summary of Proposed New Wastes for Acceptance At The Atlas Site

Waste Type	EWC Code	Haz. Or Non Haz.	Quantity MT p.a	Method of Recovery / Disposal
Solvents – Chlorinated and non Chlorinated	140603	Haz.	300	Off Site Disposal
Mixed Fuels – Petrol and Diesel	130701 130702	Haz.	250	Off Site Disposal
Sludge	070511 070512	Non Haz	30,000	Off Site Disposal – Local Landfill
Brakefluid	160113	Haz.	25,000 l	Off Site Disposal
Antifreeze	160114 160115	Haz.	25,000 l	Off Site Disposal
Windscreen Washwater	200130	Non Haz.	70	Off Site Disposal
Oily Solid wastes	130503	Haz.	5,025	Off Site Disposal
Tyres	160103	Non Haz	4,000	Process for off Site Recovery
Fluorescent tubes	200121	Haz.	50	Process for off Site Recovery
Aerosol cans	160504 160505	Haz & Non Haz	20	Process for Off Site Metal recovery – Local Agent
Windscreen glass	160120	Non Haz	7,000	Off Site Recovery
Waste batteries	160601 160602 160605	Haz.	3,000	Off Site Recovery (Possible future on-site recovery)
Waste Cooking Oil	200125	Non Haz	1,000	On Site Recovery
Waste ELV	160104	Haz	1,200	Storage Only
Waste Oil	130000	Haz.	25,000	On Site Recovery
Waste oil filters	160107	Haz.	800	On site recovery of oil and off site metal recovery
Contaminated soil	170503	Haz.	30,000	On site treatment and off site reuse
Waste Electronic Goods	200135 200136	Haz. 7 Non Haz.	6,000	Off Site Recovery
Blending / Reconditioning of Acids & Bases	0601 0602	Haz.	100	On Site Recovery

Note: EWC codes based on the current "European Waste Catalogue and Hazardous Waste List – Valid from 1 January 2002"

The impacts associated with extending these waste management services to the actual site are fully covered within sections 5 to 15 of the EIS, this section however will deal

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:21

with the broader issues of theses proposed measures within the context of waste planning on a regional and national context.

In general, it is expected that the impact of the proposed expansion at the Atlas facility will be broadly positive through the provision of a recovery outlet for a number of wastes which are currently disposed of by conventional landfill or potentially in an unregulated manner including aerosol cans, ELV, general vehicle residual waste (brakefluid, windscreen washer fluid, fuels, batteries and windscreen glass) and tyres. Tyres and batteries in particular are listed as priority waste streams under the EU resolution of May 7th, 1990 on waste management policy within the community. These wastes have been prioritised by the EU in order to increase their rate of recycling and reduce the volume of these wastes going to landfill. The ELV Directive (2000/53/EC) also arose from this resolution as a response to the issues created by the disposal of large volumes of scrapped vehicles often containing hazardous materials. Through the provision of these new facilities at Atlas important steps are being taken in addressing the infrastructure requirements of the directive and more broadly the EU resolution measures.

Under the Waste Management plan for the Midlands Region which was adopted by Laois County Council in September 2001 a number of objectives were established for waste management in the region, which also included Longford, Westmeath, Offaly and Tipperary (North Riding). Central to this plan was the Midlands Intercounty Waste Management Strategy Study which has devised recommendations for infrastructural development in the region. These developments are centred around the governments' national waste management policy "Changing Our Ways" which was published in October 1998. These policy measures include, amongst others, the following targets;

For inspection purposes only.
Consent of copyright owner required for any other use.

- Recycling of 35% of municipal waste
- Development of waste recovery facilities employing environmentally beneficial technologies, as an alternative to landfill
- Rationalisation of waste landfills with programmed and sustained reductions in numbers leading to an integrated national network of some 20 state of the art facilities incorporating energy recovery and high standards of environmental protection

These targets are to be achieved over the following 15 years and are intended to fulfil national obligations under EU legislation and compliance with EU policy. If the proposed Atlas development is taken into context with this policy and indeed the Landfill Directive requirements it is clear that the development has a positive impact in reducing the volume of material going to landfill and thus relieving pressure on this declining disposal outlet. The Atlas expansion is a waste recovery facility, although primarily for hazardous waste materials, which employs environmentally beneficial technologies and thus offers an alternative to landfill.

The proposed development at Atlas will also have a number of positive impacts in light of the recently published Department of The Environment and Local Government policy document: "Preventing and Recycling Waste: Delivering Change" (March 2002) Under this policy statement there are a number of proposed measures aimed at providing more co-ordination and support around waste recycling and

EPA Export 26-02-2016:00:50:21

financial incentives. This new approach also deals with a number of additional area's including the provision of recycling grants.

In assessing the impact of hazardous wastes management services provided at the Atlas facility it is also necessary to evaluate the development in light of the "National Hazardous Waste Management Plan" published by the EPA in 2001. Table 4.4.2 outlines the proportions of hazardous wastes types which the expanded facility will handle and it is evident that when the new facility is in place it will make a significant contribution to national hazardous management.

Table 4.4.2 Summary of The Contribution of The Proposed Atlas Hazardous Wastes Processing Quantities to National Hazardous Wastes Arisings

Hazardous Waste	*Quantity 1998 MT p a	% of The National Total to be Processed by Atlas' Proposed Development
Oily Sludges	19,063	26.4
Waste Oil	17,346	90.0
Batteries (Lead Acid & Small Batteries)	17,145	17.5
Oil Filters	1327	60.3
Fluorescent Lamps	554	9.0
Contaminated Soil	45,456	44.0

*This is the quantity produced nationally as stated in the "National hazardous Waste Management Plan"(2001).

Consent of copyright owner required for any other use. For inspection purposes only.

It was also noted in the National Hazardous Waste Management plan that while Ireland has a relatively well developed waste brokerage industry, smaller producers of hazardous waste have generally not availed of this for the following reasons;

- High Unit Cost
- Lack of awareness of regulatory obligations
- Unwillingness to pay for hazardous waste disposal.

This has led to a significant level of unreported hazardous wastes and is of concern as the environmental impact of this waste may be high. This particular situation was highlighted by the EPA as a major shortcoming and a number of means by which smaller producers could avail of the service were recommended . Through the expansion of their existing service, Atlas go some way towards addressing this issue by the provision a broad mobile collection service and collection on demand by commercial suppliers. Furthermore the Atlas expansion will provide a broader range of hazardous wastes outlets which can be availed of by these smaller producers.

The plan also acknowledges the "relatively strong position" of the hazardous waste recovery industry in Ireland and has included Atlas within this remit. This proposed expansion will have the impact of further strengthening this position. One of the recommendations within the plan includes the following; " Continued support may in future be required for the hazardous waste recovery industry to ensure that it remains viable. The possibilities for additional state funding should be explored." The plan

EPA Export 26-02-2016:00:50:21

also states that "EU policy dictates that Ireland should strive for self sufficiency in the management of hazardous wastes" and states that this should be addressed. Through the expansion of the existing site hazardous waste recovery services, particularly in respect to contaminated soil and waste oil, and also the introduction of treatment services for aerosol cans and fluorescent tubes, Atlas are contributing significantly to overall self sufficiency . While certain quantities of hazardous wastes are exported the vast majority of hazardous wastes will be either recovered on site or processed for local recovery . Given the total anticipated throughput of materials from the proposed development, this is a significant contribution to reducing the dependency on hazardous waste export and is in compliance with EU waste policy.

The sludge drying facility also provides an effective waste treatment alternative which will reduce the weight and volume of this material significantly (from 25% solids to 90%) thus ensuring lower waste disposal quantities. When dried to 90% also the potential nuisance properties of the sludge are reduced significantly and handling is much more favourable. The sludge drying facility proposal has also been evaluated in light of the local Laois County Sludge Management Plan and the plans prepared for Counties Westmeath, Tipperary North Riding, Offaly and Longford. The general approach of these plans appears to be that of providing a hub centre for sludge treatment in each county or on an inter-county basis. The treated sludge may then be applied to land for agricultural benefit, reclamation or in forestry or dried for thermal treatment. The actual source of the sludge to be dried at the facility in Atlas is expected to be from Pharmachem plants in Cork region and again sludge plans for this area have been considered. In terms of the source area of these sludges the proposed sludge drying facility at Atlas will take some of the strain from local transportation and central hub requirements in the Cork area. The provision of the sludge drying facility at Atlas will not impact on local sludge management arrangements and will in effect operate independently of local arrangements. In fact the proposed facility may be a potential outlet for the drying of sludge prior to thermal treatment for the overall midlands area in the event of such a disposal facility being provided. It is not considered that the dried granulated sludge arising from the facility at Atlas will give rise to any disposal issues in the context of local and regional sludge management plans given the fact that the volume of the material is reduced considerably by drying and given it's relatively inert state. The material will also be amenable to future thermal treatment disposal options in it's dried state following processing at Atlas.

Consent of copyright owner required for any other use.
For inspection purposes only.

In summary it is clear that the Atlas development will have a number of positive impacts on waste management generally on a regional and national scale. It is also noteworthy that the "do nothing" impact would be significant particularly if these facilities were not be provided and if there was a greater dependency on landfill or indeed export of waste outside the country as a result.

4.4.2 Energy Efficiency

Due to the generally low level of construction activity no significant impacts are expected as mitigation measures include the use of only modern plant and equipment in order to ensure energy efficient consumption. Operational energy consumption has therefore been given priority in this section.

EPA Export 26-02-2016:00:50:21

4.4.2.1 Impacts Existing Site Energy Consumption

Energy use of site is currently mainly provided for through natural gas and electricity usage. The majority of the proposed new facilities on site will have little effect on existing energy consumption however each are considered in detail in table 4.4.3 overleaf.

4.4.2.2 Sludge Drying Facility

Due to the nature of the process there will be increased electrical demand arising. Typically 650 kw/hr is required per tonne of evaporated water generated in the process however the amount of energy required is reduced through a system of heat recovery. This is achieved through using the vapours that are produced in the initial thin film evaporation stage to heat the drying air for the second stage. This is estimated to represent a 30% to 45% saving in energy. The emissions from the unit are expected to be negligible and wastewater sludge accepted at the plant will already be at 25% solids thus reducing transportation fuel requirements. The Dryer will also be PLC operated this allowing less dependence on manual inputs and ensuring more efficient operation.

Consent of copyright owner required for any other use.
For inspection purposes only.

In order to meet the energy needs of the sludge drying facility Atlas are proposing the installation of an electricity generating unit. The impacts of this unit have been fully considered in other sections of this E.I.S namely sections 8, Air and 9, Noise. The unit itself will be operated mainly using low sulphur fuel oil derived from the on site reprocessing of waste oil thus extending the life cycle of what may otherwise be considered a waste product. Back up fuel will be provided by light fuel oil. Atlas are currently working with the generator installation contractors to evaluate means by which any waste heat arising from the process can be efficiently used. These efforts include the following;

- Use of heat exchangers to use the waste heat in order to augment the soil remediation processes on site
- Use of the heat for on site office and plant heating in order to reduce consumption of existing heating sources
- A means of making the heat available for commercial use within the surrounding area.

EPA Export 26-02-2016:00:50:21

Table 4.4.3 Site Expansion Energy Consumption Requirements

Proposed Expansion Item	Effect On Energy Consumption
1. UNDERGROUND TANKS	
Bulk Solvent & Mixed Fuel Storage	
Solvents – Chlorinated & Non Chlorinated	None – underground tanks only
Mixed Fuels – Petrol / Diesel	
2. SLUDGE DRYING FACILITY	
Sludge Treatment	
Industrial Sludges	This is covered separately in section 4.4.2.2
Tyres	Additional Electrical consumption with 37KWhr gear motor
Water Treatment Chemicals (Storage Only)	None – Storage tanks only.
3. WASTE TRANSFER AREA'S	
Waste Transfer Facility	
Brakefluid	None – these materials will only be delivered to the site and retained on site. There will be some additional fuel usage due to deliver and distribution of these items including disposal abroad.
Antifreeze	
Windscreen Washwater	
Oily Solid Wastes including greases	
ELV's	
Waste Electronic Goods	
Waste Recovery Facility	
Acids/Bases Blending & Reconditioning	Additional Electrical consumption (Low Level)
Fluorescent Tubes	Additional Electrical consumption (Low Level)
Aerosol cans	*Additional transport only
Windscreen Glass	Additional transport only
Waste Batteries	Additional transport only
Waste Cooking oil	Additional transport / Negligible increase in process energy consumption
4.EXISTING SERVICES EXPANSION	
Waste Oil / Waste Cooking Oil	Marginal Increase in consumption of c.10%
Waste Oil Filters	100% increase in energy consumption of crusher and conveyor however the feasibility of using the tyre shredder for filter treatment will be explored.
Contaminated Soil	Significant increase in transport , additional operation of compressed air blowers
Oily Solid Wastes	Increase in transport only

*The traffic study in section 13 revealed that there would be a 25% increase in traffic at the site as a result of the expansion and it would be reasonable to assume a proportionate increase in energy consumption

For inspection purposes only.
Consent of copyright owner required for any other use.

4.5 References

1. Midlands Regional Waste Management Plan, January 2000.
2. National Hazardous Waste Management Plan, (EPA, 2001)
3. European Waste Catalogue and Hazardous Waste List (Valid from 1st January 2002)
4. Atlas Annual Environmental Report, 2000 and 2001.
5. " Changing our Ways" Department of the Environment and Local Government, 1998.
6. "Delivering Change", Department of The Environment and Local Government, 2002.
7. "Sludge Management Plan for Co. Laois ", prepared by M.C. O'Sullivan, 2000.

EPA Export 26-02-2016:00:50:21

5.0 ECOLOGY

5.1 Introduction

This report comprises an Ecological Impact Assessment of the proposed expansion of small scale waste recovery and transfer facility within the confines of and integrated with the existing Atlas Environmental Ireland waste management facility at Clonminam Industrial Estate, Portlaoise, Co. Laois.

The proposed development site is located approximately 1 km south west of Portlaoise Town Centre. The site is situated in an urban area that is dominated by industrial and commercial activities. Total area of the site is 6 acres, all of which is within a fenced compound.

5.2 Methodology

The site was surveyed on 26th June 2001, in order to assess its ecological value; to identify ecological constraints associated with the proposed development and to assess the likely impact of the proposed development on the ecology of the site and its surroundings. A phase 1 habitat survey of the site was conducted. Habitat types were classified according to '*A Guide to Habitat Types in Ireland*', published by The Heritage Council (Fossitt, 2000). The ecological value of each habitat type was evaluated to determine the significance of the features located at the site, on an importance scale ranging from:

For inspection purposes only.
Consent of copyright owner required for any other use.

- International
- National
- County
- High local
- Local importance
- Local value
- No significance

It should be noted that there are no standard criteria for evaluating the importance of ecological features in Ireland and any evaluation of the type presented below has to be considered provisional.

The site was surveyed for mammals and mammal signs, with particular attention given to Badger, Otter and bats, all of which are protected (see section 3.3.2). Birds and bird habitats were also surveyed. All birds encountered during the course of the survey were noted and the habitats present on the site were assessed as to their suitability for breeding species. An assessment of the potential conservation value of the habitats on the site and also of the species likely to be found on the site was undertaken.

EPA Export 26-02-2016:00:50:21

5.3. Existing Environment

5.3.1. Infrastructure And Services

The site is located within an existing purpose built waste management facility within the Clonminam Industrial Estate, Portlaoise. The site has an existing Environmental Management System (EMS) in place and is regulated under an Integrated Pollution Control (IPC) licence.

The northern and eastern sides of the site are adjacent to a small section of the Cork-Dublin rail line and adjacent railway yard. The southern side of the plant is bounded by the EMO fuel storage and office complex and to the west of the site is a halting site. The site occupies a total of 6 acres, of which the proposed developments will cover approximately 2 acres.

5.3.2. Designated Site

Dúchas, the Heritage Service is the state agency responsible for nature conservation in Ireland and have designated sites of national importance as proposed Natural Heritage Areas (pNHA's). The proposed development site is not located within or adjacent to any recognised sites of conservation importance. The closest designated site is Ridge of Portlaoise pNHA (site code: 00876), which lies approximately 1.3km to the West of the proposed development site (see Figure 5.1). The site comprises a wooded esker with areas of open calcareous grassland on which two rare plants are recorded, Nettle-leaved Bellflower and Blue Fleabane. The site synopsis, prepared by Dúchas, is presented in Appendix 5.2. At present pNHA's have no legislative protection until such time that the Wildlife (Amendment) Act 2000 is fully enacted and the consultative process completed.

Consent of copyright owner required. For inspection purposes only. Any other use requires permission of author.

Candidate Special Areas of Conservation (cSAC's) are designated and protected under the EU Habitats Directive (92/43/EEC). To be designated a cSAC, internationally important habitats or species listed in the habitats Directive must occur on a site. There are two candidate Special Areas of Conservation (cSAC's) each located approximately 10 km from the proposed development site; Slieve Bloom Mountains cSAC (site code: 00412) to the west and River Barrow and Nore cSAC (site code: 02162) to the southwest. The Dúchas site synopses for both these sites are presented in Appendix 5.2. The proposed development site lies within the hydrological catchment of the River Barrow.

Special Protection Areas for Birds (SPA's) are also protected under the EU Habitats Directive (92/43/EEC). There are no SPA's designated in County Laois or located within 10km of the proposed development site.

5.3.3. Habitats

A site survey was carried out on 26th of June 2002 to evaluate the habitats present on the site and surrounding area. The site itself is comprised of a number of office buildings, large storage tanks and other structures used in the present activities tasking place on the site. The remainder of the site comprises an area of land that is covered with an artificial surface of concrete. There are no natural or semi-natural habitats

EPA Export 26-02-2016:00:50:21

present on the proposed development site, those habitats recorded close by the site are of low ecological interest. The following habitats are present on the site and surrounding area. Figures given in brackets, such as 'BL3' refer to habitat codes given in Fossitt (2000). The scientific names of species mentioned in the text are presented in Appendix 5.1. Due to the absence of any ecologically important areas of semi natural habitat a Habitat Plan is not presented.

Buildings and Artificial Surfaces (BL3)
This habitat type as defined by Fossitt is present throughout the development site. It has little ecological value.

Flower Beds and Borders (BC4)
This habitat comprises a small area at the western margin of the site adjacent to the visitors car park. The flower beds were planted with dwarf coniferous shrubs for the purpose of landscaping in the vicinity of the site. Since then the beds have been poorly maintained and are now dominated by weeds and pioneer species including Common Ragwort, White Clover, Hogweeed, Yorkshire Fog and Bush Vetch.

Recolonising Bare Ground (ED3)
This habitat type is not located on site but is present in the surrounding area in the vicinity of the Halting site to the West of the proposed development site. The ground has undergone disturbance in the past and there are pioneer species re-colonising the area. These species include Dandelion, Common Nettle, Selfheal, Oxeye Daisy and Common Ragwort.

Consent of copyright owner required for any other use. For inspection purposes only.

Dry Meadows and Grassy Verges (GS2)
This habitat type is present along the railway line to the North of the proposed development site. The habitat is dominated by grasses, which include Cock's-foot, Yorkshire Fog and Meadow Foxtail. The following plant species are also represented in the sward, Cow Parsley, Hogweed, Common Nettle, Bush Vetch, Oxeye Daisy and Common Knapweed.

5.3.4 Species

5.3.4.1. Flora

The habitats section above gives details of the common plant species associated with each habitat type found on the site. No plant species of conservation interest were noted, and given the habitats present, it is considered unlikely that any occur.

5.3.4.2. Fauna

Mammals
There was no evidence gathered within the site to indicate that mammals use it. Due to the presence of secure fencing around the entire site and an absence of any suitable habitats on site it is considered that mammals do not use the site.

The linear habitats along the railway line may be used occasionally by species such as Rabbits, Foxes and even Badgers. There is secure fencing on each side of the railway

EPA Export 26-02-2016:00:50:21

line preventing mammals from venturing outside of this linear habitat in the region of the proposed development site.

Bats
There were no suitable roosting sites or feeding habitats recorded within the proposed development site or in the surrounding area within close proximity to the site.

Birds
No birds were recorded within the proposed development site during the site visit. It is unlikely that birds frequently occur within the site, as there is a large degree of human activity during the day and much machinery in operation to make the site unattractive for birds. There are also no suitable habitats for birds within the site. The following birds were recorded in the surrounding area; Pied Wagtail, Swallow and Chaffinch. Rooks were recorded flying overhead. These species commonly occur in urban areas and are likely to be breeding in the locality.

Invertebrates
There were no invertebrates recorded within the proposed development site. Considering the habitats present it is thought unlikely that any invertebrates of conservation importance occur within the site or surrounding area.

For inspection purposes only.
Consent of copyright owner required for any other use.

5.3.4.3 Evaluation Overview

There were no species or habitats of conservation interest recorded within or adjacent to the proposed development site. The closest designated site; the Ridge of Portlaoise pNHA, is located 1.3 km to the West of the proposed development site. The site lies within the hydrological catchment of the River Barrow, a section of which is designated a cSAC, and therefore is of international importance.

There is no evidence of birds or mammals using the proposed development site. The habitats of the surrounding area are deemed unsuitable for use by birds, mammals or invertebrates of conservation importance.

5.4. Impacts

Ecological impacts can occur by several different mechanisms. The terminology used to describe impact significance is defined in Appendix 1 – No.1.3.

5.4.1. Designated Sites

There will be no direct impacts on any designated areas. The nearest designated site to the proposed development is the Ridge of Portlaoise located approximately 1.3km to the West. There will be no discernible change in the ecology of this site as a result of the proposed development work.

5.4.2. Direct Habitat Loss

The proposed development occurs on the habitat type 'Buildings and Artificial Surfaces', which is of low ecological value. In any case this habitat will be replaced

EPA Export 26-02-2016:00:50:21

by the same habitat type as a result of the development. There will be no direct loss of semi-natural habitats as a result of the proposed development.

5.4.3 Species

The additional noise and activity around the site may deter some individual birds from visiting the site. Since there is no evidence of birds breeding on the site, it is thought that this impact will be minimal. The proposed development will not impact upon any site recognised as an important breeding area for birds.

5.4.4 Secondary Impacts

As well as direct habitat loss, habitats outside the land-take of the proposed development site may change as a result of indirect impacts. If these impacts significantly alter the type and/or quality of the habitat, then such changes are effectively additional habitat losses. In the case of the proposed developments, secondary/indirect impacts could include:

- Hydrological impacts
- Air pollution
- Pollution of watercourses
- Noise disturbance which could cause a decline in breeding bird numbers

Consent of copyright owner required for any other use. For inspection purposes only.

These types of impacts are discussed below with particular reference to areas of ecological constraint, and also in relation to species of conservation importance.

Hydrological Impacts

Hydrological impacts to habitats could result from changes to patterns of surface water and/or ground water drainage.

The proposed development involves digging on site to install two 30,000 l underground tanks; these tanks are to be double contained and of suitable steel construction thereby minimising the possibility of leakage. There is no foreseen contamination of ground water from the proposed development (refer to Section 6). There were no habitats identified in close proximity of the site that are directly influenced by groundwater, and hence sensitive to groundwater changes.

Pollution of Watercourses

It is our understanding that surface water runoff from the site will be collected and fed through oil-interceptors and discharged via the town storm water drainage network. The outfall of such discharge into local watercourses is addressed in the water section of the report (refer to Section 7).

Air Pollution

Air emission from the proposed development will result from the running of four 1.2MW generators. The generators will not be running constantly and the level of emissions will be relatively low (refer to Section 8). There were no habitats that would be potentially sensitive to air pollution recorded in close proximity to the proposed development.

EPA Export 26-02-2016:00:50:21

Disturbance

Much of the proposed additional work on site will be housed indoors therefore noise levels will be minimised. The level of noise is not expected to be significantly increased as a result of the proposed development (refer to Section 9). The absence of potential breeding bird habitats in the vicinity of the site rules out any possible disturbance to breeding bird populations.

5.5. Mitigation

Should the development proceed as proposed there are no significant impacts predicted and therefore no mitigation measures are proposed. However, any landscape proposals should where possible use native plant and tree species in areas outside borders/beds.

5.6. Residual Impacts

Should the development proceed as proposed there should be no residual impacts on the ecology of the site or surrounding area.

5.7 References

Fossitt, J.A. (2000). *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:21

6.0. SOIL, GEOLOGY AND HYDROGEOLOGY

6.1. Introduction

This section of the Environmental Impact Statement assess the impacts to soil, geology and hydrogeology from the proposed development. This section should be read in conjunction with the site layout plans for the site (Figure 2.2), project description (Section 2) and water (Section 7) sections of this EIS.

6.2. Methodology

This section of the EIS was prepared in accordance with the *Guidelines on the information to be contained in Environmental Impact Statements* (EPA 2002) and *Geology and the EIS process a Guide, Consultation Draft* (IGI 2002). The following sources of information were used in the compilation of this assessment:

- Bedrock Geological map of the Carboniferous of Central Ireland, Chevron Mineral Corporation of Ireland and Ivernia West plc and the Geological Survey of Ireland (1992).
- Geological Survey of Ireland Archive Field Sheets, 6 inch to 1 mile scale.
- Soil and Groundwater Investigation Atlas Ireland Facility, Portlaoise, Final Report prepared by URS Dames & Moore (2001).

For inspection purposes only.
Consent of copyright owner required for any other use.

6.3. Existing Conditions

6.3.1. Soil

The subsoil in the area has been mapped as limestone gravel on the Geological Survey of Ireland (GSI) archive drift maps for the Portlaoise area. During the URS Dames & Moore investigation conducted on the site, 4 boreholes were drilled on the site and the subsoil geology was observed to comprise clay and sand which varied across the site. Boreholes 101 – 103 encountered gravely clay with some boulders to approximately 5-5.5m below ground level. Borehole 104, located at the southern boundary of the site encountered thicker sequence of made ground to 3.5m below ground level. Sand and gravel was encountered underlying the clay (BH 101-103) and made ground (BH 104) at approximately 4.5 to 5m below ground level and extended to 5.5-6.5m below ground level.

Laboratory analyses were conducted on soil samples collected from the site investigation boreholes drilled by URS Dames & Moore in 2001. Low concentrations of petroleum hydrocarbons were observed in most samples but at concentrations below the Dutch Intervention (I) values and as such not considered to pose a risk to the environment. The concentrations observed in the soil are summarised below:

- Diesel Range Organics (DRO) : 18 - 69mg/kg
- Gasoline range Organics (GRO) : <0.01 – 0.408mg/kg
- Polycyclic Aromatic Hydrocarbons (PAH's) sum of 10 : 3.15 – 6.16mg/kg

EPA Export 26-02-2016:00:50:21

Metals (arsenic, barium, cobalt, chromium, copper, molybdenum, nickel, Lead, antimony, zinc, cadmium, mercury) were also analysed from samples collected from below the site. All samples were below method detection limits for cadmium and mercury, and all other results were significantly below the respective Dutch Intervention (I) Values. Atlas are currently conducting on going investigations in consultation with the EPA in order to resolve any issues which may be present.

6.3.2. Bedrock Geology

The bedrock geology below the site has been mapped as Carboniferous Limestone, which has been described as Argillaceous Bioclastic Limestone. Te rock has been described as medium to dark grey fossiliferous argillaceous calcarenites interbedded with thin calcareous shales (Chevron and GSI 1992). Boreholes drilled on site by URS Dames & Moore encountered obstructions at 5.5-6.5m below ground, which may be the bedrock surface, but which could not be confirmed with the employed drilling technique.

6.3.3. Hydrogeology and Groundwater

The bedrock below the site is considered to be a locally important fractured aquifer by the GSI. Regional groundwater flow is expected to be in an easterly direction towards the Triogue River, which is a tributary of the River Barrow. The Triogue River is located 1.5km to the east of the site and smaller tributaries of the Triogue are located approximately 500m to the east of the site. It would be expected that groundwater will discharge to the Triogue and possibly its tributaries as baseflow in the rivers.

Consent of copyright owner required for any other use.
For inspection purposes only.

Groundwater was encountered in the sand and gravel during borehole drilling on the site as part of the URS Dames & Moore investigation, and groundwater level measurements have indicated that groundwater flows in a east-southeasterly direction in the sand and gravel below the site. Groundwater within the sands and gravels appears to be confined by the overlying clays as static groundwater levels have been measured at between 1.5m to 4.0m below ground level.

Groundwater quality samples were collected and analysed for petroleum hydrocarbons (DRO, GRO, BTEX, PAH) and metals during the site investigation conducted by URS Dames & Moore (2001). Low concentrations of diesel range organics (DRO) were observed at 0.13-0.23mg/l in groundwater collected from the four monitoring wells. GRO and BTEX compounds were not observed in groundwater sampled from the four wells. Total PAH concentrations (the sum of 10 compounds on the Dutch list) ranged between 0.3µg/l and 3.3µg/l, which was below the Dutch Intervention Value. However, four individual PAH compounds were observed in groundwater in some of the wells above the Dutch Intervention (I) values (0.05 µg/l), which included:

- Benzo(k)fluoranthene (0.051-0.084 µg/l)
- Benzo(a)pyrene (0.05-0.085 µg/l)
- Indeno(123-cd)pyrene (0.035-0.058 µg/l)
- Benzo(ghi)perylene (0.063-0.077 µg/l)

EPA Export 26-02-2016:00:50:21

Metals (barium, cobalt, molybdenum, zinc, mercury, arsenic, cadmium, chromium, copper, nickel, lead) were analysed from the four groundwater samples collected from the monitoring wells on the site by URS dames & Moore (2001). Eight of these metals were not observed above method detection limits. Low levels of barium (0.06-0.26mg/l) and zinc (0.05 and 0.12mg/l) were observed but below the Dutch Intervention (I) Value. Nickel was observed in three wells at 0.038-0.077mg/l. Only one sample collected from BH103 was observed above the Dutch Intervention (I) value of 0.075mg/l.

Public water supply for Portlaoise is obtained from two groundwater supplies in the area. The primary source is located at Ballydavis, which is approximately 4km to the northeast of Portlaoise, and the second location is located along the R426 to the south east of Portlaoise. The Ballydavis site is located at considerable distance from the site and on the opposite side of the Triogue River and would therefore not be at risk from any groundwater contamination present on the site.

6.4. Impact Assessment

6.4.1. Potential Impacts

For inspection purposes only.
Consent of copyright owner required for any other use.

The potential impacts to soil, geology and groundwater from the proposed development are considered in this section. The development will entail the excavation of soil for foundations for the proposed buildings (sludge drying facility) and storage areas (soil remediation bays and bunded storage areas) and for the proposed additional underground storage tanks during the construction phase of the project.

During the operational phase of the development, the Atlas facility will be storing waste oils and solvents in the underground storage tanks and in drum storage areas of the site. In addition, hydrocarbon contaminated soils will be treated in the site's additional soil remediation facilities. Wastewater treatment plant sludge will be dried in the sludge drying facility. If stored in an uncontained manner, these materials have the potential to contaminate soil and groundwater underlying the site if accidentally released from their primary storage containers.

The development will increase the area of the site covered in hardstanding impermeable surfaces, which will increase the amount of surface water runoff and reduce the infiltration of rainfall through the existing un-surfaced areas of the site that recharges underlying groundwater.

6.4.2. Impacts During Construction

During the construction phase of the project, soil will be excavated from below the site to facilitate the construction of foundations for the sludge drying facility, drum storage compound and soil remediation bays. This will entail the excavation to approximately 0.5-0.75m depth below ground level. The proposed underground storage tanks will require excavation to approximately 4m depth below ground. In addition, in order to create adequate drainage lines across the site, local excavations will be required to depths of approximately 2m below ground. These soil excavations

EPA Export 26-02-2016:00:50:21

will result in unavoidable soil removal from below the site in localised areas. However, the soils have been described as being gravely clays and would therefore not have any aggregate or economic potential. Where possible, the excavated soil will be used on site for landscaping purposes, with the remainder being sent for offsite disposal to an appropriately licensed landfill facility for possible use in capping or other activities as required. In the unlikely event of any contaminated soils being excavated samples will be taken to assess the quality of the material and on site treatment in the soil remediation bays will be carried out if deemed necessary.

6.4.3. Impacts During Operation

The proposed development incorporates the use of secondary containment features for all areas where hazardous materials are stored and treated to ensure that accidental release of these compounds do not impact soil and groundwater quality below the site. These features are described in detail in Section 2 relating to the project description and are summarised in Table 6.1.

Table 6.1. Containment Features of Proposed Development

Area/Facility	**Secondary Containment Feature**
2 additional Underground Storage Tanks	Double contained steel construction
Sludge Drying facility Wastewater Treatment Chemicals Storage Tanks.	Sludge feed tanks and above ground diesel storage tanks will be bunded. Wastewater treatment chemicals stored in this area to be held in above ground HDPE lined bunds..
Stores building for IBC, drum storage and acids / bases mixing	Enclosed building with spill containment measures. Acids / Bases tank will be bunded as a precaution.
Bunded Drum Storage Area	Covered and bunded
Soil remediation bay	Covered, concreted and bunded
ELV and Waste Electronic Goods Storage Compound	Walled bunded yard area.

For inspection purposes only.
Consent of copyright owner required for any other use.

Given the use of secondary containment and the use of an independently certified Environmental Management System operating on the site, it is predicted that the development will not result in adverse impacts to soil and groundwater quality. In addition, Atlas Ireland is required under the existing IPC Licence to monitor groundwater quality to ensure that the site does not impact groundwater quality.

The construction of hardstanding and roofed areas over presently un-surfaced ground in the north of the site will result in an increase in the proportion of rainfall that forms surface water runoff. This will result in an imperceptible reduction in the amount of rainfall recharge to groundwater below the site.

EPA Export 26-02-2016:00:50:21

6.5. Mitigation Measures

As the site is located in an industrial estate and low levels of potential contaminants have been observed in soils below the site, it is possible that during excavation, soil and shallow groundwater contamination may be encountered. Prior to disposal off site of any soils, it is recommended that soil samples be collected in order to test for the presence of potential contaminants that could have an impact on the soil waste disposal route.

Given that secondary containment features have been incorporated in the overall design of the facility expansion and that Atlas will be required to monitor groundwater quality below the site as a condition of the site's IPC Licence, no other mitigation measures are recommended during the operational phase of the project.

6.6. Residual Impact

The impacts to the soil, geology and groundwater environments following the implementation of mitigation measures for the development are summarised in Table 6.2.

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 6.2. Residual Impacts to Soil, Geology and Groundwater

Environment	Residual Impact
Soil	Permanent imperceptible, due to removal of soil in localised areas for building foundations and underground storage tanks. Neutral impact to soil quality during operation given the incorporation of secondary containment features in the design of the site.
Groundwater	Neutral impact to groundwater quality during operation given the incorporation of secondary containment features in the design of the site.

6.7. References

1.Chevron Mineral Corporation of Ireland and Ivernia West plc. And Geological Survey of Ireland (1992) Bedrock Geological Map of the Carboniferous of Central Ireland, Sheet 15, 1:100,000 scale.

2.URS Dames & Moore (2001) Soil and Groundwater Investigation Atlas Ireland Facility, Portlaoise, Final Report.

EPA Export 26-02-2016:00:50:21

7.0. WATER

7.1 Introduction

As part of the scope of the EIS, which has been agreed with the EPA, a section addressing water in relation to the proposed expansion is required to be included.

7.2 Methodology

This report was prepared in accordance with the recommendations of the EPA's "Guidelines on the information to be contained in Environmental Impact Statements, March 2002"

This assessment was based on a desk top study of publicly available information including a report entitled "Soil and Groundwater Investigation, Atlas Ireland Facility, Portlaoise", a document "A Risk Assessment To Determine If A Fire Water Retention Facility Is Required On Behalf Of: Atlas Environmental Ireland Limited", and data from weekly monitoring of the surface water discharge over a two year period (2000 to 2001)

Consent of copyright owner required for any other use.
For inspection purposes only.

7.3. Existing Conditions

7.3.1. Surface Water & Effluent Systems

7.3.1.1 Foul and Process Effluent

Process effluent consists of water removed from the waste oil processing system, and that collected from the soil remediation area. The aqueous effluent from the separation of oil is treated twice on a batch basis to remove as much oil as possible, before settling and then passing through separators before being pumped under controlled conditions through a monitoring station to a final process effluent drain. This drain joins the main industrial park foul sewer system to the west of the site, and then passes to the town municipal treatment system. The company has an IPC licence (Reg 472) which spells out emission limit values for the constituents of the wastewater.

The Limits are as follows:

Temperature	43°C (max.)
pH	6-8.5
Chemical Oxygen Demand (kg/day)	200
Suspended Solids	400 mg/l
Sulphates	500 mg/l
Chlorides	4000 mg/l
Total Phosphorus (as P)	50 mg/l
Ammonia	80 mg/l
Phenols (as C6H5OH)	50 mg/l
Copper	0.5 mg/l

EPA Export 26-02-2016:00:50:22

Effluent Emission Limits – Contd.

Zinc	0.5 mg/l
Lead	0.5 mg/l
Cadmium	0.05 mg/l
Fats, Oils & Greases	300 mg/l

7.3.1.2 Surface Water Drainage

There are two surface water collection systems on the site.

In the first system, the main area of the site, i.e., the central and south areas of the site, surface water is collected by yard gullies and drains to a four chamber interceptor. In this unit, separation of traces of oil takes place and the oil free water is pumped under level control from a post separation pump chamber to a second interceptor located near the west border of the site.

In the second system, surface water from the north end of the site, i.e., around the new tank farm and the soil remediation area, is collected and fed to the second separator mentioned above.

The water from the interceptors leaves the site and passes to the municipal surface water system which eventually discharges to a local surfacewater stream.

For inspection purposes only.
Consent of copyright owner required for any other use.

7.3.2. Baseline Data

Atlas has proposed to the EPA, as required under their IPC licence, a warning level for OF&G of 10 mg/l and an action level of 15 mg/l. For COD, they are proposing 150mg/l and 250 mg/l respectively. It is not known what dilution of the surface water leaving the site will be before it reaches the river.

Information on the condition of sub-soil and groundwater is found in the Soil and Groundwater investigation report referenced above, and issues relating to soil, geology and groundwater are covered in more detail in section 6.

Based on the report, there does not seem to have been any serious contamination of the subsoil or groundwater.

The AER for the year 2000, submitted to the EPA, showed 99 percent compliance with the parameters of the limits set for discharge to the sewer over a series of 271 measurements.

EPA Export 26-02-2016:00:50:22

7.4. Impact Assessment

7.4.1. Impacts During Construction Phase

During the construction phase, there should be little impact on the quality or quantity of the surface water discharge. One would expect that some increase in silt would occur, but this should not leave in the discharge as it would be contained in the bottom of the oil interceptors.

One would not expect any significant increase in either volumetric or mass COD output during the construction phase.

7.4.2. Impacts During Operation Phase

The expansion of the operations will increase the volumetric flow to the council's wastewater treatment plant by approx. 30%. As the concentration of pollutants is, in the main, proportional to the throughput of oil, the mass COD requirement will also increase. However, as one-third of the volumetric increase comes from the condensate recovered during the proposed Sludge Drying operation, and has a typical COD of only120 mg/l., the oxygen demand on the treatment plant will not be increased by the same proportion as the volumetric duty requirement.

The process effluent load is a significant part of the Council's treatment plant, and an improvement in the quality of their discharge to the sewer is a requirement of their IPC licence. Atlas are actively investigating treatment methods which could be applied to their process effluent in an effort to reduce the load.

Consent of copyright owner required for any other use.
For inspection purposes only.

The intention is to cover the entire site area with concrete paving. This will help to prevent contamination of the ground and groundwater systems by collecting all site run-off into the surface water collection system. Based on the monitoring data, Atlas may have a difficult time in keeping below the action level proposed for COD, and would probably exceed the action level for OF&G approx. 50% of the time. A review of the data shows little correlation between COD and OF&G levels, which could indicate that petroleum hydrocarbon levels are varying considerably.

A major spill or a fire event on the site could potentially lead to contamination of the surface water, as there is presently no system for diverting and holding the run-off from such an occurrence. An assessment of the requirement for a fire water retention facility has been carried out and has been approved by the EPA.

7.4.3. Impacts During Decommissioning/Restoration Phase

Based on the information contained in the hydro-geological survey report,
there should not be any major effect on the surface or underground waters during the decommissioning or restoration phases.

EPA Export 26-02-2016:00:50:22

7.5. Mitigation Measures

Atlas has spill prevention and control procedures in place which are designed to minimise the effects of unexpected events which could contaminate the surface waters.

7.6. Residual Impacts

Section 6 of this study covers in detail the information on the condition of sub-soil and groundwater. It can be seen that existing operations have not had any deleterious effect on the area and residual impact should be minimal.

In addition, the plans to cover the entire site with concrete should further ensure protection of the area.

7.7. References

1. "Soil and Groundwater Investigation, Atlas Ireland Facility, Portlaoise", July 2002
2. "A Risk Assessment To Determine If A Fire Water Retention Facility Is Required On Behalf Of: Atlas Environmental Ireland Limited", dated February, 2002.
3. Atlas Monitoring data "Surface Water 2000.xls"
4. Atlas Monitoring data "Surface Water 2001.xls"
5. Atlas SOP 8," Emergency Preparedness"

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

8.0 AIR

8.1 Introduction

This study will identify, describe and assess the impact of the development in terms of its impact on air quality. Particular attention will be focused on sensitive receptors, such as residential areas adjacent to the site, and to the extent of the exposure of these receptors to airborne pollutants and odours derived as a result of the development.

8.2. Methodology

This report was prepared in accordance with the recommendations of the Environmental Protection Agency's (EPA) Revised EPA Guidelines (2002).

This assessment was based on a desk top study of the information provided in the project description section of the statement, detailed process information from similar plants and previously determined air quality data from the facility. The current air quality at the facility is addressed using previously determined modelling data (National Environmental Sciences Report Reference 330964/AR04.0). The potential impacts of the proposal have been addressed using technical data from similar existing facilities. The potential odour impact of the sludge treatment unit has been modelled using the USEPA approved ISC ST 3.6 Air Dispersion Modelling software.

For inspection purposes only.
Consent of copyright owner required for any other use.

8.3. Existing Conditions

8.3.1 Site of the Proposed Development

The site of the proposed development is within the confines of the existing Atlas Environmental Ireland Waste Management facility at the Clonminam Industrial Estate, Portlaoise, Co. Laois. The site is urban in nature and is largely used for industrial purposes. Portlaoise is a large town immediately to the northeast of the site. There are a series of sensitive receptors approximately 200 metres to the east of the site boundary, and a temporary halting site 50 metres to the west of the site boundary which is currently unoccupied (Rowan Park and Oak Park).

The M7 Portlaoise bypass, which links Dublin to Cork/Limerick, lies approximately 1.5 km to the south of the site. There is a sufficient distance between this road and the site of the proposed development to remove any potential for a build up of traffic-derived pollution at the site. The other roads adjacent to the site have lower traffic volumes and will not act as a major source of traffic-derived pollution.

There is a fuel storage depot immediately to the south of the Atlas facility and the Dublin-Cork railway line runs along the northern boundary of the site.

EPA Export 26-02-2016:00:50:22

8.3.2 Ambient Air Quality Standards

In any urban region, such as the site of the proposed development, current and projected pollution sources will be dominated by fuel burning/evaporation and traffic emissions. Specifically, these sources will emit pollutants, which are currently of concern due to their effect on human health and the potential to reach significant concentrations in ambient air. The pollutants of concern from these sources include nitrogen dioxide (NO_2), benzene, PM_{10}, carbon monoxide (CO) and sulphur dioxide (SO_2). These pollutants have been targeted in recent years by national and European legislation.

Originally the ambient air quality standards for sulphur dioxide, suspended particulates, lead and nitrogen dioxide, which were given effect in Ireland were based on EU Directives 80/779/EEC, 82/884/EEC and 85/203/EEC. National standards for these pollutants were passed into Irish Law under the Air Pollution Act, 1987. (Air Quality Standards) Regulations, 1987.

As part of the measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, Council Directive 1999/30/EC, has set limit values, which has replaced previous limit values under Directives 80/779/EEC, 82/884/EEC and 85/203/EEC with effect from July 2001. The directive, as relating to limit values for sulphur dioxide, nitrogen dioxide, lead and particulate matter, is detailed in Appendix 3, Table 8.1. The directive also details margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance varies from 100% for lead, to 50% for 24-hour limit value for PM_{10}, 50% for the hourly and annual limit value for NO_2 and 43% for hourly SO_2 limit values. The margin of tolerance commenced in May 1999, and has started to reduce from 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% by the attainment date. EU Council Directive 2000/69/EC has published limit values for both carbon monoxide and benzene in ambient air as set out in Appendix 3, Table 8.2.

Consent of copyright owner required for any other use.
For inspection purposes only.

EU Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (S.I. No. 33 of 1999). The act has designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in the State.

8.3.3 Baseline Air Quality

The sources associated with individual air quality pollutants tend to be dependent on the traffic volumes, local domestic fuel source and nature of industries in the study region. Nitrogen dioxide (NO_2) is classed as both a primary pollutant and a secondary pollutant. As a primary pollutant, NO_2 is emitted from all combustion processes (such as a gas/oil fired boiler or a car engine). Potentially the main sources of primary NO_2 for the proposed development will be from boiler/generator emissions and vehicle exhausts.

As a secondary pollutant NO_2 is derived from atmospheric reactions of pollutants that are themselves, derived mainly from traffic sources (e.g. volatile organic compounds).

EPA Export 26-02-2016:00:50:22

Secondary pollution is usually derived from regional sources and may be used as an indicator of general air quality in the region.

Sulphur dioxide is classed as a primary pollutant principally emitted from the combustion of fossil fuels (diesel, coal, oil, etc.). As a traffic based pollutant, SO_2 is mainly emitted from vehicles running on diesel fuel, which will include most LGVs and HGVs. SO_2 emissions from domestic heating may be significant as SO_2 is a major constituent of sulphurous smog. However, in recent years the government has significantly reduced the importance of SO_2 as an air pollutant with the introduction of smokeless fuel. Consequently, concentrations of SO_2 are typically low and this is likely to decrease in future years with the broadening of the ban on non-smokeless fuels.

Particulate matter (PM_{10}) are traffic derived pollutants and, as with SO_2, concentrations are greater where diesel engines predominate. Carbon Monoxide (CO) is also derived from the burning of carbon based fuels (petrol, diesel, coal, natural gas).

Methane is a naturally occurring VOC from plants and animals but is also generated as a by-product of certain industries. Benzene and other aromatic compounds and alkanes are most likely derived from petrol driven vehicle exhausts. Heavier semi-volatile organic compounds are frequently derived from diesel-powered engines.

Consent of copyright owner required for any other use.
For inspection purposes only.

The current operation of Atlas Environmental Ireland involves the collection of waste oils from garages, ships and industry and the subsequent treatment/recovery of the oil for reuse. As part of the treatment process, water is driven off through a drying process and this drying process is emitted to atmosphere via three emission points (R24, R25 and R32). Potentially, the main air emissions from the current operations are volatile organic compounds, in particular the aromatic compounds, as these constitute a large proportion of motor vehicle fuel. In light of this, Atlas Environmental Ireland have previously commissioned National Environmental Sciences to carry out an air dispersion modelling report from the exhausts of the three dryer emission points (Refer Report 330964/AR04.0 Dated 21/10/1999).

This survey measured the emission concentrations of benzene, toluene, ethylbenzene, xylene and total VOCs from the drier stacks and subsequently modelled the ground level concentrations at the nearest sensitive receptors (Rowan Park and Oak Park). The ground level concentrations were compared to the EU Directive 2000/69/EC (then in draft format), the Danish "C-values" as outlined in the Danish EPA "Industrial Air Pollution Control Guidelines 1992" and the German Government TA Luft Imission Standard "S-values". The predicted ground level concentrations are presented in Appendix 3, Table 8.3. All levels determined were within 30% of the relevant assessment criteria. As part of the proposed development there is anticipated to be a 10% increase in the volume of waste oil processed at the site. This increase is unlikely to cause any breach in the guideline ground level concentration values for benzene, toluene, ethylbenzene, xylene and total VOCs.

EPA Export 26-02-2016:00:50:22

As part of the soil remediation facilities on site, contaminated soil is regularly taken on to the site which can potentially give rise to odour emissions. In order to minimise any odour emissions the material is continuously aerated in a covered bay with partially open sides for free air movement and the aerobic bioremediation process provides for minimising any odours.

On the existing Atlas facility there is also a natural gas fired boiler. The emissions from this boiler (Emission Point A-01) are governed by Schedule 1(i) of the site's IPC Licence (Register No. 472). The licence sets emission limit values on sulphur oxides, nitrogen oxides, carbon monoxide and combustion efficiency. To date, the emissions from the boiler have been in compliance with the emission limit values.

8.3.4 Local Meteorological Conditions

The ability of the atmosphere to disperse pollutants is characterised by the prevailing wind speed, mixing height and level of stability (or turbulence). The emissions from traffic-derived sources will be most heavily influenced by very stable atmospheres and low wind speeds when movement of the air is restricted. The frequency of these conditions is low. The prevailing wind is from the southwest and consists of neutral conditions (D stability) with moderate wind speeds which are favourable for the dispersion of pollutants emitted at low emission heights (as occurs from traffic-derived sources). Climatic conditions are therefore favourable for the majority of the year to reduce any residual potential for the build up of significant levels of pollutants.

For inspection purposes only.
Consent of copyright owner required for any other use.

8.4 Impact Assessment

8.4.1 Impacts During Construction Phase

There is the potential for a number of emissions to atmosphere during the construction of the development. In particular, the construction activities may generate quantities of dust, particularly in drier weather conditions. This problem is exaggerated when vehicles transporting sands/gravels/soils etc. to and from the site have the potential to cause an environmental nuisance several kilometres from the facility. The Construction vehicles, generators etc., will also give rise to petrol and diesel exhaust emissions, although this is of minor significance compared to dust. For a construction project of this scale the number of vehicles involved is low so any impact on air quality as a result will be negligible.

If a satisfactory environmental impact minimisation plan is implemented, the effect of construction on air quality will not be significant. If the construction contractor adheres to good working practices and dust mitigation measures the levels of dust generated will be minimal and are unlikely to cause an environmental nuisance. A series of such good working practices and mitigation measures are outlined in Section 8.5 of this chapter. The construction phase of the project is to be carried out in a single phase, with completion within a six month timeframe and, as such, any nuisance experienced is likely to be short-lived.

EPA Export 26-02-2016:00:50:22

8.4.2 Impacts During Operation Phase

8.4.2.1 Scheduled Emissions - Odours

The greatest potential for scheduled emissions to atmosphere is the odour derived from the sludge treatment facility. The proposed sludge drying facility (INNODRY 2E) will be designed to cater for 5000 metric tonnes of sludge per annum. INNODRY 2E is a two-stage sludge drying process with integrated heat recovery. The proposed model for the Atlas site is the G3, which processes 2.5 metric tones of wet sludge per hour. It will be contained within a sealed building. The sludge will be transported to the site 2 to 3 times per week in 20 metric tonne tankers and discharged into this holding tank by using tanker hosing through a small 2 m^2 double door at surface level. The holding tank has a total capacity volume of 50,000 litres. It will be located underground adjacent to the proposed building where the INNODRY 2E unit will be contained. The sludge is pumped to the INNODRY 2E by a positive displacement pump, where it is dried to a dry matter content of 90%. Drying the sludge to 90% allows for labour saving handling and easy storage.

The dried sludge is granular and can be shaped (4, 8 and 10 mm) for each specific use (agriculture and combustion). It has a density of approximately 650 kg/m^3, which is hygienic, biological stable, dust free, odourless, can be floated stored indefinitely and is not hygroscopic.

Consent of copyright owner required for any other use. For inspection purposes only.

Due to the low processing temperatures, slow and little movement of particles in the belt dryer, a dust free granulate is obtained. The plant operates without any sieve separation or dust circulation and therefore minimizes erosion, wear and maintenance costs. Innodry allows for the most economic solution for further utilisation of waste sludge coupled with operational simplicity and low operating costs (INNODRY Technical Notes, 2000). Research has shown that there is no loss of nitrogen (N) or available phosphorous from thermally dried sludge (EIA, 1999) and hence it maintains its agricultural value.

The INNODRY 2E unit is completely sealed. There are only three possible odour emission sources due to the operation of the unit, which are listed below:

- Air vent discharge
- Fugitive odour emissions due to filling underground tank
- Fugitive odour emissions from thermally dry sludge

8.4.2.2 Air vent discharge

The air vent discharge is approximately 20 ^0C above the temperature of the cold incoming air (25 to 38 ^0C). The total volume flow rate of air from this emission point source is approximately 6000 m^3 h^{-1}. The odouriferous substances of digested homogenous sludge with a dry solids content of 50% are low. Olfactometric analysis of the outlet air in another plant revealed values of between 250 to 500 odour units. If the unit is to be place in an area where residents are located then it is recommended to treat the outlet air with an odour abatement system.

EPA Export 26-02-2016:00:50:22

8.4.2.3 Fugitive Odour Emissions Due To Filling Underground Tank

The underground storage tank will be located adjacent to the building holding the INNODRY 2E system. A 2 m^2 sliding double door will allow access to the tank. When a clean tanker arrives on site to fill the storage tank, the tanker operator will open the doors and unload the sludge tanker by means of a tanker hose. It is recommended to place an automated fan to maintain a negative pressure within the tank to prevent the release of fugitive emissions from the storage tank during filling. This ventilation air will be treated in the odour abatement system. It is also recommended that the tankers arriving on-site be clean and practically odourless.

8.4.2.4 Fugitive Odour Emissions From Thermally Dry Sludge

Thermally dry granulated sludge will be stored in a sealed skip or large bag. It is relatively stable with a low/no odour emission rate even when exposed. It is important to store this dried sludge in a cool dry place to prevent the formation of odour. The dry sludge can be stored on site for relatively long periods of time in these conditions as long as the dry matter content is above 90%. It is recommended to store the dry sludge indoors in a cool dry environment in sealed skips or bags.

Consent of copyright owner required for any other use.
For inspection purposes only.

8.4.2.4 (a). Odour Model Inputs

Two data set for odour emission rates were calculated to determine the potential odour impact of the sludge drying facility before and after abatement:

- Odour emission rate calculation from the area source sludge storage tank on site without abatement protocols implemented (Appendix 3, Table 8.4).
- Odour emission rate calculation from the area sources sludge storage tank on site with abatement protocols implemented (Appendix 3, Table 8.5).
- Odour emission rate calculation from the point source Sludge dryer stack on site without abatement protocols implemented (Appendix 3, Table 8.6).
- Odour emission rate calculation from the point source Sludge dryer stack on site with abatement protocols implemented (Appendix 3, Table 8.7).

A worst-case odour emission rate was assumed to determine any potential odour nuisance impact. A maximum assumed odour emission rate was used to calculate the input data for the atmospheric dispersion model. ISC ST 3.6 was used to determine the overall odour impact of the sludge drying facility as set out in annoyance criteria Table 8.8. The output data was analysed to predict:

- Odour emission contribution of overall process to odour plume dispersal before abatement protocols implemented for the 1 hour short-time maximum odour concentration of 15 Ou_E m^{-3}
- Odour emission contribution of overall process to odour plume dispersal before abatement protocols implemented at the 98th percentile for odour concentrations ≤5, and 10 Ou_E m^{-3}

EPA Export 26-02-2016:00:50:22

- Odour emission contribution of overall process to odour plume dispersal after abatement protocols implemented for the 1 hour short-time maximum odour concentration of 1.5, 3 and 5 Ou_E m^{-3}
- Odour emission contribution of overall process to odour plume dispersal before abatement protocols implemented at the 98th percentile for odour concentrations ≤0.5, 1 and 1.5 Ou_E m^{-3}

The frequency/odour hours that 10 Ou_E m^{-3} exists around the sludge drying facility were also determined for 100, 200 and 300 hours per year. A comparison study was performed between plume dispersal for no abatement and all abatement protocols implemented in order to assess:

- The differences between the 10 Ou_E m^{-3} odour isopleths for 100, 200 and 300 odour hours/frequency without abatement protocols implemented
- The differences between the 1 Ou_E m^{-3} odour isopleths for 100, 200 and 300 odour hours/frequency with abatement protocols implemented

These computations gave the odour concentration of 1 and 10 Ou_E m^{-3} at each 10-meter x y Cartesian grid receptor location that is predicted to be exceeded for 100, 200 and 300 hours of the year. This will allow for the analysis of any potential impact on the neighbouring sensitive locations while the sludge drying facility is in operation. It will also allow the operators of the sludge drying facility to assess the effectiveness of their abatement strategies.

For inspection purposes only.
Consent of copyright owner required for any other use.

The intensity of the odour from the two sources of the sludge drying facility will depend on the strength of the initial odour threshold concentration from the sources and the distance downwind at which the prediction and/or measurement is being made. Where the odour emission plumes from a number of sources combine downwind, then the predicted odour concentrations may be significantly higher than that resulting from an individual emission source.

8.4.2.4 (b). Odour Modelling Results

b(i) Odour plume dispersion without abatement protocols implemented for maximum predicted 1 hour concentration of odour.

The plotted odour concentrations of ≤15 Ou_E m^{-3} for the maximum predicted 1 hour concentration of odour is circular approximately along a north south to east west axis. The maximum radial spread of the plume for a concentration of 15 Ou_E m^{-3} is approximately 95 metres for the north to south axis and 85 metres for the east to west axis respectively without abatement measures implemented (*Fig. 8.1*). As observed in *Figure 8.1*, an odour impact will be experienced by residential property along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving a maximum 1 hour odour concentration of at least 15 Ou_E m^{-3}.

EPA Export 26-02-2016:00:50:22

b(ii) Odour plume dispersion without abatement protocols implemented using calculated odour emission data.

The plotted odour concentrations of ≤5 and 10 Ou_E m^{-3} for the 98th percentile is circular approximately along a north south to east west axis (*Figure 8.2*). The maximum radial spread of the plume for a concentration of 5 Ou_E m^{-3} and 10 Ou_E m^{-3} is approximately:

- 60 metres for the north to south axis and 100 metres for the east to west axis,
- 50 metres for the north to south axis and 60 metres for the east to west axis

respectively without abatement measures implemented (*Fig. 8.2*). As observed in *Figure 8.2*, an odour impact will be experienced by residential property along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving an odour concentration of at least 5 Ou_E m^{-3}..

b (iii) Odour plume dispersion with abatement protocols implemented for maximum predicted 1 hour concentration of odour.

For inspection purposes only.
Consent of copyright owner required for any other use.

The plotted odour concentrations of ≤1.5, 3 and 5 Ou_E m^{-3} for the maximum predicted 1 hour concentration of odour is circular approximately along a north south to east west axis. The maximum radial spread of the plume for a concentration of 1.5, 3 and 5 Ou_E m^{-3} is approximately:

- 160 metres for the north to south axis and 120 metres for the east to west axis
- 100 metres for the north to south axis and 70 metres for the east to west axis
- 45 metres for the north to south axis for 5 Ou_E m^{-3}

respectively with abatement measures implemented (*Figure 8.3*). As observed in *Figure 8.3*, there should be no odour impact experienced by residential property and the railway along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving a maximum 1-hour odour concentration of between 1.5 and 3.0 Ou_E m^{-3}. An odour threshold concentration of 1 Ou_E m^{-3} is the level at which an odour is detectable by 50% of the screened panellists. According to research and published data, the odour recognition threshold is approximately 3-5 times this concentration and is liable to be distinct (3-5 Ou_E m^{-3}).

b(iv) Odour plume dispersion with abatement protocols implemented using calculated odour emission data.

The plotted odour concentrations of ≤0.5, 1 and 1.5 Ou_E m^{-3} for the 98th percentile is circular approximately along a north south to east west axis (*Figure 8.4*). The maximum radial spread of the plume for an odour concentration of 0.5, 1 and 1.5 Ou_E m^{-3} is approximately:

- 130 metres for the north to south axis and 190 metres for the east to west axis,
- 80 metres for the north to south axis and 120 metres for the east to west axis,
- 60 metres for the north to south axis and 80 metres for the east to west axis

EPA Export 26-02-2016:00:50:22

respectively without abatement measures implemented (*Fig. 8.4*). As observed in *Figure 8.4*, no odour impact will be experienced by residential property and the railway along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving an odour concentration at the 98th percentile of between 0.5 and 1 Ou_E m^{-3}. In accordance with the odour annoyance criterion *Table 1*, there should be no odour impact experienced beyond the boundaries of the sludge drying facility site if abatement protocols are implemented.

b(v) Odour hours/frequency of plume around Sludge drying facility before abatement protocols implemented

The frequency/odour hours experienced by residences and the railway to the northwest and southwest is significant due to the radial spread of an odour concentration of 10 Ou_E m^{-3} isopleths. All residences and the railway located to the northwest and southwest of the sludge drying facility will experience an odour concentration of at least 10 Ou_E m^{-3} up to 100 hours in one year (*Fig. 8.5*) without abatement protocols implemented.

Consent of copyright owner required for any other use. For inspection purposes only.

b(vi) Odour hours/frequency of plume around Sludge drying facility before abatement protocols implemented

The frequency/odour hours experienced by residences and the railway to the northwest and southwest is not significant. They will experience an odour concentration of 1 Ou_E m^{-3} for 100 hours with abatement protocols implemented. This odour concentration should not cause any odour impact in the vicinity of the sludge drying facility as an odour concentration of at least 3 to 5 Ou_E m^{-3} would be required in order to cause a impact as the recognition threshold of an odour is at least 3 to 5 times its detection threshold.

b(vii) Summary of Odour Impacts

A worst-case odour emission scenario was modeled using the atmospheric dispersion model ISC ST 3.6 with 5 years worth of hourly sequential meteorology data. Odour impact distances were discussed for the operation of the sludge drying facility with and without the implementation of abatement. It was concluded that without the implementation of abatement:

- An odour impact will be experienced by residential property and the railway along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving a maximum 1 hour odour concentration of 15 Ou_E m^{-3}
- An odour impact will be experienced by residential property and the railway along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving an odour concentration of ≥5 Ou_E m^{-3} for the 98th percentile.

EPA Export 26-02-2016:00:50:22

- All residences and the railway located to the northwest and southwest of the sludge drying facility will experience an odour concentration of at least 10 Ou_E m^{-3} for up to 100 hours.

It was concluded that with abatement protocols implemented:

- No odour impact should be experienced by residential property and the railway along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving a maximum 1-hour odour concentration of between 1.5 and 3.0 Ou_E m^{-3}.
- No odour impact will be experienced by residential property and the railway along the southwest and northwest boundaries of the sludge drying facility with residents and the railway receiving an odour concentration at the 98th percentile of between 0.5 and 1 Ou_E m^{-3}.
- All residences and the railway located to the northwest and southwest of the sludge drying facility will experience an odour concentration of at least 1 Ou_E m^{-3} for up to 100 hours.
- In accordance with the odour annoyance criterion *Table 1*, there should be no odour impact experienced beyond the boundaries of the sludge drying facility site.

Consent of copyright owner required for any other use. For inspection purposes only.

b (viii) Recommendations

It is recommended that:

1. Automatic negative ventilation should be applied to the sealed underground storage tank. This will prevent the release of fugitive odour emissions while the tank is being filled by a road tanker operator. The exhaust air from this tank should be piped to the odour abatement system,
2. An odour abatement unit should be fitted to the sludge drying exhaust stack,

The dry sludge should be stored indoors in cool dry conditions and sealed to prevent the escape of fugitive emissions. Dry sludge is relatively stable and can be stored on-site for longer periods of time.

8.4.2.5 Fugitive Emissions

Fugitive emissions are any unscheduled emissions from the facility, i.e. any emissions that are not through emission vents or emission stacks. There is a potential for fugitive emissions in any instance where large volumes of volatile liquids are stored. In particular, the storage of organic solvents and fuels, which contain high quantities of volatile organic compounds, have the potential to release fugitive emissions through evaporation. As part of the proposed development, two 30,000 litre underground tanks will be installed in addition to the existing tank. These tanks will

EPA Export 26-02-2016:00:50:22

store solvents (separate chlorinated and non-chlorinated tanks) and mixed fuels as part of the on-site process. However, these tanks and all ancillary fixtures will be double contained and will be situated under a concrete yard. As a result, there are no fugitive emissions to atmosphere expected to occur from these storage tanks.

The existing storage building is to be extended to incorporate an enclosed area which will house an Aerosolv aerosol can degassing unit. This unit is designed to puncture the cans for degassing whereupon the can is stored in a dedicated scrap metal skip. The unit consists of a puncturing unit which threads into the bung of a 2001 UN steel approved drum. The gas is routed through a combination activated charcoal filter to trap any hazardous material. Once the drum and filter are exhausted they are dispatched as hazardous waste. Once this operation is carried out using certified methodologies, suitably trained personnel and the drums/filters are changed sufficiently there is unlikely to be any potential for fugitive emissions from this process.

8.4.2.6 Traffic Derived Pollution

Section 13 of this statement addresses the potential impacts to traffic from the proposed development. The current traffic fleet operating at the Atlas facility is 17 vehicles (12 large and 5 medium vehicles). As a result of the proposed development the fleet is expected to increase by 5-7 vehicles (possibly 4 large and 3 medium). The conclusions of the traffic impact assessment states that only a marginal effect on the background traffic growth would be attributable to the Atlas site traffic, over the next 5 years. Consequently, levels of traffic derived pollution are not expected to increase in the vicinity of the Atlas site or the surrounding roads as a result of the proposed development.

For inspection purposes only.
Consent of copyright owner required for any other use.

8.4.2.7 Boilers and Generators

The proposed sludge treatment facility will be powered by a series of four 1.2 MW generators. These generators will be fuelled by reprocessed waste oil from the Atlas site (Atlas 11LS Oil) and backed up by diesel when required. The emissions from these units will be exhausted to atmosphere via a single emission point. Provided that these generators are operated within the best practicable means and emissions are monitored to determine compliance with the relevant guidelines, the emissions are not expected to have any impact on the local air quality.

The German TA Luft has expressed guidelines for emissions from boilers/generators fired by a series of fuels. *Paragraph 3.3.1.2.2 "Furnaces fired with heating oil of first refining or crude/oil with a thermal firing capacity of less than 50 MW"* states the following emission guidelines:

Oxygen Content Reference	*3%*
Particles	*80 mg/m^3 (only for furnaces >5 MW)*
Carbon Monoxide	*170 mg/m^3*
Nitrogen Oxides	*250 mg/m^3*
Sulphur Oxides	*1,700 mg/m^3*

EPA Export 26-02-2016:00:50:22

Furnaces with a thermal firing capacity of up to 5 MW shall only use heating oil with a sulphur mass content according to DIN 51 603 Part 1 (December 1981 edition). Sentence 1 does not apply if desulphurisation facilities ensure that no higher sulphur dioxide emissions are generated than if a heating oil according to DIN 51 603, Part 1 (December 1981 edition) is used.

These guidelines are referenced by the Irish EPA and are used to determine emission limit values for similar facilities in Ireland.

Schedule 3 (iii) of the Atlas Ireland IPC Licence (Register Number 472) has expressed a quality standard for the reprocessed oil. This schedule sets a sulphur content limit of 10,000 mg/kg, which is equivalent to 1% sulphur content in the reprocessed oil. Once this sulphur content, and the contents of the additional parameters outlined in Schedule 3 (iii) of the IPC licence, are maintained it is unlikely that the generators will have a significant negative impact on the air quality of the area.

It is recommended that a regular emission survey be carried out to ensure that all emission concentrations are within the appropriate parameters. In the event that these guidelines are breached on a regular basis an alternative fuel source should be considered.

Consent of copyright owner required for any other use.
For inspection purposes only.

8.5 Mitigation Measures

8.5.1 Construction Phase

Construction activities are likely to generate some dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speed and wind direction.

The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and as such any impacts from dust deposition will typically be within several hundred metres of the construction area.

In order to ensure that no dust nuisance occurs, a series of measures will be implemented. Site roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface. Any un-surfaced roads shall be restricted to essential site traffic only. Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

Vehicles using site roads shall have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road and on hard surfaced roads that site management dictates speed shall be restricted to 20 km per hour. Vehicles delivering material with dust potential shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust.

EPA Export 26-02-2016:00:50:22

All vehicles exiting the site shall make use of a wheel wash facility, preferably automatic, prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site shall be regularly inspected for cleanliness, and cleaned as necessary.

Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

8.5.2 Operation Phase

8.5.2.1 Scheduled Emissions

It is recommended that the emissions from the INNODRY 2E are treated for odour using a system which comply with the Best Available Techniques (B.A.T) requirements as outlined in Article 2 (11) and Annex IV of the IPPC Directive (96/61/EC). While BREF notes have not yet been published for the waste treatment sector the main BAT criteria have been considered and Biofiltration was found to be the most suitable form of abatement for this sludge drying plant due to operational and economic advantages over chemical filtration. Biofiltration is a recent air pollution control technology used for the abatement of odours and volatile organic carbons. It has been used in many industries for the end of pipe treatment of emissions including, waste water treatment plants, rendering plants, intensive agricultural facilities and polymer production plants. The operational principle of a biofilter is that the contaminated air from a building is passed through a chamber, which contains a moist filter based media (organic and/or inorganic). The surface of the media is surrounded by a biofilm, where the microbes reside. As the contaminated air passes over the biofilm, it transverses the aqueous film, where the microbial consortium breaks downs the contaminants to water, carbon dioxide and inorganic salts. Biofilters are usually associated with high airflow rates and low concentration. They are ideal for the control of odour emanating from most processes, providing the odour concentration in the exhaust air is relatively high.

Consent of copyright owner required for any other use.
For inspection purposes only.

The design of biofilters for this sludge drying application needs to be carefully optimised if the technology is to fulfil its potential. Initial studies have indicated that the packing medium and electrical running costs of a biofilter represent a high proportion of the overall cost. For efficient operation, a filter material should provide optimum environmental conditions for the microbes (i.e. oxygen, temperature, humidity, nutrients and pH). The medium should possess uniform particle size, providing low pressure drop, minimal gas channelling, high reactive surface area and especially good mechanical strength that leads to negligible bed compaction in operation to minimise maintenance and media replacement. The addition of inert lightweight solids such as polystyrene beads and volcanic rock to the packing matrix to reduce compaction could lengthen the life span of organic packing materials. The addition of granular activated carbon will enhance biofilter start-up time during cyclic process operation.

For odourous air emanating from this sludge drying facility, the media should preferably be composed mainly of inorganic medium structure incorporating granular

EPA Export 26-02-2016:00:50:22

activated carbon and clinoptriloite, organic medium such as wood chips, marl/oyster shells/magnesium carbonate for pH control and an efficient moisturising system. Inoculation of the medium may be performed using activated sludge from a wastewater treatment plant. Prior to inoculation, the activated sludge should be checked to determine if the microbes of interest are present in the activated sludge. An air distribution system should be designed carefully to distribute the air evenly throughout the surface area of the medium. Maximum superficial air velocities of 100 m h^{-1} should be maintained in order to achieve maximum removal efficiency. Odour removal efficiencies of greater than 95% are achievable if these protocols are followed. Biofilters have an advantage over other technologies in that no secondary environmental hazards are produced.

The volume of air from the INNODRY 2E to be treated by a biofilter is approximately 1500 m^3 h^{-1}. Assuming a bed height of 1 metre, a medium void volume of 50% and a conservative empty bed retention time of 30 seconds, the volume of medium required is 30m^3 incorporating a 20% safety factor. This is equivalent to a 6*5 metre squared biofilter. This gives a superficial velocity of 72 m h^{-1} and should achieve removal efficiency closer to 95%. By optimisation using a pilot scale biofiltration system this size may be reduced by 30 to 50%. The biofilter is the most cost effective technology available for odour abatement.

8.5.2.2 Fugitive Emissions

The waste sludge is delivered to the site in 20 metric tonne tankers 2 to 3 times per week. The sludge will be pumped into the sealed underground tank using tanker hosing through a 2 m^2 sliding door opening. In order to prevent fugitive odour emissions escaping while this process is in operation a fan will be placed at the door opening in order to maintain a negative pressure. This fan will prevent fugitive emissions escaping and transfer them to the odour abatement unit. The fan will be automated by means of a switch, which will activate the fan when the tanker operator opens the sliding doors.

Consent of copyright owner required for any other use.
For inspection purposes only.

The dried palletised sludge will be stored in large bags or skips, which will be sealed when full. The dry sludge will be stored in a building in a dry cool environment before transport of the site. Research by the water research council in the United Kingdom revealed that thermally dried sludge has a threshold odour number 69% lower than dewatered sludge. Examination of the microbial content revealed that there were no detectable traces of faecal coliforms, salmonella or enterovirus. As moisture content decreases, the aerobic and anaerobic microbial activity decreases therefore eliminating the possibility of the production of odouriferous compounds.

8.6 Residual Impacts

Providing the site is managed according to best practice and the mitigation measures recommended are implemented, the residual impact to air quality from the development is predicted to be slight to imperceptible during the construction and operation phases of the project.

EPA Export 26-02-2016:00:50:22

8.7 References

1.EU Ambient Air Standard 1999/30/EC
2.EU Ambient Air Standard 2000/69/EC.
3.WHO "Guidelines For Air Quality", 1999.National Environmental Sciences Report "Modelling of Process Emissions from Atlas Oils Ltd." Reference 330964/AR04.0, October 1999
4.German Government TA Luft "Technical Instructions on Air Quality" 1986
5.Danish EPA "Industrial Air Pollution Control Guidelines", 1992
6.Atlas Environmental Ireland Ltd. Integrated Pollution Control Licence Reg. 472.
7.INNODRY Technical Notes, 2000

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

9.0 NOISE

9.1 Introduction

This study will identify, describe and assess the impact of the proposed Atlas extension in terms of its impact on noise. Predicted noise levels have been made where possible to estimate the expected noise levels on the nearest noise sensitive receptors to the site.

9.2 Methodology

This report was prepared in accordance with the recommendations of the Environmental Protection Agency's (EPA) Revised EPA Guidelines (2002).

The assessment of the potential noise impacts from the proposed extension was based on information provided in the project description section of the statement, provided noise data for proposed equipment (where available) and previously measured noise levels within and surrounding the Atlas site made in accordance with ISO 1996: *Acoustics Description and Measurement of Environmental Noise*.

Predicted noise levels and mitigation measures for the construction phase of this development have been made with reference to BS5228 : *Noise and vibration control on construction and open sites.*

For inspection purposes only.
Consent of copyright owner required for any other use.

9.3 Existing Conditions

Atlas Ireland operates a facility at Clonminam Industrial Estate, Port Laoise. The site is bounded to the north by a railway line, to the east by a railway yard and to the south and west by industrial units. The nearest noise sensitive location to the site is a halting site situated approximately 30m south of the site boundary. The nearest property is situated on the far side of the railway line to the north of the site approximately 200m from the northern site boundary along Clonminam Road.

9.3.1 Existing Noise Levels

Noise levels are assessed annually to comply with Atlas's IPC Licence (Licence number 472). Noise limits as stated in section 8.2 of Atlas Ireland's IPC licence set a limit of 55dB L_{Aeq} over the day time period and 45dB L_{Aeq} over the night time period. The most recent noise assessment was carried out in February 2002. Measurements were carried out within the sites boundaries and at the two nearest noise sensitive locations in order to quantify the existing noise environment. Measurements were made during full operating conditions and are considered typical of existing noise levels from the site. Three environmental noise parameters were measured during the survey.

L_{Aeq} is the A-weighted equivalent continuous sound level during the sample period and effectively represents an "average" value.

EPA Export 26-02-2016:00:50:22

L_{A10} is the A-weighted sound level that is exceeded for 10% of the sample period; this parameter is typically used to quantify traffic noise.
L_{A90} is the A-weighted sound level that is exceeded for 90% of the sample period; this parameter is typically used to quantify background noise.
A-weighting is the process by which noise levels are corrected to account for the non-linear frequency response of the human ear.

All noise levels are quoted in dB(A) relative to a sound pressure of 20 Pa.

The survey was performed on the 12th February 2002. Measurements were made over intervals of 30 minutes during the day time period and 15 minute durations during the night time period.

9.3.2 Noise Measurement Locations

Noise measurements were made at the positions described in Table 9.3.2 below. These positions are also shown in Figure 9.1.

Location	Description
N1	Along the eastern site boundary at entrance gates.
N2	At northern site boundary beside portacabins.
N3	At southern site boundary –behind waste oil storage shed.
N4	Nearby residential area, west of Atlas, beside railway line.
N5	East of Atlas Ireland, on the corner with access road for halting site.

Table 9.3.2: *Description of Noise Monitoring Locations*

For inspection purposes only.
Consent of copyright owner required for any other use.

9.3.3 Survey Details

Full survey details are as follows.

Instrumentation

Brüel & Kjær Type 2260 Precision Sound Level Meter
Brüel & Kjær Type 4231 Sound Level Calibrator

Calibration

Before and after each survey the measurement apparatus was check calibrated to an accuracy of ±0.3dB using the Type 4231 Sound Level Calibrator. The calibrator produces a sound pressure level of 94.0dB re $2x10^{-5}$Pa at a frequency of 1kHz.

Methodology

The results were noted onto survey sheets immediately following each measurement. All measurements were carried out in general accordance with ISO1996: Acoustics: *Description and measurement of environmental noise*.

EPA Export 26-02-2016:00:50:22

Survey Results

Table 9.3.3 overleaf summarises the results of the noise survey.

In general, noise levels within the site boundary (locations N1 –N3) are above 55dB(A) during the morning and afternoon period while the main on site noise sources are in operation (i.e. trucks loading and unloading waste materials, reverse warning alarms, noise from the boiler and centrifugal areas and vehicle wash areas). After approximately 18:00 hours the majority of on site operations ceased and consequently noise levels were significantly reduced to below the guidance daytime level.

The L_{A90} levels measured which represents a steady background noise level are below the EPA limits for all boundary locations with the exception of one measurement at Location N2. This was noted to be due to noise from the centrifugal and boiler room and a truck idling nearby.

The noise sensitive locations surrounding the site, (locations N4 & N5) were also measured. Location N4 is situated to the west of the site. Noise levels at this location were above the 55dB(A) daytime and 45 dB(A) night time limits. The dominant noise source at this location was road traffic. The Atlas site operations were audible during lulls in traffic at this location but were not considered the dominant noise source. The background noise levels (L_{A90} values) indicate noise levels which may be attributed to the Atlas site, these ranged from 39 – 49 dB L_{A90} during daytime measurements. A night time level of 38 dB L_{A90} was measured.

Consent of copyright owner required for any other use. For inspection purposes only.

Location N5 situated to the east of the site was 1dB(A) above day time limits for one measurement. The main noise sources at this location were noted as passing trains (Freight and passenger), vehicles near the halting site and noise from the Atlas Ireland site. The night time noise levels were below the EPA guidance limits. The measured L_{A90} levels ranged from 42 – 46 dB L_{A90} daytime and 35 dB L_{A90} night time.

EPA Export 26-02-2016:00:50:22

Table 9.3.3: Existing Noise Levels Measured at Atlas Site

Location	Measurement time/	L_{Aeq}	L_{A10}	L_{A90}	Notes
N1	13:30	64	67	48	On site activities & passing trains
	17:00	60	62	53	Power hose washing vehicles
	20:08	48	49	44	External traffic, noise from Atlas not audible.
	23:21	54	46	43	Same as above
N2	14:05	57	59	54	On site activities. Boiler * centrifugal room, reverse alarms.
	17:35	60	61	57	
	20:45	52	52	47	Little site movement
	22:55	49	48	43	No site noise audible during last measurement.
N3	14:45	60	64	50	Vehicles transporting material around site main noise source
	18:20	49	49	45	
	21:15	46	43	40	
	22:40	39	40	35	Quiet location during late evening & night time.
N4	15:25	72	70	49	Road traffic main noise source. Atlas site audible during lulls in traffic.
	18:55	64	60	42	
	21:45	56	56	39	Road traffic main noise source
	23:45	55	56	38	
N5	12:30	56	52	42	Noise from on site vehicles movements & passing trains main noise source
	16:17	54	56	46	
	18:35	46	47	43	Atlas site not audible during evening & night time measurements
	22:05	42	37	25	

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

9.4 Impact Assessment And Mitigation Measures

9.4.1 Characteristics of The Project

The proposed development consists of an extension of existing waste treatment facilities on the Atlas site. All operations will be developed within the existing sites boundaries. A description of the proposed developments are included in Table 9.4.1 below.

Table 9.4.1: Characteristics of Proposed Development.

Development	Location	Process/ Characteristics of development
Establishment of Bulk Solvent and Mixed Fuel Storage	Beneath concrete yard. Southeast corner of site, beside existing tanks.	Storage, unloading of IBC's to underground storage tanks.
Construction of Sludge Drying Facility	North west area of site.	Waste water sludge drying using belt dryer (Powered by 4, 1.2MW generators). Tyre shredder bay and 4 x water chemical tanks stored here also.
Development & Integration of Waste Recovery and Transfer Facility	Various locations within existing site.	• Extension of stores building to house fluorescent tubes crusher, aerosol can degassing unit, battery storage & windscreen washer storage unit. • Construction of covered yard area to rear of sludge drying warehouse. Used for waste transfer facilities. • Development of covered bay area north of existing soil remediation bays. Used for waste transfer, soil remediation, and waste recovery • ELV compound and extension of reprocessing to include cooking oil

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

9.4.2 Potential Impacts Of This Proposal

The potential impact of this proposed development can be split into two distinct phases:

Construction Phase
Operational Phase

9.4.2.1 Construction Phase

There is likely to be a temporary increase in noise levels during the construction phase of the development. The three main developments of this proposal will involve differing construction requirements. Predicted noise levels associated with the construction phase are included in Table 9.4.2.1 overleaf.

Establishment of Mixed Fuel and Solvents Bulk Transfer Facility

The construction phase of this development will involve the concreted ground being broken and cleared using mechanical breakers and mechanical diggers. Lifting equipment and additional plant will be used to prepare enclosed area and house bulk tanks.

For inspection purposes only.
Consent of copyright owner required for any other use.

Construction of Sludge Drying facility

This area will be prepared using mechanical excavators, trucks and other associated equipment. Construction of the facility will involve the use of general construction plant, including cement mixers, aggregate delivery trucks, hand powered tools etc.

Development and Integration of Waste Recovery and Transfer Facilities

Excavation, foundation layering and flooring will be required for the development of bay areas to house drum store and soil remediation. The remainder of construction activities associated with this area of the development will involve primarily steel and block work.

Construction Traffic

A small increase in construction traffic is anticipated during this phase. This will include deliveries of steelwork and construction materials along with any mechanical machinery used on site.

EPA Export 26-02-2016:00:50:22

Table 9.4.2.1 : Predicted Construction Noise levels

Construction equipment from BS5228: Part 1: 1997	Sound Power Levels Lw dB(A)	N5 (Distance)	N4 (Distance)
Site Preparation		**150m**	**200m**
Tracked Excavator fitted with breaker	119	67	65
Grader	112	60	58
TOTAL		**70**	**66**
General Construction		**50m**	**200m**
Wheeled excavator/Loader	104	62	50
Concrete mixer	100	58	46
Lorry (pulling up)	98	56	44
TOTAL		**64**	**52**

Consent of copyright owner required for any other use.
For inspection purposes only.

Table 9.4.2.1 summarises predicted noise levels, of assumed equipment during the construction phase at the two nearest noise sensitive locations surrounding the Atlas site. These predictions are based on the methodology in British Standard 5228: *Noise and vibration control on construction and open sites.* The predictions do not take account of reduction in noise level due to screening effects. The predicted levels give an indication of noise levels experienced by typical construction activities associated with the site. For site preparation works, the distance between construction activities and N5 is greater than for those associates with general construction works as the majority of this activity will be based along the south east corner of the site. A distance of 200m has been assumed for all calculations for N4. This may be regarded as a worst case scenario for this location.

Generally a level of 65dB(A) incident outside a house would be audible indoors, and generally could be tolerated for limited durations. A level exceeding 70dB(A) would be likely to be intrusive, if maintained for prolonged periods. The entire construction period is anticipated to last intermittently over a 6 month period.

EPA Export 26-02-2016:00:50:22

9.5 Mitigation Measures

9.5.1 Construction Phase

With regard to construction activities, reference will be made to BS5228: *Noise control on construction and open sites*, which offers detailed guidance on the control of noise from demolition and construction activities. These include:

- Limiting the hours of construction so that noisy activities will not occur at unsociable hours;
- Establishing channels of communication between the contractor/developer, Local Authority and residents;
- Selection of plant with low inherent potential for generation of noise and/or vibration;
- Erection of temporary barriers around items such as generators or high duty compressors;
- Siting of noisy plant as far away from sensitive properties as permitted by site constraints.

For inspection purposes only.
Consent of copyright owner is required for any other use.

9.5.2 Operational Phase

A number of noise mitigation measures have been incorporated into the site design and layout in order to minimise the impact on the surrounding environment. This includes housing all equipment within enclosed structures with no external air moving plant on any of the new or extended buildings and incorporating as is best practicable, deliveries with existing traffic to and from the site.

Establishment of Mixed Fuel and Solvents Bulk Transfer Facility

It is proposed that Vehicles used to load and unload material to this area do so during busy operating periods of the site to combine with existing deliveries. Deliveries should be limited to day time hours (08:00 to 22:00 hours) so as to avoid noise impacts from reverse warning alarms during quiet periods. Audible reversing warning systems on delivery vehicles whilst ensuring that they give proper warning, should have a minimum noise impact on premises outside the site. Several varieties are available which are less intrusive (adjustable alarms, smart alarms which automatically adjust to the ambient noise).

Construction of Sludge Drying Facility

The housing of the sludge dryer within an enclosed building will reduce the breakout noise from this area significantly. It is proposed that doors are kept closed at all times and all joints and gaps around entrance points are well sealed to reduce noise breakout from any 'weak' areas. Noise data from machine manufacturers state that noise levels at a distance of 6m from the enclosed structure will be 45dB(A).

EPA Export 26-02-2016:00:50:22

9.4.2.2 Operational Phase

A summary of potential noise impacts from the operational phase of the proposed extension to developments is described in Table 9.4.2.2 below.

Table 9.4.2.2 : *Summary of potential noise impacts from proposed site developments.*

Development	Potential Noise Impacts
Establishment of bulk solvent and mixed fuel storage	Vehicles used to load and unload IBC's from underground tanks. Reverse warning alarms.
Construction of Sludge Drying facility	Electricity generators Belt Dryer Tankers loading/unloading bulk storage tanks Tyre shredding unit
Development & integration of waste recovery and transfer facility	Lamp crusher unit Windscreen glass collection ELV Storage Compound
Increase in waste processing materials	Increase in delivery traffic volumes

For inspection purposes only.
Consent of copyright owner required for any other use.

In reference to Table 9.4.2.2 above, the potential noise impacts of the proposed developments will be a combination of existing noise sources (traffic and site vehicles) and new sources (Sludge drying facility, waste recovery units).

The location of these additional noise sources on site will determine their impact on their surrounding environment. The greatest potential noise source is the generators used to power the belt dryer housed in the sludge treatment building and noise from the dryer machine. This building is closest to the noise sensitive area located to the north west of the site (N5). Noise data provided for the belt dryer machine states noise levels at a distance of 1m are 80dB(A). Noise levels at approximately 6m from the enclosed dryer are expected to be 45dB(A). Sound power data for the generators are not presently available but are anticipated to be in the range of 110 to 115dB.

There is limited noise level data for the remaining equipment on site at present. however as stated above the sludge drying facility is anticipated to be the greatest source from the proposed extension. The combination of existing noise levels with the additional noise sources is not anticipated to create any major noise impact emanating from the site as a whole however with mitigation measures in place.

EPA Export 26-02-2016:00:50:22

The generators used to power the belt dryer unit will be housed within an acoustic enclosure fitted with silencers on all air handling equipment of the structure. The enclosure will be designed to provide an insertion loss of approximately 50dB. The final design and properties of this structure are being developed at present. It is intended that the noise level outside the building will not exceed 45dB(A).

The inside walls of the full enclosures will be constructed of are lined with sound absorbing material to reduce the reverberant sound level within this space enclosure and therefore external noise levels.

The location of the proposed new storage area at the far north west corner of the site will also provide screening between the sludge drying facility and the nearest residential area.

In the event of ventilation being required on any building it is proposed that splitter attenuators or acoustic louvres providing free ventilation to plant areas are installed.

Development and Integration of Waste Recovery and Transfer Facilities

The processes associated with this development are expected to be minimal. All waste recovery units are to be housed in enclosed areas which will prevent any major noise sources adding to the existing noise climate.

Consent of copyright owner required for any other use. For inspection purposes only.

Traffic Volumes

The impact of any increased traffic volumes associated with the operational phase of this extended development is expected to be minimal on its surrounding environment. According to the traffic impact assessment (Section 13) the proposed site expansion will lead to an approximate increase of 25% in traffic volumes within the industrial estate. In decibel terms this should lead to no more than an increase of 1dB(A) which in subjective terms is not considered perceptible.

9.6 Predicted Impact Of The Proposal

9.6.1 Construction Phase

During the construction phase of the project the noise impact will vary depending on the proximity of noise sensitive properties to construction activities being carried out at any one time. The predicted construction noise levels based on machinery assumed has resulted in a variety of noise levels surrounding the site. Activities to the northwest and southeast of the site may arise in elevated levels for temporary periods. However the application of binding noise limits and hours of operation, along with implementation of appropriate noise control measures, will ensure that noise impact is kept to a minimum.

EPA Export 26-02-2016:00:50:22

9.6.2 Operational Phase

The operational phase of the development is not considered to have a negative noise impact on its surrounding environment. As discussed in the previous section, enclosing all noise sources from the development will reduce the potential noise impacts from these areas.

As the site already has a number of existing noise sources, the expansion to the sites operations is not expected to create any noise sources exceeding those already operating on site. This therefore should not lead to an increase noise levels from the site as a whole.

Traffic noise from the development is not expected to generate significant levels of noise in the vicinity of the site as previously discussed.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

10. LANDSCAPE AND VISUAL

10.1 Introduction

RPS Environmental Sciences were commissioned by Atlas Ireland Limited to produce a landscape and visual assessment for the proposed expansion of the existing facilities at Clonminan Industrial Estate, Portlaoise. This report assesses the potential landscape and visual impact of the proposed expansion of facilities on the landscape and visual resources of the area. The report seeks to:

- Identify current landscape designations and planning policies affecting the sites and its surroundings;
- Assess the existing landscape character of the site and its surroundings;
- Assess the visual impact of the proposed development including a discussion of potential impacts, a prediction of impacts and significance of impacts;
- Detail measures proposed to mitigate significant detrimental visual impacts and assess their effectiveness;
- Assess any positive benefits.

10.2 Methodology

10.2.1 Introduction

Consent of copyright owner required for any other use. For inspection purposes only.

The methods used in this assessment are in accordance with the 'Guidelines for Landscape and Visual Impact Assessment' by The Landscape Institute and Institute of Environmental Assessment 1995 and the "Draft Landscape and Landscape Character Assessment Guidelines" by DOE and Local Government, June 2000. The document recommends baseline studies to describe, classify and evaluate the existing landscape and visual resource focusing on its sensitivity and ability to accommodate change. This is established through a process of desktop study, site survey work and photographic surveys. The proposal is then applied to the baseline conditions to allow the identification of potential impacts, prediction of their magnitude and assessment of their significance. Mitigation can then be identified to reduce as far as possible potential environmental impacts.

10.2.2 Assessment Terminology

Terminology for the measurement of visual change adopted from the Landscape Institute's Landscape and Visual Assessment Guidelines is based upon the sensitivity of the viewpoint and the extent to which the view is altered by the proposal and is used in the evaluation. The degrees of change fall into three categories as defined below:

Slight visual resource change occurs where only a minor portion of the view changes with very little alteration of the overall scene; or the product of a low sensitivity.

EPA Export 26-02-2016:00:50:22

Moderate visual resource change occurs where some changes occur in the view, but not for a substantial length of time or not to a substantial part of the view; or the product of a medium sensitivity.

Substantial visual resource change occurs where changes in the view significantly alter the overall scene or cause some alteration to it for a significant length of time, or a product of a high sensitivity.

In predicting visual impact the main requirements are to show:

- The extent of potential/theoretical visibility
- The views and viewers affected
- The distance of view
- The resultant impacts upon the character and quality of views.

Visual Resources

The visual resources of the landscape are the stimuli upon which actual visual experience is based. They are a combination of visual character and visual quality.

Visual Character

When a viewer experiences the visual environment, it is not observed as one aspect at a time, but rather as an integrated whole. The viewer's visual understanding of an area is based on the visual character of elements and aspects and the relationships between them. The visual character is, therefore, descriptive and not evaluative.

For inspection purposes only.
Consent of copyright owner required for any other use.

Visual Quality

Although the interpretation of viewers' experience can have preferential and subjective components, there is generally clear public agreement that the visual resources of certain landscapes have high visual quality. Some such areas may have been officially designated Areas of Outstanding Natural Beauty and, therefore, it can be assumed that such areas were of high visual quality at the time of designation.

Due to the subjective value of the evaluation there is no comprehensive official process for identifying visual quality. The visual quality of this evaluation has been carried out by one landscape architect and verified by another.

Viewers

Visual experience is a combination of visual resources and viewer responses. Given the nature and scale of this assessment, it is not possible to analyse individual viewer responses, thus views have been categorised based upon level of viewer exposure and level of viewer sensitivity.

Viewer Exposure

Visual perception is the act of seeing and recognising. Accordingly, physical conditions will therefore affect perception. These include:

EPA Export 26-02-2016:00:50:22

DISTANCE, which will affect the ability to see detail.
SPEED, which will affect the sharpness of lateral vision and the observer tends to focus vision along the line of travel.
DURATION, of view which will affect the degree of impact of the resulting image.

Viewer Sensitivity

Viewer sensitivity tends to vary according to the different viewer groups and is strongly related to visual preference. It can be gauged from information available in the form of formal designations of landscape quality, public hearings or published information, etc.

Resource Change

This is the alteration brought about by the presence of the proposal, ie the change to the database, its visual character and visual quality.

Predicted Viewer Response

This is the result of viewer exposure and sensitivity to the resource change.

Consent of copyright owner required for any other use. For inspection purposes only.

10.3 Theoretical Zone Of Visual Influence (ZVI)

The theoretical ZVI is the area within which views of the site and/or the development can in theory be obtained. The extent of the ZVI is determined primarily by the topography of the area. The ZVI is then refined by field studies to indicate where relevant forestry, woodlands, hedges or other local features obscure visibility from the main roads, local viewpoints/landmarks and/or significant settlements.

Using terrain-modelling techniques combined with the sand and gravel pit specification, a map is created showing areas from where the proposal would in theory be seen. A worst case scenario is taken in line with Landscape Institute guidelines.

It should be noted that the theoretical ZVI takes no account of local features such as:

- Low hills (approximately 10 metres [m] high);
- Roadside hedges and fences;
- Forestry and other planted areas; or
- Buildings

In practice the actual ZVI is considerably less in extent than the theoretical one, since the development is located at a low level within existing low hills it is difficult to focus on at a distance, and small-scale topographic features, local hedges tend to restrict views.

EPA Export 26-02-2016:00:50:22

10.4 Photographic Viewpoints

A number of representative viewpoints have been selected around the site. Two viewpoints have been selected in total. Viewpoints have been selected to reflect typical views obtained of the site, using the parameters of distance and direction of view (Photographic viewpoint locations 1 - 4).

10.5 Existing Landscape Setting

10.5.1 Scale And Character

The site of the proposed expansion is located within the existing Atlas Ireland facilities with Clonminan Industrial Estate, which is located in the south-west part of the Portlaoise town. The study area is predominantly urban.. The site is surrounded by industrial and commercial developments. The Cork-Dublin Railway line embankment is located north and east of the site, including a large railway yard.

For the purposes of this assessment the study area is contained within the ZVI, ie within the extent of theoretical views from the proposal.
The landscape character of the study area can be described by the use of distinctive landscape character types as follows:

- Urban landscape

Urban Landscape: The site lies within the town of Portlaoise and is surrounded on all sides by urban development. The Clonminan Industrial Estate consists of mixed industrial and commercial premises of varying standard of visual appearance. Residential properties are absent. Trees are absent. Overhead power lines are frequent. The urban landscape has a low sensitivity to change.

Consent of copyright owner required for any other use.
For inspection purposes only.

10.5.2 Planning Designations

The following designations have been noted from the Laois County Development Plan 2000:

Scenic Views

There are no scenic views affected by the proposal.

Areas of Special Development Control

There are no areas of High Amenity affected by the proposal.

Tree Preservation Orders

There are no tree preservation orders affected by the proposal.

EPA Export 26-02-2016:00:50:22

10.6 Landscape Visual Impact Assessment

This stage of the assessment process aims to:

- Identify systematically all potential landscape and visual impacts of the development
- Predict and estimate their magnitude
- Assess their significance.

10.6.1 Sources Of Impact

The proposed site consists of an area of approximately 2 acres within an existing 6 acre site. The principal potential sources of impact of such a development include:

i) disturbance from construction
ii) imposition of new features in the landscape.

10.6.2 Direct Landscape Character Impacts

The proposed site will be directly located on the urban landscape character type. This landscape character type has been identified as having a low sensitivity to change. The predicted landscape impact will be no change.

Consent of copyright owner required for any other use.
For inspection purposes only.

10.6.3 Visual Impacts

10.6.3.1 Zone of Visual Influence (ZVI)

The ZVI for the proposed site is extremely limited in extent. The proximity of surrounding buildings and particularly the railway embankment and facilities results in the proposal only being visible from within and immediately next to the site.

When views from southerly directions are considered the extent of views remains extremely limited to within 250m from the site. The proposal will not be visible from the wider Portlaoise area.

10.6.3.2 Views From Towns/Villages

The proposed development will not be visible from the surrounding residential landscape. The proximity of the built environment to the site results in limited views of the proposal. The nearest dwellings are located within a travellers site to the west of the proposed site. There will be no views of the proposal from this location. There are no views of the proposal from residential areas of Portlaoise.

10.6.3.3 Views from National Primary Roads

There are no views available from the National Primary Roads to the proposed site.

10.6.3.4 Views from Regional Roads

There are no views available from the Regional Roads to the proposed site.

EPA Export 26-02-2016:00:50:22

10.6.3.5 Local Roads

A view of the site entrance will be available from the adjacent local road. The view is direct but brief. The visual sensitivity of the viewer is low. The proposal will blend with the surrounding industrial/ commercial development. The predicted visual impact is no change (See photographic viewpoint locations 1-4). All potential views from surrounding local roads are screened by adjacent buildings especially the CIE Railway facilities.

10.7 Construction Phase Impacts

During the construction phase potential visual impacts may result from the following:

- site preparation works and operations
- site infrastructure and access
- vehicular and plant movements
- dust emissions.

For inspection purposes only. Consent of copyright owner required for any other use.

The initial construction phase is likely to be limited to consist of; excavations, construction of 2 underground tanks; construction of a sludge drying facility with a single storey facility and six storage tanks; extension to existing stores; covered bunded yard area; provision of waste recovery and transfer facilities. It has been established that the only direct views of the site entrance are directly at the site entrance and from the adjacent local road at one viewpoint. The construction phase of this scheme will, therefore, not be visible from the wider landscape. When viewed from the wider landscape the predicted visual impact during the construction phase is no change. When viewed from the adjacent local road the predicted visual impact during the construction phase will be moderate negative. The impacts will be temporary in nature.

10.8 Cumulative Impacts

Potential cumulative impacts of the proposal are most likely to effect the existing landscape character. The visual impact of the proposal and its relationship with its surroundings has been fully established above. The proposal is included within an area zoned for industrial and commercial development by Laois County Council. The predicted cumulative impact of the proposal is no change.

10.9 Mitigation Measures And Their Effectiveness

The visual impacts of the proposal are caused by the creation of new features in an urban landscape. General mitigation measures to be adopted include:

- sensitive use of local materials for constructed elements;
- careful integration of constructed elements with existing features;
- careful grading and reinstatement proposals and screening measures to reduce visual impacts;

EPA Export 26-02-2016:00:50:22

- appropriate materials and colour of security fencing and building;
- good quality of finish to access roads, gates, tracks, fences to complement local styles and materials;
- Good site housekeeping.

10.10 Residual Impacts

This section of the report assesses the impact of the proposed development following completion. The development will consist of a series of buildings, tanks and hard standings within an industrial estate. It is predicted that there will be no residual visual impacts from the proposal since it will not be visible to the surrounding landscape and the development is entirely suited to its surroundings.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

11. ARCHAEOLOGY AND CULTURAL HERITAGE

11.1. Introduction

Cultural Heritage (Physical), in respect of a project, is assumed to include all humanly created features on the landscape, including portable artefacts, which might reflect the prehistoric, historic, architectural, engineering and/or social history of the area. The Cultural Heritage of the area was examined through an Archaeological, Architectural and Historical study. The Archaeological and Architectural study involved a documentary search and field inspection of the area, while the Historical study involved a documentary search.

11.2. Methodology

The Cultural Heritage Assessment component of the EIS comprises the results of a survey and evaluation of selected sites of archaeological, architectural and historical potential within, and in the immediate environs of, the proposed development area. The work consists of the results of the following :

(i) Paper Survey
(ii) Field Inspection

For inspection purposes only.
Consent of copyright owner required for any other use.

11.2.1 Paper Survey

As part of a documentary search, the following sources were examined from which a list of sites and areas of archaeological, architectural and historical potential was compiled:

- Sites and Monuments Record - Co. Laois.
- Records of National Museum of Ireland.
- Stereoscopic photographic coverage carried out by Geological Survey.
- Documentary & Cartographic Sources in National Library, National Archives and Laois County Library (Portlaoise).
- Laois County Development Plan – 2000.

11.2.2 Field Inspection

The proposed development area and a 200m area surrounding the boundaries of the site was checked for the presence of archaeological monuments and sites of architectural interest in the case of map and aerial photographic sources. A field survey of this entire area, where possible, was initially undertaken in mid-May 2002 for scoping purposes. A more detailed inspection was carried out in early June 2002.

An attempt was made to identify previously unrecorded sites of Cultural Heritage potential within, and in the immediate environs of, the proposed development area.

EPA Export 26-02-2016:00:50:22

11.2.3 Difficulties in Compiling Specified Information

Access to most of the properties located within the defined study area could not be gained. However, they were visually inspected from their respective road frontage boundaries.

11.3. Existing Conditions

The existing facility is located in the townland of Knockmay (O.S. 6" sheet No. Queens County [Laois] 13). The area examined included the existing waste management facility site, as well as an area of c. 200m surrounding the defined boundaries of the site, where possible.

There are a number of modern structures, e.g. offices, waste tanks, concrete yards, etc. located within the boundaries of the existing facility. Where external concrete yards do not exist, then such areas are being used for the soil storage/disposal and have been subjected to continuous disturbance/surface reductions over the years.

The area under assessment is part of a landscape rich in historical and archaeological material. The general region has attracted settlement from early times as is shown by the presence of monuments dating back to the prehistoric period. Continuity of settlement is illustrated by identified monuments ranging from Neolithic to Medieval and Post-Medieval remains.

For inspection purposes only.
Consent of copyright owner required for any other use.

11.3.1 The General Archaeological Potential of the Receiving Environment

The siting preferences of particular monument types is well documented. Broadly speaking, the general landscape surrounding the proposed development offers many locations for differing habitation and burial sites. These locations fall into three main categories:

(i) The river and stream valleys and areas of wet marshy ground offer many opportunities for the location of Fulachta Fiadh (cooking sites). These monuments are location specific and sometimes occur in groups.

(ii) The 'dry land' drumlin/esker areas are a preferred location for later prehistoric burial sites in the region as a whole. Similarly, these areas are the preferred location for ringforts and other habitation and ecclesiastical sites.

11.3.2. History

No features or events of historical interest were revealed during research into the local history of the townland.

EPA Export 26-02-2016:00:50:22

11.3.3. Architecture

There are no Protected Structures or structures of architectural interest located within the defined study area. The facility is located within a modern Industrial Estate. All be buildings located within the study area are constructed in a mixture of concrete block with metal cladding.

The site is bounded to the north by Dublin – Cork railway line. This section of the line (Maryborough/Portlaoise to Ballybrophy) was opened in September 1847 and originally operated by the Great Southern and Western Railway. A section of the former Portlaoise to Waterford railway line is located to the east of the site. This section of the line (Portlaoise to Abbeyleix) was originally opened in May 1867 and operated by Kilkenny Junction Railway. Much of this line was closed in 1963. However, that section running from the existing Dublin-Cork line to Conniberry Junction, located within Clonminan Industrial Estate is presently used for access to the Portlaoise 'Maintenance of Way' Depot. This is the location for modern crane/loading facility where railway lines and sleepers are stored. There are no structures of architectural interest or merit located within the Depot.

11.4. Impact Assessment

11.4.1. Archaeology

The proposed development does not impact on any sites of archaeological interest or potential. Furthermore, given the history of disturbance within the site, it is improbable that any sub-surface deposits, features, structures or finds of archaeological potential might be impacted by the proposed developments.

Consent of copyright owner required for any other use.
For inspection purposes only.

11.4.2. History

The proposed development does not impact on features or events of historical interest.

11.4.3. Architecture

Potential impacts from a development of this kind on buildings and structures of architectural interest include :

11.4.3.1 Direct Impact

- demolition or loss of part of a structure or site.

11.4.3.2 Direct Impact on Surroundings

- severance of other linked features such as gardens, outbuildings or lodges.
- change the original landscape of the building on site.

11.4.3.3 Indirect Impacts

- increased visual intrusion

EPA Export 26-02-2016:00:50:22

- increased noise and vibration disturbance
- loss of amenity, especially where open to the public.

In the case of this development, there are no structures of architectural interest which have the ability to be impacted upon.

11.5. Mitigation Measures

No mitigation measures are suggested..

11.6. Predicted Impacts

There are no predicted direct or indirect impacts with regard to Cultural Heritage in relation to the development, as proposed.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

12.0. HUMAN ENVIRONMENT

12.1 Introduction

This section provides an assessment of the potential impacts of the proposed development on the Human Environment and was carried out in accordance with the Environmental Protection Agency's Guidelines on the *Information to be Contained in Environmental Impact Statements* (EPA, 2002) and the *Advice Notes on Current Practice* (*in the preparation of Environmental Impact Statements* (EPA, 1995). Some aspects of the human environment are discussed separately in other sections of the Environmental Assessment; e.g. Landscape & Visual, Traffic, Air, Water etc. This section considers the remaining aspects of the human environment, which may be affected by the proposed development. The most common significant interactions between different areas considered are between human beings and air quality, noise, water, landscape and traffic and these are discussed below.

12.2 Methodology

With regard to the scoping of this section of the E.I.S the Environmental Protection Agency guidelines list Health & Safety, Nuisance and Amenity as 'typical significant impacts likely to affect Human Beings' in relation to the development of waste facilities.

For inspection purposes only.
Consent of copyright owner required for any other use.

Impacts on Health & Safety in the local environment arising from the proposed development are discussed under appropriate sections such as Air, Water Quality, and Noise. The section on Human Environment will cross reference with these sections where appropriate.

A review of potential nuisance, including modelling exercises, is covered more fully in sections 8 (Air) and 9 (Noise). Consideration is made in both of these sections also to traffic components (See Section 13) in addition to the site operational processes.

A review of 'Amenity' relates to the land and surrounding landscape, and an assessment of any potential impact the proposed quarry development would have on such amenity value or recreation; the visual component is Landscape & Visual (see Section 10).

The basis for preparing this section is a site visit, a review of relevant technical literature and consultations with relevant organisations and individuals. With respect to the planning context, the Laois County Development plan 2000 was reviewed. Particular attention was paid to policy statements on Environmental Protection, Community Resources and Development, and Recreation, Tourism and Amenity. Impacts due to construction works, operation and decommissioning were also considered.

EPA Export 26-02-2016:00:50:22

12.3 Existing Conditions

12.3.1 Site Location and County Development Context

The proposed development site is located approximately 1 km south west of Portlaoise Town Centre. The site is situated in an urban, industrial zone area that is dominated by industrial and commercial activities. Total area of the site is 6 acres, all of which is within a fenced compound.

The Laois County Development Plan 2000 provide the planning context for the proposed development . The plans deal with the entire county of Laois and identify the planning issues facing the rural and urban environs of the county.

The 2000 development plan set out the policies of Laois County Council in relation to development and land use within the County of Laois. The plan stated that:

"The social, economic and physical development of the county is inextricably linked with the economic performance of the midland region. The Action Plan for the midlands region has established a vision and model for development of the region. It is the policy of the council to co-operate with and assist in the realisation of the policies and objectives contained therein in order to increase economic growth, increase employment levels, stabilise population while protecting and improving the economic environment"

For inspection purposes only.
Consent of copyright owner required for any other use.

The plan stated that *"The county has a rich abundance of natural heritage, cultural and amenity resources. It is the policy of the council to market and develop the potential of this sector whilst preserving and protecting it's intrinsic qualities"*

It was an objective of the council to protect any areas of scientific interest within its' jurisdiction. These are covered more fully in section 5, Ecology.

In the 2000 County Development Plan' in 2000 Laois County Council states that the principals of Sustainable Development shall govern their planning and development policies for the period of the plan.

"The Council is committed to the protection of the natural and built environment and recognises that this commitment to sustainability involves direct and indirect action across the entire gambit of environmental issues such as waste disposal, sludge disposal, protection of water resources, pollution control and monitoring."

The Council recognises that it has a role in facilitating the establishment and expansion of enterprises that will provide employment for the county's population and wishes to develop this role in a sustainable manner.

"The Council recognises that industrial development and employment provide a key component in the development of the economic life of the county. Furthermore, it consolidates and reinforces the social life and physical fabric of the town and

EPA Export 26-02-2016:00:50:22

villages. County Laois is strategically positioned to capitalise on industrial development. The strategy of the council is to maximise the strategic centrality of the County supported by investment in human resources and infrastructural services to foster a climate of self sustaining industrial development" It is the policy of the council to: .... encourage the establishment of industries which would benefit from the county's central, geographical location particularly in the Service and Retail sectors. Furthermore it is stated that the *" environmental impact of industrial development location must be given due consideration".*

In respect to waste management the Council has a broadly positive policy towards waste reduction initiatives under it's Environmental Protection Policy as follows;

"It is proposed that greater resources will be devoted to a reduction in the quantities of waste produced and also the re-use and recycling of materials where possible. The Council will co-operate with schemes where the objective is to reduce waste production and implement recycling measures. The control and management of waste in terms of volumes, composition, recycling and management at a local, regional and national level is fundamental to sustainability and environmental protection. It is the policy of the council to participate in the strategy for the control and management of waste and to implement the standards for landfill operations and sludge disposal."

The Atlas proposed development includes significant waste reduction measures including reuse, recycling and broader waste management measures and these would clearly impact positively on the plan.

In respect to ELV Laois County Council have outlined their policy in relation to such waste from a litter perspective as follows;

"The existence of litter, indiscriminate roadside dumping, abandoned vehicles, litter graffiti, fly-posting, unauthorised dumps is not acceptable to the Council"

Clearly the provision of the ELV storage facility at Atlas should contribute positively to the County Council realising the above policy,

12.3.2 Socio Economic Context

The development is proposed for the existing Atlas facility located within the Clonminam Industrial Estate which is principally an industrial and commercial area as illustrated in Fig. 4.1. Portlaoise town is strategically located nationally and regionally at the intersection of a number of National Arterial Roads and has extensive rail linkages to Dublin, Cork and Limerick as well as a growing rail commuter population. The town has experienced considerable growth and development in the last five years with a 9% increase in population between 1991 and 1996. Under the development plan for the town which is included in the County Development Plan, 2000, a development boundary has been designated for the town. Within this development boundary land use is zoned under the following categories;

- Residential
- Industrial

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

- General Business / Commercial
- Open Space / Recreational
- Institutional / Community / Public

The Atlas site is located within an Industrially zoned area as is the immediate surrounding land while there is some residential and Institutional Public Community Facility zoning outlined in area's beyond the site in the Knockmay area of the town. There is also some adjacent land zoned for industrial use in this area. In relation to industry the Council is pro-actively promoting the development of the industrial base of the town through a number of measures. It is also Council policy to, amongst other measures;

- Ensure that sufficient serviced land is available for industry and employment generating opportunities to cater for the workforce
- To grant planning permission for industrial projects subject to normal environmental considerations
- To capitalise on the strategic centrality of Portlaoise for industrial development particularly in the distributive and service sectors.

Amongst the specific industrial objectives of the Council are;

- Develop the industrial landbank at Knockmay
- Secure the completion of Industrial Estates at Clonminam and Kylekiproe
- Co-operate with local, community, enterprise, voluntary and development agencies in the promotion and development of Portlaoise for employment purposes
- Ensure that industrial area's are developed and completed to a high environmental standard

For inspection purposes only.
Consent of copyright owner required for any other use.

Within this overall context the Atlas development has a number of favourable effects. This will be achieved firstly through the provision of employment to local contractors during the construction phase. Where possible, local construction material outlets will be used as will local plant hire firms. When the development is complete and fully operational there are expected to be up to 9 new staff employed at the expanded facility.

12.4 Impact Assessment

12.4.1 Health & Safety

In order to ensure the safety of the general public, relevant training and control of transport will be a priority in particular compliance with Dangerous Goods Safety Advisor (DGSA) requirements. Discussions are also on going with the Health and Safety Authority regarding Seveso requirements and Atlas are committed to complying with any relevant requirements arising from these discussions. All relevant Atlas staff receive full training in HAZCHEM requirements, Decision driving

EPA Export 26-02-2016:00:50:22

and Confined Space working in order to ensure the safety of transport of Atlas' products to the public.

In relation to employee safety, the requirements of employment legislation, including the provisions of the *Safety, Health & Welfare at Work Act,* and subsequent Regulations relating to safety training, appropriate site management etc., will be adhered to.

Any health issues relating to any residences within the vicinity of the plant would be related to air quality in the vicinity of the plant and are covered in more detail in section 8 of this document.

12.4.2 Amenity

The area in which the Atlas site is located is not within an area of Special Development Control as stipulated under the Laois County Development Plan. As the site is located within a commercial and industrial area there are no recreational, tourism or other amenities likely to be affected by this proposed development.

12.4.3 Traffic

Consent of copyright owner required for any other use. For inspection purposes only.

The proposed development is located in the upper reaches of Clonminam Industrial Estate with access onto the national route N8, that ultimately leads most traffic south to the Portlaoise Bypass from Portlaoise Town. The site may also be accessed from the Limerick Road (R445) by means of the Knockmay Road to the railway level crossing point within the industrial area. The Knockmay Road is primarily residential on the town side and does not appear to be a favoured route for most of the industrial area traffic, owing to manoeuvring difficulties for large trucks coupled with the fact that most destinations are more readily accessible from the N8 and M7 bypass. The area of the proposed development is situated within the existent Atlas site, and because of the cul-de-sac situation, is fortunate not to be disadvantaged by passing traffic. The Atlas site is approximately 1Km southwest of the town proper. The overall development envisages an increase in traffic of 25% on a moderately sized fleet and no significant impacts are predicted. Traffic is considered in more detail in section 14.

12.4.4 Ecology

An extensive ecological assessment is provided in Section 5.). Given the immediate site setting of the facility and the developed nature of the site the existing environment does not have a strong ecological component and the development is not predicted to have any significant ecological impacts. Section 5 however covers the issue in more detail.

12.4.5 Water Quality

Impacts to Water are covered in detail in Section 7 and impacts to groundwater are addressed in Section 6 (under Soils and Geology). No significant impacts were identified.

EPA Export 26-02-2016:00:50:22

12.4.6 Air Quality

The assessment of air quality and the possible impact on the human environment are discussed in detail in Section 8 (Air Quality). The impact of a development on air quality is determined by assessing available baseline air quality data and modelling of potential odour emissions.

12.4.7 Noise

Noise levels associated with the proposed development, were determined by measuring the noise levels at sensitive locations in the vicinity of the site and predicting the noise generated from the site during the main phases of the development. The noise assessment is discussed in detail in Section 9 and deals with noise due to construction, operation and traffic movement.

12..4.8 Landscape

A detailed discussion of Zones of Visual Impact is presented in Section 10 (Landscape and Visual Impact Assessment). However, following mitigation measures, as outlined in Section 10, it is predicted that there will be no residual visual impacts from the proposal since it will not be visible to the surrounding landscape.

12.4.9 Archaeology

There are no identified sites of archaeological potential or interest located within the boundaries of the site or within the defined study area. Consequently, it is not envisaged that the development will have any negative physical impact any such identified sites. Furthermore, it is not envisaged that the development will have any negative visual impact on any sites in the general environs of the development site as none of these sites can be seen from anywhere within the development area.

Consent of copyright owner required for any other use.
For inspection purposes only.

12.5 Mitigation Measures

Details of specific mitigation measures are outlined in the appropriate sections on Ecology (Section 5), Soil and Geology (Section 6), Water (Section 7), Air (Section 8), Noise (Section 9) and Landscape (Section 10).

12.6 Predicted Impacts

Details of specific residual impacts are outlined in the appropriate sections on Ecology (Section 5), Soil and Geology (Section 6), Water (Section 7), Air (Section 8), Noise (Section 9) and Landscape (Section 10).

EPA Export 26-02-2016:00:50:22

13 TRAFFIC

13.1 Introduction

13.1.1 Scope Of This Report

This report attempts to assess the impact of the traffic generated by the proposed expansion in particular, and takes into account traffic likely to be generated on immediate corridors associated with the proposed development site. The main study component has been defined as the access road of the Clonminam Industrial Estate (hereafter called Clonminam Road in this report). Other components include:

1. The Knockmay Road to the Limerick Road (R445)
2. Conditions between the M7 Portlaoise bypass and the Clonminam Road
3. Conditions from Clonminam Road to the town centre
4. The junction at the internal railway level crossing
5. The access road to surrounding farms
6. Moore Park stadium
7. Access at the Atlas site

Consent of copyright owner required for any other use. For inspection purposes only.

13.1.2 Description of Site Location (see Figure 2.1 for location map).

The proposed development is located in the upper reaches of Clonminam Industrial Estate (CIE) with access onto the national route N8, that ultimately leads most traffic south to the Portlaoise Bypass from Portlaoise Town. The site may also be accessed from the Limerick Road (R445) by means of the Knockmay Road to the railway level crossing point within the industrial area. The Knockmay Road is primarily residential on the town side and does not appear to be a favoured route for most of the industrial area traffic, owing to manoeuvring difficulties for large trucks coupled with the fact that most destinations are more readily accessible from the N8 and M7 bypass. The area of the proposed development is situated within the existent Atlas site, and because of the cul-de-sac situation, is fortunate not to be disadvantaged by passing traffic. The Atlas site is approximately 1Km southwest of the town proper.

13.1.3 Description Of Surrounding Development

The lands in the vicinity of the Atlas site are primarily commercial / industrial, consisting of a variety of businesses including a DIY store, car repair workshops, electrical rewinding works, various storage facilities and furniture factories. Irish Rail also operates some track engineering yards in this area.

13.1.4 Background Of Expansion Development

The proposed site expansion involves the construction and operation of various types of small-scale waste recovery, collection and transfer facilities within the confines of the existing site. No extra lands shall be procured. Some increase in the throughput handling of existent site materials for treatment is also envisaged. This section of the EIS aims to assess the overall impact of any additional traffic generated by these

EPA Export 26-02-2016:00:50:22

processes and any extra staff requirements following the commissioning of the facilities.

During the construction phase (6 months) the expected traffic generation is anticipated to be small in absolute terms. Construction traffic shall consist for the most part of sporadic materials delivery rather than repetitive earthmoving operations. Construction staff is anticipated to be not more than 10 at any one time with ample parking space available at Atlas or in the adjacent compound by arrangement with Atlas.

It is envisaged that construction will commence in 2002, and will last for a period not exceeding 6 months.

For a detailed account of construction activity please refer to the main body of the EIS report.

13.1.5 Breakdown Of The Proposed Expansion Development

The expansion development of the aforementioned site mainly comprises:

a) A Mixed Fuels and Solvents Storage Facility
b) A Sludge Drying Facility with electricity generator, water treatment chemicals storage and tyre shredder bay.
c) A Fluorescent Tube Crushing and Aerosol Degassing Facility
d) A Windscreen Washer Fluid / Antifreeze / Brake Fluid Collection Facility
e) A Windscreen Glass Collection and Transfer Facility
f) A Waste Batteries Collection and Transfer Facility
g) An Expanded Waste Oil Facility to include waste cooking oil processing
h) An Expanded Oily Solid Wastes Facility
i) An Expanded Oil Filter and Used Tyre Recovery Facility
j) An Expanded Contaminated Soils Facility
k) An ELV and waste Electronic Goods Storage Compound
l) Blending and reconditioning of acid and base solutions

Consent of copyright owner required for any other use.
For inspection purposes only.

This report addresses the projected impact of any extra traffic generated as a direct result of the processes as outlined above. In order to draw a sensible and understandable comparison the report and analysis focuses primarily on the route of most activity, i.e. the Clonminam Road and its intersection with the National Route N8.

13.1.6 Summary - Traffic and Staff Changes

Fleet Size and Breakdown:
Atlas currently operates approximately 17 vehicles consisting of 12 large trucks and 5 medium sized utility vehicles, along with various medium sized trailers. Expected increase to the Atlas fleet will be approximately 5-7 vehicles overall, perhaps 4 large and 3 medium. A lot of the proposed wastes to be taken in will be incorporated into existing collection routes and vehicles.

EPA Export 26-02-2016:00:50:22

Vehicle Entry and Exit to Plant Everyday:
At present approximately 35 vehicles enter the plant daily. How long a vehicle will spend on site depends on its function when coming into the yard. Lorries that come into the yard to load/unload spend 1 hour to 1.5 hours depending on the availability of the gantry at the time. The vehicles leave the plant in the morning between 7.30 - 8.30 AM depending on the destination. The majority of vehicles are not around the plant during the day and usually return to the plant from 4.30 PM onwards depending on where they are coming from.

Staff and Anticipated Changes:
The number of staff located at the Atlas site is 50, of which 6 operate in the yard and 16 consist of drivers and crew. The remaining 28 are office-based workers. The proposed increase in staff is envisaged as 4-6 manual workers and 3 office-based workers.

Parking Arrangements
There are 64 spaces available in a neighbouring compound by arrangement with Atlas Ireland. There are a further 8 in front of the adjacent EMO Building. Parking spaces are currently available at the side of the Atlas building but these will be lost during the course of expansion. All workers do not park daily as some take company vehicles home so that they may travel immediately to site in the mornings. This will have an ameliorating influence on any possible traffic loading.

Proposed Increase in Vehicular Activity:
The general increase in expansion activities shall lead to an extra 10-12 vehicles approximately coming on site daily, some of which shall be independent of Atlas and some owned by Atlas. These will mostly visit outside of peak hours. The collection routes for the new waste streams have yet to be decided.

Truck Movement Habits:
As outlined above Atlas' traffic movements tend to be more concentrated around the plant in the early morning before 9 AM and Atlas vehicles generally filter back to the plant between 4 and 5 PM. Truck movements via the town tend to consist of those collection vehicles going to the north west. The bypass takes all traffic going to Limerick, Dublin, Cork and Galway and that is approximately 80% of the services.

Consent of copyright owner required for any other use.
For inspection purposes only.

13.2 Existing Conditions

13.2.1 Access Conditions at the Atlas Site

The Atlas Facility is situated at the end of a cul-de-sac within the industrial area. The site entrance does not in itself present any problem in terms of traffic disruption. It is suggested that the item of prime importance with regard to the proposed expansion facilities is that of the effect on the junction of Clonminam Road with the N8, i.e. adjacent to the stadium.

Initial observations indicate that Traffic Lights, or Roundabout Control, need to be provided at this access point to this industrial area based on present traffic behaviour.

EPA Export 26-02-2016:00:50:22

A Roundabout is dependent on available land area appropriate to the required roundabout diameter, whereas, the provision of traffic signals in this case depends on the anticipated conflicts between 'estate' and 'N8' traffic together with the anticipated likelihood of accidents. In this case, and based on experience, there appears to be sufficient space for a medium size roundabout of approximately 18M diameter. This area does not appear to be heavily used by pedestrians. However, there is a Stadium close by and that indicates that at certain times there will be quite a number of pedestrians about. However, it is understood that stadium activity only occurs when there is least activity in the industrial estate.

13.2.2 The National Route N8

The N8 National Route used to carry all traffic through Portlaoise towards Cork and vice versa. However since the opening of the M7 bypass segment, traffic volumes along this section of road near the entrance to Clonminam Industrial Estate have fallen significantly throughout the day. The N8, as identified above near the access point to Clonminam Road, consists of a single carriageway or undivided highway, with one lane in either direction. A critical section is considered to be the junction at Clonminam Road and the N8. This is a readily identifiable pressure point. Also to be taken into consideration is the effect that any extra traffic generated by the proposed expansion might have at the 'town end' of the N8, or at the junction with the Portlaoise bypass ramps and roundabout.

Consent of copyright owner required for any other use.
For inspection purposes only.

13.2.3 Clonminam Road / N8 - Junction

The industrial area of Clonminam is not strictly an industrial estate as there are a number of dwellings alongside the railway on the Knockmay Road leading to the Limerick Road (R445). There is also a southbound access road to local farms from the railway level crossing point. After several periods of local observation it has been determined that the critical junction is that with the N8. The Clonminam Road leads east down to the industrial area proper and is well developed and marked, and it also leads past some industrial and retail outlets. The road then turns sharply right to the north before the level crossing at which point can be found some private dwellings, and from there the road becomes more urbanised before leading eventually to the Limerick Road (R445).

Some upgrading of the intersection with the N8 is probably overdue as some build up in traffic queues is observed particularly in the PM peak. As matters stand at present this junction should be provided with increased safety measures, such as enhanced road-markings, advance warning signs, improved footpaths, improved surfaces, particularly in the left turn lane into Clonminam Road industrial area. Visibility needs to be improved for traffic exiting Clonminam Road, in particular left turning traffic. Left turning traffic from this area towards the town are presently exiting from a blind corner. A roundabout could conceivably serve this junction, but if the northwest corner land area cannot be acquired for this purpose, then traffic light control must be considered.

EPA Export 26-02-2016:00:50:22

13.2.4 Entrances To The Inner Estate

The far reaches of the estate is the point beyond the rail crossing and comprises almost solely of commercial industrial and business premises. Several observations taken at this point throughout the day indicate that no congestion occurs at this point. The level crossing opens only once per day at the very most. The roadway is adequately marked in order to facilitate right turning traffic towards the private dwellings or the Limerick Road (R445). All vehicular access to and egress from the Atlas depot must traverse this point.

13. 2.5 Knockmay Road to Limerick Road (R445)

It seems reasonable to discount this approach owing to the generally low volumes of observed traffic exiting from the point beyond the railway level crossing. At the point where the Limerick road leaves the town proper (Clonroosk Little) traffic volumes have been significantly reduced owing to the opening of the Portlaoise bypass. In relation to the Atlas site the volumes of existing staff and business activity is small in comparison to that using the Clonminam Road.

13.2.6 Other Side Roads

There is one other exit road from this point at the rail crossing and this leads south alongside the railway line. This road is a narrow country lane and would appear to be totally unused by commercial traffic in this area. It provides access to some distant farms. This road eventually leads by a circuitous route to the bypass and N8 towards the south.

For inspection purposes only.
Consent of copyright owner required for any other use.

13.3 Impact Assessment

13.3.1 Existent Traffic Flow Rates

Traffic count data for the critical intersection at Clonminam Road / N8 in the AM and PM peaks are shown in a table in the following section 3.4 below. The heaviest volumes in the AM period are clearly identified as being towards the town from the bypass, especially in the latter part of the AM peak period. Traffic entering the estate in the AM is steady up to 8:45 am after which time an increase is observed. This is consistent with the arrival of office or shop workers. Exit traffic in the AM from the area is observed to be of consistently low volume.

In the PM period, the pattern shows that the heaviest flows are from the town towards the bypass with a constant flow into and out from the industrial area increasing steadily towards 5:30pm.

13. 3.2 TRICS Estimates

In order to assess the likely impact of the traffic generation arising from expansion development of the Atlas site, the following approach has been adopted. Under normal circumstances it might be possible to use the Trip Rate Information Computer

EPA Export 26-02-2016:00:50:22

System (TRICS) in order to predict the likely effects resulting from expanded operations. However, owing to the nature of operations carried on at the Atlas site and the relatively low actual recorded movements it is deemed inappropriate to try and apply a software TRICS model in this case. The expansion components at the site cannot be directly related to any identifiable TRICS profiles. In this case increase factors have to be ascertained from direct local knowledge and compared against the status quo for the critical intersection. Therefore, it is suggested that the better method of assessment in this case is to use actual counts.

13.3.3 Actual Count Data

The AM and PM data collected from the Clonminam Road / N8 junction will form the basis for the calculations as these time periods would be of most concern relating to any proposed developments. These counts were made over a 2-hour AM and 2 hour PM peak. Based on these available figures and supported by observation, estimates are then made as to the busiest hourly rate. An estimate is then made as to how much expansion traffic will use this junction and at what time. This will enable a prediction to be made as to how any expansion might affect matters.

13.3.4 Summary of Count Data

The figures in the table below are based on actual counts taken at the single existent t-junction at Clonminam Road and the N8.

Consent of copyright owner required for any other use. For inspection purposes only.

Inbound into the Estate

Present count data for the AM shows that 54% of the traffic volume enters the estate from the town direction, whereas 46% of the traffic volume enters from the south and the bypass. In the PM 61% comes from the town direction, whereas 39% enters the estate from the south and the bypass.

Outbound from the Estate

Present count data for the AM suggests that 44% exiting tend to go north towards Portlaoise and 56% south to the bypass. The pattern in the PM is 41% north towards Portlaoise and 59% south towards the bypass.

Relevant Data

The figures likely to be most affected by the expansion are:

a) The 54% inbound in the AM from the town
b) The 46% inbound in the AM from the south and the bypass
c) The 41% outbound in the PM towards the town
d) The 59% outbound in the PM towards the south and the bypass

The present movements 'in' during the AM and 'out' during the PM consist largely of Industrial Area traffic coupled with a small component from the Knockmay dwellings and some 'short-cut' traffic to and from the Limerick Road (R445).

For arriving and departing Atlas staff an 80/20 split is thought likely based on Atlas information with regard to the number of staff using the Clonminam Road or the Knockmay Road respectively.

EPA Export 26-02-2016:00:50:22

Clonminam Road / N8 Count Analysis

DIRECTION	DETAIL	AM PEAK 8-9 AM	PM PEAK 4:30 – 5:30 PM
	'out' To North & Portlaoise	91	203
	'out' To South and Bypass	71	140
	To Portlaoise	351	355
	To South and Bypass	231	512
	'in' from North and Portlaoise	178	135
	'in' from South and Bypass	149	87

For inspection purposes only.
Consent of copyright owner required for any other use.

13.3.5 Methodology of Assessment

Under normal circumstances a PICADY and / or ARCADY analysis would form the basis of a comparison model by determining the likely queue build up in a 'before and after' scenario. For the purposes of analysis in this case the AM period is chosen for a PICADY comparison and owing to the low count factors the results are extrapolated to the PM.
With regard to the extra staff it is believed that the additional loading will be 3 extra private cars inbound on the Clonminam Road in the AM and similarly outbound in the PM.

Private cars are counted as 1 PCU, vans as 2 PCUs and Trucks as 3 PCUs. With regard to both factors above for operations and staff the extra loading is 9 PCUs.

Therefore, in the worst possible case:

e) The 178 PCUs inbound in the AM from the town will increase by 3.3%
f) The 149 PCUs inbound in the AM from the south and the bypass will increase by 4%
g) The 91 PCUs outbound in the PM towards the town will increase by 6.6%
h) The 71 PCUs outbound in the PM towards the south and the bypass will increase by 8.4%

EPA Export 26-02-2016:00:50:22

As the observed queues in either direction in the AM or in the PM never exceeded 10 vehicles in any lane at any one time then one can reasonably conclude that the extra loading from the Atlas site will result in a queue increase of not more than one vehicle. Again, based on observations and counts this will only occur for a brief period of time before 9:00AM and before 5:30PM.

In the AM/PM the split of extra traffic resulting from the expansion development is thought to be 80% using the Clonminam Road. Based on Atlas' substantial experience of traffic movements it is believed that most of the operational vehicles, both owned and visiting, will be spread throughout the day, resulting in 2 extra operationally owned vehicles in the AM peak hour and similarly in the PM.

The PICADY results are given in Appendix A and show that queue exacerbation is negligible. A five-vehicle queue may be increased by one vehicle. Extrapolation of the data into the PM suggests that a 10-vehicle queue out from the estate would be increased by at most two vehicles in the worst possible case.

13. 4 Mitigation Measures

13.4.1 Resurfacing of Left Turn Slip Lane (N8 to Clonminam Road)

On site observation of the surface of this slip lane suggests that the intersection in general would benefit from a reinstatement of the asphalt surface. The high hedge and wall on the northwest corner of the junction should be reduced to visibility level. This will facilitate pedestrian safety and also reduce the tendency for the small queue buildup in the PM.

For inspection purposes only.
Consent of copyright owner required for any other use.

13.4.2 Measures To Ameliorate the Traffic Impact of the Development

In line with the policies of the Dublin Transportation Office, certain measures can be undertaken to reduce the dependency of today's workforce on car travel and in particular single car occupancy. A sample target modal split for a suburban workforce is given in **Table 4.1**.

Table 4.1 Workforce - Target Modal Split

MODE	*% split*
Car (driver)	35%
Car (passenger)	*10%*
Rail & Bus	33%
Walk	8%
Cycle	*14%*

In the case of the Atlas Development almost all staff arrive by car, as this is the most attractive option at present. The access roads to the estate are not particularly congested, even at peak times, and parking does not present any problems. It is conceded that walking and cycling to work are not really an option for the majority of workers and staff involved owing to the rural distances involved.

EPA Export 26-02-2016:00:50:22

13.4.3 Public Transport Network

Bus use is not an attractive option, as staff would not have access to that many predetermined bus routes. There is no effective public transport link to the estate.

It is suggested that the Atlas site would never expand to such a point or ever have enough staff demand to warrant its own private bus service.

13.4.4 Parking Rate Spaces

At present staff vehicles number about 30 to 35. Of these, approximately 10 may park conveniently at the Atlas site and the remainder at a neighbouring facility that can also cater easily for any extra staff vehicles generated as a result of the expansion. In this regard an extra 9 (nine) vehicles are predicted.

13.5 Conclusions And Recommendations

13.5.1 Traffic Growth

For inspection purposes only.
Consent of copyright owner required for any other use.

Figures published in the NRA's National Road Needs Study report indicate that an average growth rate of 2.7% per annum up to 2021 is anticipated. Taking into account the characteristics of the Atlas site, it has been assumed that existing 'background' traffic levels in the environs of the Industrial Estate will grow annually at a rate of at around 2.0 per cent between 2000 and 2021. As the industrial estate is finite in size and adult population, then the anticipated growth will be confined to other developments and in particular the Clonminam Road. The Atlas site itself is believed to be currently approaching maximum expansion.

For the purposes of this study, and taking a conservative approach, it is suggested that no extra staff traffic shall be generated after the present expansion plans with only a marginal increase in commercial traffic. This implies that only a marginal effect on the background traffic growth would be attributable to the Atlas Site traffic, over the next 5 years, after which time Atlas would have to expand at a different location.

13.5.2 Roundabouts

Observations taken on site at the N8 would immediately suggest that a roundabout at the access road would be a natural option. The analysis tool used for the roundabout option is ARCADY, and an inscribed circle diameter of 18 Mts has been chosen based on experience and the available land area on site. The analysis (not included in this report) shows that there would be no queue development on any approach and this in itself is a good result. Because there would be no queuing in the estate, that would mean that queues might be likely to lengthen marginally at the bypass or in Portlaoise town

A disadvantage with roundabouts is that they do not afford any right of way to pedestrians.

EPA Export 26-02-2016:00:50:22

Therefore a separate pedestrian crossing might have to be considered, as soon as a demand profile could be studied.

13.5.3 Traffic Lights

The Atlas site Development is fortunate to be afforded with two access routes. It is understood that approximately 20% of Atlas staff traffic might choose to take the Knockmay Road to the Limerick Road (R445), but that most of the commercial traffic would use the Clonminam Road to the N8. The provision of traffic lights at the Clonminam Road / N8 junction would be helpful in ameliorating the effects at this point particularly in reducing queues from the estate. Traffic signals also provide a safer environment for both traffic and pedestrians. Another useful side effect of putting in traffic signals at this location would be to insert breaks into the traffic, thus creating better conditions at the bypass and at Portlaoise town.

13.5.4 Internal Junction at the Railway Level Crossing

The internal road layout at the Clonminam Estate is characterized by a junction at the railway level crossing that leads to the further reaches of the estate. An assessment of this intersection shows no particular traffic problems or queue build up. The crossing operates less than once per day.

Consent of copyright owner required for any other use.
For inspection purposes only.

13.5.5 Summary

1) The proposed Expansion Development at the site will increase site traffic by approximately 25%.
2) The anticipated disruption to existent traffic patters is negligible.
3) The Access road / N8 junction would presently benefit from traffic signals regardless of the Atlas site operations.
4) PICADY analysis shows a one or two car queue lengthening,

EPA Export 26-02-2016:00:50:22

14.0 MATERIAL ASSETS

14.1 Introduction

The effect of any development on the worth or material assets of the locality is influenced both by the location and nature of the development. In the case of the proposed expansion at Atlas, key issues include:

- the location of residential dwellings and land use
- the existing transportation infrastructure
- the use of natural resources (soil and water).

However, it is more appropriate to address many of these topics under other sections of the EIS. For example, land ownership and the impact of the proposed development on the local population is examined with reference to socio-economic impacts, recreational amenities and community severance under Human Beings (Section 4). Impacts on water resources are examined in the sections on Geology (Section 6). And Water (Section 7). Therefore, for the purposes of this report, the Material Assets section only considers impacts on land use, road infrastructure, and the use of natural resources. The development will not make use of major utilities even includes a provision for on site electricity generation using reprocessed waste oils.

Consent of copyright owner required for any other use.
For inspection purposes only.

14.2 Methodology

This section provides an assessment of the potential impacts of the proposed development on Material Assets, and was carried out in accordance with the Environmental Protection Agency's *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)* (EPA, 1995). The objective is to ensure the sustainable use of material assets and to ensure that they will be available for future generations.

14.3 Impact Assessment

14.3.1 Land Use

The predominant land use in the area comprises commercial / industrial and transportation (roads and rail). The development will not result in any change in land use

The emissions for the site to air, noise and water are covered in the respective chapters of the EIS. The predicted impacts in these environments have been predicted to be generally low when incorporating the recommended mitigation measures such that there will be no impact on surrounding land use to the site.

14.3.2 Transport Infrastructure

The nature of the development proposal will entail the transport by road of various solid and liquid waste materials to eth proposed recovery facilities and transfer locations as described in Section 2. The existing transport network and the predicted

EPA Export 26-02-2016:00:50:22

impacts of the proposed development upon are fully assessed in section 13 and were found not be significant with some recommended mitigation measures in place.

14.3.3 Use of Natural Resources

There will be minimal use of natural resources during the project aside from any aggregates used in the foundation and construction of the warehouse and obviously water and construction machinery fuel during construction activities. In broader terms, the extension to the existing waste oil and oil filters business will help ensure that a finite natural resource, oil , will have a greater, enhanced life cycle.

Existing site energy needs are provided for using the on site natural gas fired boiler. Electricity demand on site is expected to increase following the installation of the proposed package plants however the installation of an electricity generator on site, which will be fuelled by reprocessed waste oil, will meet the demand of the sludge drying unit. As part of the project procurement procedures Atlas will give due consideration to energy efficiency measures.

14.4 Mitigation Measures

14.4.1 Land Use

The proposed project will not cause any change in land use on the site during the construction and operational phase of the project. This will not affect the surrounding land use of the area.

Consent of copyright owner required for any other use.
For inspection purposes only.

14.4.2 Transport Infrastructure

The project will not significantly increase the volume of traffic and relevant mitigation measures are outlined in section 13.

14.4.3 Use of Natural Resources

Natural resource use is not significantly affected by the project and the project involves measures to extend the life of a number of natural resources which would otherwise be wasted.

14.5 Residual Impact

In summary, the project will not result in any change in land use or affect natural resources.

EPA Export 26-02-2016:00:50:22

15 INTERACTIONS

A proposal of this nature gives rise to a number of potential environmental impacts, which have been addressed in the preceding sections of the EIS. However, environmental impacts in one media often interact with impacts in different environmental media. This section of the EIS aims to highlight these potential interactions and a summary of interactions between environmental impacts are outlined in the Interaction matrix included in Table 13.1.

Table 15.1. Environmental Impact Interaction Matrix

	Human Env.	Ecology	Soils and Geology	Water	Air	Noise	L'scape and Visual	Arc'ogy and Cultural Heritage	Waste	Traffic	Material Assets
Human Env.	-	√	√	√	√	√	√	√	√	√	√
Ecology	√	-	√	√	√		√			√	√
Soils and Geology	√	√	-	√	√		√	√			√
Water	√	√	√	-			√		√		√
Air	√	√	√		-				√	√	
Noise	√					-	√		√	√	
L'scape and Visual	√	√	√	√		√	-	√			
Arc'ogy and Cultural Heritage	√		√				√	-			
Waste				√	√	√			-		
Traffic	√	√			√	√				-	
Material Assets	√		√	√							-

For inspection purposes only.
Consent of copyright owner required for any other use.

All environmental factors are inter-related to some extent. As defined in the Environmental Protection Agency ' Guidelines on the Information to be Contained in Environmental Impact Statements', 2002 a cumulative effect is defined as '*...the addition of many small impacts to create one larger, more significant impact*'. A synergistic impact occurs where '*...the resultant impact is of greater significance than the sum of its constituents*'. Cumulative and synergistic effects are, therefore, those, which result from the incremental effect of an action when added to other past, present, and reasonably foreseeable actions. The subject of assessing the interaction of

EPA Export 26-02-2016:00:50:22

environmental effects is a complex one. Assessment is based on the concept that all effects (water and air quality, noise, visual intrusion, nature conservation, etc) ultimately have an effect on the following, which compromise the principal elements of the environment:

- *Amenity*: Encompassing both public use of facilities and perception of environmental quality;
- *The Resource Base*: Natural resources and land; and
- *Physical Assets*: Infrastructure, historical/cultural features

Interactions between one topic and another are previously discussed in the relevant Impact Assessment Sections of the EIS (Sections 4-14). While negative impacts have been identified they are in the main related to which represents a consumption of natural resources.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

APPENDIX 1

Ecology

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:22

APPENDIX 5.1

Scientific names of species mentioned in text

Table A5.1.1. Scientific names of vascular plants mentioned in text.

Common Name	Scientific name
Blue Fleabane	***Erigeron acer***
Bush Vetch	*Vicia sepium*
Common Knapweed	*Centauria nigra*
Common Nettle	*Urtica dioica*
Common Ragwort	*Senecio jacobaea*
Cow Parsley	*Anthriscus sylvestris*
Dandelion	*Taraxacum officinale* agg.
Meadow Foxtail	*Alopecurus pratensis*
Nettle-leaved Bellflower	***Campanula trackelium***
Oxeye Daisy	*Leucantheum vulgare*
Selfheal	*Prunella vulgaris*
Yorkshire Fog	*Holcus lanatus*

Table A5.1.2. Scientific names of mammals mentioned in text.

Common Name	Scientific name
Badger	*Meles meles*
Rabbit	*Oryctolagus cuniculus*
Red Fox	*Vulpes vulpes*

Table A5.1.3. Scientific names of birds mentioned in text.

Common Name	Scientific name
Pied Wagtail	*Motacilla alba*
Chaffinch	*Fringilla coelebs*
Rook	*Corvus frugilegus*
Swallow	*Hirundo rustica*

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

APPENDIX 5.2

Dúchas Site Synopses

SITE NAME: RIDGE OF PORTLAOISE; pNHA

SITE CODE: 000876

The ridge of Portlaoise is an elongated raised ridge or esker formed of sand and gravel, which was deposited when a mass of ice covered this area during the last period of glaciation. The esker runs through the eastern part of Portlaoise town and extends in a SSE-NNW direction. North of the town, the secondary road to Mountmellick runs along the top of the ridge, while south of Portlaoise the L26 road to Timahoe runs alongside it.

Much of the esker is wooded. In the southern part, Scots Pine (*Pinus sylvestris*) and Beech (*Fagus sylvatica*) form the canopy. Elsewhere, multi-stemmed Hazel (*Corylus avellana*) and/or Ash trees (*Fraxinus excelsior*) predominate, with a range of other native species, for example Wych Elm (*Ulmus glabra*), Elder (*Sambucus nigra*), Holly (*Ilex aquifolium*), and Hawthorn (*Crataegus monogyna*) occasionally present. Ground flora beneath the woodland canopy includes Wood Melic (*Melica uniflora*), Sanicle (*Sanicula europaea*), Bluebell (*Hyacinthoides non-scriptus*) with a range of ferns, such as Hart's-tongue (*Phyllitis scolopendrium*) and grasses, including False Brome (*Brachypodium sylvaticum).*

Open grassland on the esker is calcareous and typically species-rich. Quaking grass (*Briza media*), Crested Dog's tail (*Cynosurus cristatus*) and Cock's foot (Dactylis glomerata) are among the grasses, which predominate. Herbs present include Yarrow (*Achillea millefolium*), Pignut (*Conopodium majus*) and Common Bird's foot Trefoil (*Lotus corniculatus*).

There are 2 number of disused gravel pits located along the length of the esker, which are assessed by means of old trackways. All of these add habitat diversity to the site.

Nettle-leaved Bellflower (*Campanula trachelium*) is a rare species, which is legally protected under the Flora Protection Order of 1987. This plant has been recently recorded on this site - a new station for the species. Elsewhere in Ireland it is virtually confined to the southeast of the country, and has been reported from only three sites since 1970. Another rare plant, listed in the Red Data Book, Blue Fleabane (*Erigeron acer*) occurs in disused gravel pits within the site. It is a plant of eskers, dry grassland, sandy pastures and walls (especially on calcium-rich substrates) and has been recorded from only 5 10km squares since 1970.

Light grazing by cattle/sheep is not necessarily incompatible with conservation of esker habitats, although overgrazing can result in a lack of tree regeneration and damage to ground flora.

Eskers are under increasing threat in Ireland, due to the demand for sand and gravel for the construction industry. Of the few eskers which have survived, only a small percentage retain their semi-natural flora of woodland and as one of the best examples of esker in Co. Laois, along with those at Timahoe (Site No. 421) to the southeast, along with Clonaslee (Site No. 859), to the northwest. The ridge of Portlaoise also has two rare plants, one of which is protected a Flora Protection Order.

SITE NAME: RIVER BARROW AND RIVER NORE; cSAC, pNHA

SITE CODE: 002162

The Barrow/Nore River catchments consist of these main rivers and approximately 15 tributaries. The site is 195 km in length. The rivers flow through the counties of Laois, Kilkenny, Waterford, Carlow and Wexford before entering Waterford Harbour. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone below Thomastown. Before joining the Barrow it runs over Ordovician strata. The upper reaches of the Barrow also runs through limestone. The middle reaches and many of the tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end runs over Ordovician strata.

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:23

The site is very important for the presence of a number of EU Habitats Directive Annex II animal species including Freshwater Pearl Mussel (*Margaritifera margaritifera* and *M. m. durrovensis*), Freshwater Crayfish (*Austropotamobius pallipes*), Salmon (*Salmo salar*), Twaite Shad (*Alosa fallax fallax*), three Lamprey species - Sea (*Petromyzon marinus*), Brook (*Lampetra planeri*) and River (*Lampetra fluviatilis*), the marsh snail *Vertigo moulinsiana* and Otter (*Lutra lutra*). This is the only site in the world for the hard water form of the Pearl Mussel *M. m. durrovensis* and one of only a handful of spawning grounds in the country for Twaite Shad.

The EU Habitats Directive Annex II plant species, Killarney Fern, (*Trichomanes speciosum*) also occurs within the site.

Nine habitats listed on Annex I of the EU Habitats Directive occur within the site. Good examples of Alluvial Forest are seen at Rathsnagadan, Murphy's of the River, in Abbeyleix estate and along the tidal stretches of both main rivers. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Grey Willow (*S. cinerea*), Crack Willow (*S. fragilis*), Osier (*S. viminalis*), with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*). Three rare invertebrates have been recorded in this habitat at Murphy's of the River. These are: *Neoascia obliqua* (Diptera: Syrphidae), *Tetanocera freyi* (Diptera: Sciomyzidae) and *Dictya umbrarum* (Diptera: Sciomyzidae).

The best examples of old Oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kylecorragh and Brownstown Woods on the Nore; and at Drummond Wood and Borris Demesne on the Barrow. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the sixteenth century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved Bellflower and the moss *Leucodon sciuroides*. It has a typical bird fauna including Jay, Long-eared Owl and Raven. A rare invertebrate, *Mitostoma chrysomelas*, occurs in Abbeyleix and only two other sites in the country. Two flies *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur. The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeyleix.

Consent of copyright owner required for any other use.
For inspection purposes only.

Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by Oak (*Quercus* spp)., Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Birch (*Betula pubescens*) with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*) Wood Rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

On the steeply sloping banks of the River Nore about 5 km west of New Ross, in County Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of a relatively undisturbed, relict Oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown a small, mature Oak-dominant woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Cow-wheat (*Melampyrum* spp.) and Bracken (*Pteridium aquilinum*).

Borris Demesne contains a very good example of a semi-natural broad-leaved woodland in very good condition. There is quite a high degree of natural re-generation of Oak and Ash through the woodland. At the northern end of the estate Oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly Oak species. The woods have a well established understorey of Holly (*Ilex aquifolium*), and the herb layer is varied, with Brambles abundant. Whitebeam (*Sorbus devoniensis*) has also been recorded.

EPA Export 26-02-2016:00:50:23

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the EU Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Cratoneuron commutatum* var. *commutatum* and *Eucladium verticillatum*, have been recorded.

Floating River Vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include Water Starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), Milfoil (*Myriophyllum* spp.), *Potamogeton* x *nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and Crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Saltmeadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickcloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) (Flora Protection Order, 1987) are found. The very rare Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Sea Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

Consent of copyright owner required for any other use.
For inspection purposes only.

Dry Heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes of the river bank consists of Bracken (*Pteridium aquilinum*) and Gorse (*Ulex europaeus*) species with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove (*Digitalis purpurea*), Common Sorrel (*Rumex acetosa*) and Bent Grass (*Agrostis stolonifera*). Where rocky outcrops are shown on the map Bilberry (*Vaccinium myrtillus*) and Wood Rush (*Luzula sylvatica*) are present. Dry Heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabrisky, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather (*Calluna vulgaris*), Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*). Above New Ross the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*) has been recorded.

Other habitats at the site include wet grassland, marsh, reed swamp, improved grassland, coniferous plantations, deciduous woodland, scrub, ponds, tidal river, shingle shore and mudflats.

Twelve Red Data Book plant species have been recorded within the site, most in the recent past. These are Blue Fleabane (*Erigeron acer*), Basil Thyme (*Acinos arvensis*), Hemp nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh Grass (*Puccinellia fasiculata*), Meadow Barley (*Hordeum secalinum*), Opposite-leaved Pondweed (*Groenlandia densa*), Autumn Crocus (*Colchicum autumnale*), Nettle-leaved Bellflower (*Campanula trachelium*), Saw-wort (*Serratula tinctoria*), Bird Cherry (*Prunus padus*), Ivy Broomrape (*Orobanche hederae*) and Greater Broomrape (*Orobanche rapum-genistae*). Of these the first eight are listed under the Flora Protection Order 1987. Divided Sedge (*Carex divisa*) was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants, which do not have a very wide distribution in the country, are found in the site including Thin-spiked Wood-sedge (*Carex strigosa*), Field Garlic (*Allium oleraceum*) and Summer Snowflake (*Leucojum aestivum*). Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria*. The rare moss *Leucodon sciuroides* also occurs.

The site supports many important animal species. Those, which are listed in the Irish Red Data Book, include Daubenton's Bat (*Myotis daubentoni*), Badger (*Meles meles*), Irish Hare (*Lepus timidus*

EPA Export 26-02-2016:00:50:23

hibernicus) and Frog (*Rana temporaria*). The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater Mussel species, *Anodonta anatina* and *A. cygnea*.

The site is of ornithological importance for a number of EU Birds Directive Annex I species including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Peregrine and Kingfisher. Nationally important numbers of Golden Plover are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois and also along the Barrow Estuary. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country.

Landuse at the site consists mainly of agricultural activities, principally grazing and silage production. Arable crops are also grown. Forestry related activities are on-going as conifers replace deciduous species. On the rivers professional and leisure fishing takes place. There is net fishing in the estuary and a mussel bed also. A fish farm is located on the Pollmounty River. There are active and disused sand and gravel pits throughout the site. Recreational activities such as boating and walking take place on the Barrow River and towpath. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown.

The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods, which can damage the many Annex II species present. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

The site is important because of the large numbers of Annex I habitats and Annex II species it supports. The occurrence of several Red Data Book plant species, which are only found along the Nore, the presence of three rare plants in the salt meadows and the population of the hard water form of the Pearl Mussel which is limited to a 10 km stretch of the Nore, add further interest to this site.
1.3.2000

For inspection purposes only.
Consent of copyright owner required for any other use.

SITE NAME : SLIEVE BLOOM MOUNTAINS; cSAC, pNHA

SITE CODE : 000412

The Slieve Bloom Mountains lie on the Offaly-Laois border, starting about 8km north-east of Roscrea and running about 24km north-east, towards Clonaslee. The mountains are of Old Red Sandstone, flanked by Silurian rocks. From approx. 180m O.D., the site extends to 529m O.D.

This site is remarkable for its mountain blanket bog habitat. Generally uniform in character, the vegetation consists of a deep, spongy mat of Bog Moss (*Sphagnum capillifolium*), with other mosses and lichens. Growing on this are Ling Heather (*Calluna vulgaris*) and Crowberry (*Empetrum nigrum*), with smaller amounts of Cottongrasses (*Eriophorum* spp.), Bilberry (*Vaccinium myrtillus*), Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). An unusual feature is the abundance of Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*), species usually associated with raised bogs. The uncommon Lesser Twayblade (*Listera cordata*) occurs under Heather at this site.

The uplands at this site provide excellent habitat for Peregrine Falcon, a species listed on Annex I of the European Birds Directive. Breeding pairs occur here.

For the main part, the site is fringed by forestry plantations although in a few places there remains a relatively undisturbed transition downslope to poorly-drained acidic grassland. The primary threats to Irish blanket bogs in general are afforestation, drainage and overgrazing, and current habitat quality is dependent on past landuse. On the Slieve Blooms, the Heather forms tall, dense stands, with individual stems up to 20 years old, suggesting that burning has not been extensive in recent years. There is little evidence of grazing or erosion. Overall, vegetation structure is exceptionally well conserved due to lack of disturbance. A large portion of the site lies within a Statutory Nature Reserve.

EPA Export 26-02-2016:00:50:23

Blanket bogs are an increasingly rare habitat in Europe, and in Ireland is continually under threat. The Slieve Bloom Mountains are an important link in the east-to-west gradient of bogs in Ireland, and are floristically linked to the midland raised bogs north of the site. The intactness of the blanket bog here is remarkable and is echoed in few other areas in the Republic of Ireland, making this site of unique conservation value.
23.1.1997

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

APPENDIX 5.3

Evaluation of Ecological Importance and Assessment of Impact Significance

Introduction

While the EPA *Guidelines* (EPA, 1995) provide a defined terminology for describing impact significance, for ecological assessments, this terminology has not proved to have been of much use in practise: a review of 28 recent Environmental Impact Statements found that only one of these used this terminology (Gittings, 1998). In fact, a terminology specifically defined with reference to ecology is required for description of ecological impact significance. The following terminology has been developed on this basis and is used to describe impact significance in this EIS.

The impact significance is a combined function of the value of the affected feature (its ecological importance), the type of impact and the magnitude of the impact.

Evaluation of Ecological Importance

TABLE A5.6.1 Criteria for assessing ecological importance

Importance	Criteria
International	Sites which qualify for designation as SACs or SPAs
National[1]	Sites which qualify for designation as NHAs
	Sites which hold Red Data Book (Curtis and McGough, 1988) plant species
	Sites which hold nationally rare invertebrate species, subject to an evaluation as to whether their known status may be largely due to under-recording
	Sites which hold nationally rare vertebrate species (as defined by Whilde, 1993)
	Sites which hold nationally important bird populations (defined as 1% of the national population; Sheppard, 1993)
County	Sites which hold nationally scarce plant species (recorded from less than 65 10 km squares[2]), unless they are locally abundant
	Sites which hold nationally scarce invertebrate species (recorded from less than 65 10 km squares[2]), unless they are locally abundant and subject to an evaluation as to whether their known status may be largely due to under-recording
	Sites which hold regionally scarce vertebrate species
	Sites which hold semi-natural habitats likely to be of rare occurrence within the county
	Sites which hold the best examples of a semi-natural habitat type within the county
High Local Importance	Sites which hold semi-natural habitats and/or species likely to be of rare occurrence within the local area
	Sites which hold the best examples of a high quality semi-natural habitat type within the local area
Local Importance	Sites which hold high quality semi-natural habitats
Local Value	Any semi-natural habitat

[1] the island of Ireland.
[2] based pro-rata on the British criteria of 100 10 km squares (JNCC, 1995).

There is no systematic evaluation of ecological importance below a national scale in Ireland. Even for sites of national importance (i.e. pNHAs), there are no formal criteria available for their evaluation. The criteria shown in Table A5.6.1 have been developed by RPS Consultants. This is based on an international-national-county-local scale. The local scale is approximately equivalent to one 10 km square but can be operationally defined to reflect the character of the area of interest. For example, for riparian features it could be a section of a

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:23

river catchment. Because most sites will fall within the local scale, this is sub-divided into high local importance-local importance-local value.

Assessment of Impact Type and Magnitude

Criteria for assessing impact type and magnitude are presented in Tables A5.6.2 and A5.6.3, respectively.

TABLE A5.6.2 Criteria for assessing impact type

Impact type	Criteria
Positive impact:	A change to the ecology of the affected feature which improves its conservation status.
Negative impact:	A change to the ecology of the affected feature which reduces its conservation status.

TABLE A5.6.3 Criteria for assessing impact magnitude

Impact magnitude	Definition
No change:	No discernible change in the ecology of the affected feature.
Imperceptible Impact:	A change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries.
Slight Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary, but these consequences are not considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance[1].
Moderate Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance.
Substantial Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect species or habitats of high conservation importance and to potentially affect the overall viability of those species or habitats in the wider area[2].
Profound Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to be such that the overall viability of species or habitats of high conservation importance in the wider area[2] is under a very high degree of threat (negative impact) or is likely to increase markedly (positive impact).

[1] it is not possible to define specific numerical thresholds, as different species/habitat have varying degrees of resilience to ecological peturbation.
[2] i.e., the area relevant to the assessed importance of the feature.

Consent of copyright owner required for any other use.
For inspection purposes only.

REFERENCES

Curtis, T.G.F. and McGough, H.N. (1988). *The Irish Red Data Book. 1 Vascular Plants.* The Stationery Office, Dublin.

EPA (Environmental Protection Agency) (1995). *Draft Guidelines on the Information to be Contained in Environmental Impact Statements.* Environmental Protection Agency, Wexford.

Gittings, T. (1998). Assessing the significance of ecological impacts: a proposed framework and terminology. *8th Environmental Researchers Colloquium, RTC Sligo, 30th January to 1st February 1998, Book of Abstracts*, p. 26.

JNCC (Joint Nature Conservation Committee) (1995). *Guidelines for Selection of Biological SSSIs.* Joint Nature Conservation Committee, Peterborough, UK.

Sheppard, R. (1993). *Ireland's Wetland Wealth: the birdlife of the estuaries, lakes, coasts, rivers, bogs and turloughs of Ireland (The report of the Winter Wetlands Survey, 1984/85 to 1986/87).* Irish Wildbird Conservancy, Dublin.

Whilde, A. (1993). Threatened Mammals, Birds, Amphibians and Fish in Ireland. Irish Red Data Book 2: Vertebrates. HMSO, Belfast.

EPA Export 26-02-2016:00:50:23

APPENDIX 2

Selected Waste Acceptance Procedures

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

E. 3. (d) Sludge acceptance

PURPOSE:

To provide a procedure for the characterisation and acceptance of sludge on site

RESPONSIBILITY:

It is the responsibility of the laboratory personnel and the engineering manager to carry out this procedure.

PROCEDURE:

Consent of copyright owner required for any other use. For inspection purposes only.

Waste acceptance

1. Prior to acceptance a sludge characterisation is carried out(See attached form 1 for range of sludge characterisations which may be carried out on individual sludges to be accepted on site. Additional parameters may be carried out on a sludge sample depending on the source of sludge).
2. Dry Solids content **must** be between 20-35% for processing.
3. Sludge can only be processed upon approval of the sludge characterisation by the EPA. Once it has been approved by the EPA the Laboratory supervisor can approve the acceptance of the and sign off Form 1.
4. Once sludge has been accepted it can be received on site and the weight recorded at the waste reception area.
5. C1 documentation will be stored by the laboratory personnel upon receival on site.

Processing

6. Sludge is pumped into the 50,000litre hopper holding area where it is held until ready for processing.
7. The operation of the sludge dryer is fully automated and is controlled by a designated operator as per procedure.
8. Once sludge is ready for discharge it will be tested for the required parameters
9. Volumes of sludge generated will be recorded by the operator.

Removal off site

10. Once the sludge has been dried it will be fed into covered skips or IBCs
11. Finished product is stored in the designated storage area until such time as it is removed off site.
12. Removal can be either in bulk or in individual IBC bags.

EPA Export 26-02-2016:00:50:23

RELATED RECORDS:

Sludge characterisation
Sludge analysis records

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

Form 1 Sludge Characterisation	
Material Producer:	
Material Description:	
EWC Code:	
Batch No:	

Parameter		Analysis Method		Result
Major Oxides				
Al_2O_3		RFA - XRF	% DS	
CaO		RFA - XRF	% DS	
Fe_2O_3		RFA - XRF	% DS	
SiO_2		RFA - XRF	% DS	
Minor Oxides				
K_2O		RFA - XRF	% DS	
MgO		RFA - XRF	% DS	
MnO		RFA - XRF	% DS	
Na_2O		RFA - XRF	% DS	
SrO		RFA - XRF	% DS	
TiO_2		RFA - XRF	% DS	
$Na_2O + 0.67\ K_2O$		RFA - XRF	% DS	
Contaminants				
Class I				
	Hg	ICP-MS	mg/kg DS	
Class II				
	Cd	ICP-MS	mg/kg DS	
	Tl	ICP-MS	mg/kg DS	
Class III				
	As	RFA - XRF	mg/kg DS	
	B	ICP-MS	mg/kg DS	
	Be	ICP-MS	mg/kg DS	
	Co	RFA - XRF	mg/kg DS	
	Cr	RFA - XRF	mg/kg DS	
	Cu	RFA - XRF	mg/kg DS	
	Mn	RFA - XRF	mg/kg DS	
	Ni	RFA - XRF	mg/kg DS	
	Pb	RFA - XRF	mg/kg DS	
	Sb	RFA - XRF	mg/kg DS	
	Se	ICP-MS	mg/kg DS	
	Sn	RFA - XRF	mg/kg DS	
	Te	ICP-MS	mg/kg DS	
	Ti	RFA - XRF	mg/kg DS	
	V	RFA - XRF	mg/kg DS	
	Zn	RFA - XRF	mg/kg DS	

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

Parameter		Analysis Method		Result
ORGANICS				
Phenol		R2.21.2	mg/kg DS	
Σ PAHC $_{EPA}$		38407/8	mg/kg DS	
Σ PCB		38414/20	mg/kg DS	
AOX			mg/kg DS	
EOX			mg/kg DS	
BTEX			mg/kg DS	
Mineral Oil			mg/kg DS	
TOC = Total Organic Carbon			mg/kg DS	
VOC $_{(200\text{-}400°C)}$		GC-MS	mg/kg DS	
HC		38409/18 IR	mg/kg DS	
OTHER CONSTITUENTS				
Chlorine $_{total}$		RFA - XRF	mg/kg DS	
CN $_{total}$		R2.5.1	mg/kg DS	
Fluor		RFA - XRF	mg/kg DS	
P $_{total}$		RFA - XRF	mg/kg DS	
N $_{total}$		RFA - XRF	mg/kg DS	
SO_3 (total)		RFA - XRF	% DS	
S as Sulphur		RFA - XRF	mg/kg DS	
PHYSICAL PARAMETER				
Dry Substance (at 105°C)			%	
Loss of Ignition (2 h at 1050 °C)			% DS	

Additional parameters requested

Additional comments:

Signature:

Date:

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:23

Document:	**Laboratory Manual**	**Version No. 1**
Title:	**Incoming waste solvents**	**Issued: Uncontrolled**
Section:	**W.I No. (Pending)**	
Approved by	**(Pending)**	**Page 1of 1**

PURPOSE:

To issue guidelines to outline the procedure for acceptance for waste solvents

RESPONSIBILITY:

It is the Yard Staff/Truck Drivers and Laboratory to ensure the waste is properly segregated and tested in accordance with these procedures.

PROCEDURES:

1. The incoming waste barrels/ IBC's are placed in the incoming area
2. The identification on the barrel is placed in a logbook along with a unique identifier
3. A sample is obtained from each container and storage tanks
4. A water test is performed as per lab procedure LP 8
5. A calorific Value is calculated as per relevant Lab Procedure
6. Laboratory compatibility is performed as per relevant Lab Procedure
7. The Halogen content is calculated as per relevant Lab Procedure
8. The polymerization test is performed as per relevant Lab Procedure
9. The results for each container or group of containers is placed on the form- comparability sheet along with the unique identifier
10. From the compatibility test sheet the lab technician places the sticker for the appropriate location the container is deemed to go.

Consent of copyright owner required for any other use.
For inspection purposes only.

RELATED RECORDS

Compatability test sheet
Analysis Results Files

EPA Export 26-02-2016:00:50:23

E.3. (e) Solvent Acceptance

PURPOSE:

To provide a procedure for the acceptance and storage of waste solvents.

RESPONSIBILITY:

It is the responsibility of the laboratory personnel and the HSE Co-ordinator and the waste co-ordinator to ensure this procedure is carried out

PROCEDURE:

1. A waste solvent check sheet is filled out by the waste co-ordinator upon contact with the customer.

2. On form 1 (attached) the waste co-ordinator records the name, address, waste description, volume and whether a sample or an MSDS was received prior to acceptance. Either an MSDS or a sample **must** be sought prior to acceptance. Acceptance of the solvent must then be signed off by laboratory personnel.

3. A despatch note will be issued by the waste co-ordinator. The customer will sign off the despatch note and the appropriate C1 form upon collection.

4. Waste will be collected by Atlas or other approved carriers depending on the volumes to be collected.

5. All C1 forms will be stored by the laboratory personnel.

6. Once the waste is received on site it will be inspected. Where solvents are to be bulk stored compatability testing is carried out as per attached laboratory procedure.

7. When there is sufficient volume, solvent will be moved off site in accordance with TFS Regulations.

RELATED RECORDS:

Waste solvent acceptance check sheet
Laboratory compatibility tests

Consent of copyright owner required for any other use. For inspection purposes only.

EPA Export 26-02-2016:00:50:23

Name of Customer:		
Address:		
Date:		
Waste Description:		
Volume:		
Sample received:	Yes	No.
MSDS available:	Yes	No.
Laboratory personnel sign-off:		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

APPENDIX 3

Air Quality Tables

EPA Export 26-02-2016:00:50:23

Table 8.1: EU Ambient Air Standard 1999/30/EC.

Pollutant	Regulation	Limit Type	Margin of Tolerance	Value
Nitrogen Dioxide	1999/30/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	50% until 2001 reducing linearly to 0% by 2010	200 $\mu g/m^3$ NO_2
		Annual limit for protection of human health	50% until 2001 reducing linearly to 0% by 2010	40 $\mu g/m^3$ NO_2
		Annual limit for protection of vegetation	None	30 $\mu g/m^3$ NO + NO_2
Lead	1999/30/EC	Annual limit for protection of human health	100% until 2001 reducing linearly to 0% by 2005	0.5 $\mu g/m^3$
Sulphur dioxide	1999/30/EC	Hourly limit for protection of human health - not to be exceeded more than 24 times/year	43% until 2001 reducing linearly until 0% by 2005	350 $\mu g/m^3$
		Daily limit for protection of human health - not to be exceeded more than 3 times/year	None	125 $\mu g/m^3$
		Annual & Winter limit for the protection of ecosystems	None	20 $\mu g/m^3$
Particulate Matter Stage 1	1999/30/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50% until 2001 reducing linearly to 0% by 2005	50 $\mu g/m^3$ PM_{10}
		Annual limit for protection of human health	20% until 2001 reducing linearly to 0% by 2005	40 $\mu g/m^3$ PM_{10}
Particulate Matter Stage 2	1999/30/EC	24-hour limit for protection of human health - not to be exceeded more than 7 times/year	To be derived from data and to be equivalent to Stage 1 limit value	50 $\mu g/m^3$ PM_{10}
		Annual limit for protection of human health	50% until 2005 reducing linearly to 0% by 2010	20 $\mu g/m^3$ PM_{10}

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:23

Table 8.2: EU Ambient Air Standard 2000/69/EC.

Pollutant	Regulation	Limit Type	Margin of Tolerance	Value
Benzene	2000/69/EC	Annual limit for protection of human health	100% until 2003 reducing linearly to 0% by 2010	5 $\mu g/m^3$
Carbon Monoxide	2000/69/EC	8-hour limit (on a rolling basis) for protection of human health	50% until 2003 reducing linearly to 0% by 2005	10 mg/m^3

Table 8.3: Predicted GLCs of VOCs at the nearest Sensitive Receptors[2] in the vicinity of the proposed development.

Parameter	Annual Average Concentration[1] ($\mu g/m^3$)	99%ile Concentration[1] ($\mu g/m^3$)
Benzene	0.39	-
Toluene	-	16.6
Ethylbenzene	-	3.9
Xylene	-	30.0
Total VOCs	-	317.0

Notes: (1) National Environmental Sciences Report Reference 330964/AR04.0
(2) Rowan Park and Oak Park

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 8.4: Odour emission rate calculation from the area source sludge storage tanks on site without abatement protocols implemented

Source	Exposed surface area (m^2)	Specific Odour emission rate ($Ou_E\ m^{-2}\ s^{-1}$)	Process emission ($Ou_E\ s^{-1}$)
Sludge storage tank	2	2000[1]	4000[1]

[1] denotes those processes that odour emission rate was assumed

EPA Export 26-02-2016:00:50:23

Table 8.5: Odour emission rate calculation from the area source sludge storage tank on site with abatement protocols implemented

Source	Exposed surface area (m^2)	Specific Odour emission rate ($Ou_E\ m^{-2}\ s^{-1}$)	*Process emission* ($Ou_E\ s^{-1}$)
Sludge storage tank	0	-	400[2]

[2]denotes the total emission contributed to odour abatement system assuming a minimum removal efficiency of 90%.

Table 8.6: Emission rate calculation from point source Sludge dryer stack calculated using maximum odour emission rate and ventilation rate specified without abatement protocols implemented.

Source	Odour concentration ($Ou_E\ m^{-3}$)	Number of Fans per building	Ventilation Rate ($m^3\ s^{-1}$)	Odour emission rate per fan ($Ou_E\ s^{-1}$)	Total Odour emission rate
Sludge dryer stack	2000	1	0.417	834[3]	834

[3] denotes those processes that odour emission rate was assumed

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 8.7: Emission rate calculation from point source Sludge dryer stack calculated using assumed maximum odour emission rate and ventilation rate specified with abatement protocols implemented.

Source	Odour concentration ($Ou_E\ m^{-3}$)	Number of Fans per building	Ventilation Rate ($m^3\ s^{-1}$)	Odour emission rate per fan ($Ou_E\ s^{-1}$)	Total Odour emission rate
Sludge dryer stack	200	1	3.15	83.4[4]	83.4[3]

[4]denote the total odour emission rate contributed to the odour abatement system assuming 90% removal efficiency.

EPA Export 26-02-2016:00:50:23

Table 8.8 Odour annoyance criteria for dispersion modelling

Concentration Limit Ou_E m^{-3}	Percentile value %	Application
Dutch		
≤1.5	98	Waste water treatment works existing site, residential dwellings in area
≤3.5	98	Wastewater treatment works existing site, rural area or industrial estate.
Germany		
≤4	98	Waste water treatment works, level at which odour nuisance experienced).
English		
≤5	98	Waste water treatment works Greenfield site,
≤10	98	Waste water treatment works existing site, some nuisance expected
Ireland		
≤1.5	98	No nuisance expected around a pig production facility
≤3.0	98	Minimal nuisance expected around new pig production facility
≤6.0	98	Minimal nuisance expected around existing pig production facility

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

APPENDIX 4

Traffic Modelling Data

EPA Export 26-02-2016:00:50:23

TRL Ltd.

(C) TRL Ltd. 1996

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PROGRAM PICADY/3
RELEASE 1.5 (DECEMBER 1996)

FOR PROGRAM ADVICE AND MAINTENANCE CONTACT:-
MAINTENANCE CONTRACTOR LISTED IN USER GUIDE

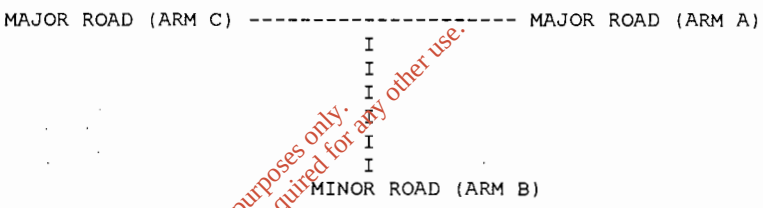
FOR SALES AND DISTRIBUTION INFORMATION
CONTACT TRL Ltd., Tel: CROWTHORNE (01344) 770176

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

ATLAS AM CURRENT

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS N8 FROM BYPASS
ARM B IS FROM CLONMINAM
ARM C IS N8 FROM PORTLAOISE

STREAM LABELING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B ETC.

For inspection purposes only.
Consent of copyright owner required for any other use.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	4.00 M.
- VISIBILITY	(VC-B)	200.0 M.
- BLOCKS TRAFFIC		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	200.0 M.
- VISIBILITY TO RIGHT	(VB-A)	200.0 M.
- LANE 1 WIDTH	(WB-C)	2.20 M.
- LANE 2 WIDTH	(WB-A)	2.20 M.

LOCAL DATA

ONE OR MORE CAPACITIES HAVE BEEN ADJUSTED
ACCORDING TO LOCAL VALUES INPUT FROM A PREVIOUS RUN AND LISTED BELOW

STREAM	ADJUSTMENT TO CAPACITY (PCU/MIN)

TRAFFIC DEMAND DATA

EPA Export 26-02-2016:00:50:23

TIME PERIOD BEGINS 08.00 AND ENDS 09.00
LENGTH OF TIME PERIOD - 60 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
08.00 - 08.15				
	ENTRY	7.5	2.0	5.7
	EXIT	4.6	4.1	6.5
08.15 - 08.30				
	ENTRY	6.8	2.2	5.7
	EXIT	3.9	4.5	6.3
08.30 - 08.45				
	ENTRY	8.1	2.9	7.3
	EXIT	5.7	5.3	7.1
08.45 - 09.00				
	ENTRY	10.9	3.7	10.6
	EXIT	7.9	7.9	9.5

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 09.00				
	ARM A	0.000	0.297	0.703
		(0.0)	(43.3)	(43.3)
	ARM B	0.440	0.000	0.560
		(68.5)	(0.0)	(68.5)
	ARM C	0.594	0.406	0.000
		(36.2)	(36.2)	(0.0)

0TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS

For inspection purposes only.
Consent of copyright owner required for any other use.

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
							08.00-08.15	
B-C	1.12	5.05	0.221		0.0	0.3	3.9	
B-A	0.88	3.27	0.270		0.0	0.4	4.9	
C-A							3.36	
C-B	2.30	7.56	0.304		0.0	0.4	6.1	
A-B							2.24	
A-C							5.29	

EPA Export 26-02-2016:00:50:23

I TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT) I
I							08.15-08.30	I
I B-C	1.23	5.15	0.239		0.3	0.3	4.5	I
I B-A	0.97	3.38	0.286		0.4	0.4	5.7	I
I		C-A					3.40	I
I C-B	2.33	7.81	0.298		0.4	0.4	6.4	I
I		A-B					2.02	I
I		A-C					4.78	I
I								I

I TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT) I
I							08.30-08.45	I
I B-C	1.61	4.71	0.341		0.3	0.5	7.1	I
I B-A	1.26	2.81	0.449		0.4	0.8	10.3	I
I		C-A					4.32	I
I C-B	2.95	7.38	0.400		0.4	0.7	9.3	I
I		A-B					2.40	I
I		A-C					5.67	I
I								I

I TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT) I
I							08.45-09.00	I
I B-C	2.09	3.59	0.582		0.5	1.3	16.7	I
I B-A	1.64	1.55	1.059		0.8	5.3	51.3	I
I		C-A					6.29	I
I C-B	4.31	6.42	0.671		0.7	1.9	24.8	I
I		A-B					3.25	I
I		A-C					7.68	I
I								I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.3	
08.30	0.3	
08.45	0.5	*
09.00	1.3	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.4	
08.45	0.8	*
09.00	5.3	*****

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.4	
08.45	0.7	*
09.00	1.9	**

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	90.6	90.6	32.3	0.36	32.5	0.36
B-A	71.4	71.4	72.2	1.01	81.3	1.14
C-A	260.6	260.6				
C-B	178.3	178.3	46.7	0.26	46.9	0.26
A-B	148.6	148.6				
A-C	351.3	351.3				
ALL	1100.9	1100.9	151.2	0.14	160.8	0.15

For inspection purposes only.
Consent of copyright owner required for any other use.

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRL Ltd.

(C) TRL Ltd. 1996

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PROGRAM PICADY/3
RELEASE 1.5 (DECEMBER 1996)

FOR PROGRAM ADVICE AND MAINTENANCE CONTACT:-
MAINTENANCE CONTRACTOR LISTED IN USER GUIDE

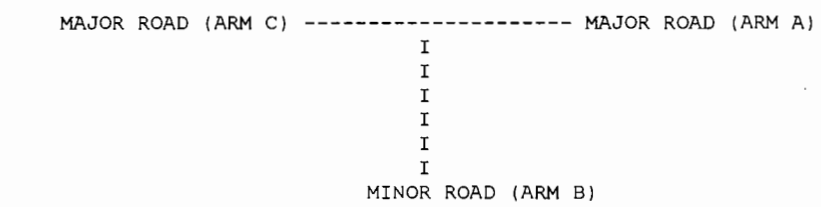
FOR SALES AND DISTRIBUTION INFORMATION
CONTACT TRL Ltd., Tel: CROWTHORNE (01344) 770176

EPA Export 26-02-2016:00:50:23

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION
ATLAS_AM_EXPANSION

MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS N8 FROM BYPASS
ARM B IS CLONMINAM ROAD
ARM C IS N8 FROM PORTLAOISE

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	4.00 M.
- VISIBILITY	(VC-B)	200.0 M.
- BLOCKS TRAFFIC		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	200.0 M.
- VISIBILITY TO RIGHT	(VB-A)	200.0 M.
- LANE 1 WIDTH	(WB-C)	2.20 M.
- LANE 2 WIDTH	(WB-A)	2.20 M.

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCAL DATA

ONE OR MORE CAPACITIES HAVE BEEN ADJUSTED
ACCORDING TO LOCAL VALUES INPUT FROM A PREVIOUS RUN AND LISTED BELOW

STREAM	ADJUSTMENT TO CAPACITY (PCU/MIN)

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.00
LENGTH OF TIME PERIOD - 60 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL	ARM A	ARM B	ARM C
08.00 - 08.15			
ENTRY	7.6	2.0	5.7
EXIT	4.6	4.2	6.5
08.15 - 08.30			
ENTRY	6.9	2.2	5.8
EXIT	3.9	4.7	6.3

EPA Export 26-02-2016:00:50:23

08.30 - 08.45			
ENTRY	8.1	2.9	6.9
EXIT	5.7	5.5	7.1
08.45 - 09.00			
ENTRY	11.0	3.7	10.7
EXIT	7.9	8.1	9.5

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 09.00	ARM A	0.000 (0.0)	0.306 (45.7)	0.694 (45.7)
	ARM B	0.448 (68.5)	0.000 (0.0)	0.552 (68.5)
	ARM C	0.588 (36.2)	0.412 (36.2)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS

For inspection purposes only.
Consent of copyright owner required for any other use.

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)
							08.00-08.15
B-C	1.10	5.02	0.220		0.0	0.3	3.9
B-A	0.90	3.22	0.278		0.0	0.4	5.1
		C-A					3.37
C-B	2.36	7.50	0.315		0.0	0.5	6.4
		A-B					2.32
		A-C					5.28

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)
							08.15-08.30
B-C	1.22	5.11	0.238		0.3	0.3	4.5
B-A	0.98	3.33	0.295		0.4	0.4	5.9
		C-A					3.41
C-B	2.39	7.74	0.308		0.5	0.4	6.7
		A-B					2.10

EPA Export 26-02-2016:00:50:23

		A-C						4.77

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-C	1.59	4.68	0.339		0.3	0.5	7.0	
B-A	1.28	2.85	0.451		0.4	0.8	10.4	
		C-A					4.08	
C-B	2.85	7.31	0.390		0.4	0.6	9.0	
		A-B					2.48	
		A-C					5.65	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-C	2.06	3.56	0.578		0.5	1.3	16.5	
B-A	1.67	1.48	1.129		0.8	6.2	58.0	
		C-A					6.31	
C-B	4.42	6.33	0.698		0.6	2.1	27.2	
		A-B					3.36	
		A-C					7.64	

For inspection purposes only.
Consent of copyright owner required for any other use.

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.3	
08.30	0.3	
08.45	0.5	
09.00	1.3	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.4	
08.45	0.8	*
09.00	6.2	******

EPA Export 26-02-2016:00:50:23

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.5	
08.30	0.4	
08.45	0.6	*
09.00	2.1	**

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	89.5	89.5	31.9	0.36	32.2	0.36
B-A	72.5	72.5	79.5	1.10	92.6	1.28
C-A	257.6	257.6				
C-B	180.3	180.3	49.4	0.27	49.7	0.28
A-B	154.0	154.0				
A-C	350.0	350.0				
ALL	1103.9	1103.9	160.8	0.15	174.5	0.16

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

APPENDIX 5

Glossary

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

APPENDIX 4 - GLOSSARY OF TERMS

Amelioration
Measures to diminish a negative impact.

Acquifer
A body of permeable rock that is capable of storing significant quantities of water.

Aquiclude
A rock with very low permeability, impermeableto groundwater flow, which may act as a boundary to an aquifer.

Baseline Survey
A description of the existing environment against which future changes can be measured.

BATNEEC - Best available technology not entailing excessive costs
Use of BATNEEC means that a greater degree of control over emissions to land, air and water may be exercised, utilizing the best currently available technologies. In the identification of BATNEEC emphasis is placed in pollution prevention techniques including cleaner technologies and waste minimization. Required under by the EPA as part of Integrated Pollution Control.

Biotic
Processes which relate to living organisms.

BPEO - Best Practicable Environmental Option
Takes accounts of the total pollution from a process (including the risk of transfer of pollutants from one medium to another) and the technical possibilities for dealing with it.

For inspection purposes only.
Consent of copyright owner required for any other use.

Competent Authority
Any agency charged with examining an Environmental Impact Statement with a view to issuing a consent to develop.

Commissioning
The rendering fully operational of a project or process.

Decommissioning
The final closing down, and putting into a state of safety of a development, project or process when it has come to the end of its useful life.

"Do nothing" Scenario
The situation or environment which would exist if no intervention or development were carried out.

Ecology
The study of the relationships between living organisms and between organisms and their environment (especially animal and plant communities), their energy flows and their interactions with their surroundings.

Effluent
Any fluid discharged from a source into the environment.

Environmental Impact Assessment - EIA
The process of examining the environmental effects of development - from consideration of environmental aspects at design stage through to preparation of an Environmental Impact Statement, evaluation of the EIS by a competent authority and the subsequent decision as to whether the development should be permitted to proceed, also encompassing public response to that decision.

Environmental Impact Statement - EIS
(sometimes study)

EPA Export 26-02-2016:00:50:23

A statement of the effects, if any, which the proposed development, if carried out, would have on the environment.

Emission
The amount of pollutant discharged per unit time, or the amount of pollutant per unit volume of gas or liquid emitted.

EPA
The Environmental Protection Agency.

Hydrology
The science concerned with the occurrence and circulation of water in all its phases and modes, and the relationship of these to man.

Impact
The degree of change in an environment resulting from a development.

Infrastructure
The basic structure, framework or system which supports the operation of a development project for example, installations such as roads and sewers which are necessary to support development projects.

Integrated Pollution Control - IPC
Aims to prevent or solve pollution problems rather than transferring them from one medium to another. all major emissions to land, air and water are considered simultaneously and not in isolation in order to minimize pollution of the environment as a whole.

Land-use
The activities which take place within a given area of space.

Life Cycle
Refers to the stages in the life of a process or development including construction, operation, existence, extraction, manufacture, storage, transport, handling, use, disposal and decommissioning.

Methodology
The specific approach or techniques used to analyse impacts or describe environments.

Mitigation
Measures designed to avoid, reduce, remedy or compensate for impacts.

Monitoring
The repetitive and continued observation, measurement and evaluation of environmental data to follow changes over a period of time, to assess the efficiency of control measures.

NGO
An acronym used to describe Non Governmental Organisations.

Paleobiology
The scientific study of the environments of past geological times, their land forms, climates and flora and fauna.

Particulates
Fine solids or liquid droplets suspended in the air.

Pedology
The scientific study of the formation, characteristics, distribution and use of soils.

Pollution
Any release to the environment which has a subsequent adverse effect on the environment or man.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

Precautionary Principle
The theory that the absence of complete information should not preclude precautionary action to mitigate the risk of significant harm to the environment.

Processes
The activities which take place within a development.

Project Promoter
A term sometimes used to describe persons or organisations carrying out a development.

Radio Nuclide
An atom that has an unstable nucleus which spontaneously disintegrates and emits radiation (alpha, beta particles or gamma radiation or both).

Receptor
Any element in the environment which is subject to impacts.

Residual Impact
The degree of environmental change that will occur *after* the proposed mitigation measures have taken effect.

Risk Assessment
An analytical study of the probabilities and magnitude of harm to human health or the environment associated with a physical or chemical agent, activity or occurrence.

Scoping
The process of identifying the significant issues which should be addressed by a particular Environmental Impact Assessment.

For inspection purposes only.
Consent of copyright owner required for any other use.

Screening
The process of assessing the requirement of a project to be subject to Environmental Impact Assessment based on project type and scale and on the significance or environmental sensitivity of the receiving environment.

Scrubber
Device for flue gas cleaning.

Sensitivity
Vulnerability of a sensitive receptor or environment to an adverse impact.

Significance
The degree of social or scientific concern attached to a likely impact.

Statutory EIS
A term sometimes used to describe an EIS prepared in accordance with the regulations.

Statutory Consultees
Organisations and authorities stipulated by Legislation to be notified by a competent authority if an application is made which might give that organisation a cause for concern

Threshold
The magnitude of a project which, if exceeded, will trigger the requirement for an Environmental Impact Assessment to be carried out.

Vector
An organism (animal or fungus, for example) which transmits or acts as a carrier of parasites or disease.

From: EPA (2001) *Preliminary Draft Revised EPA Guidelines*

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

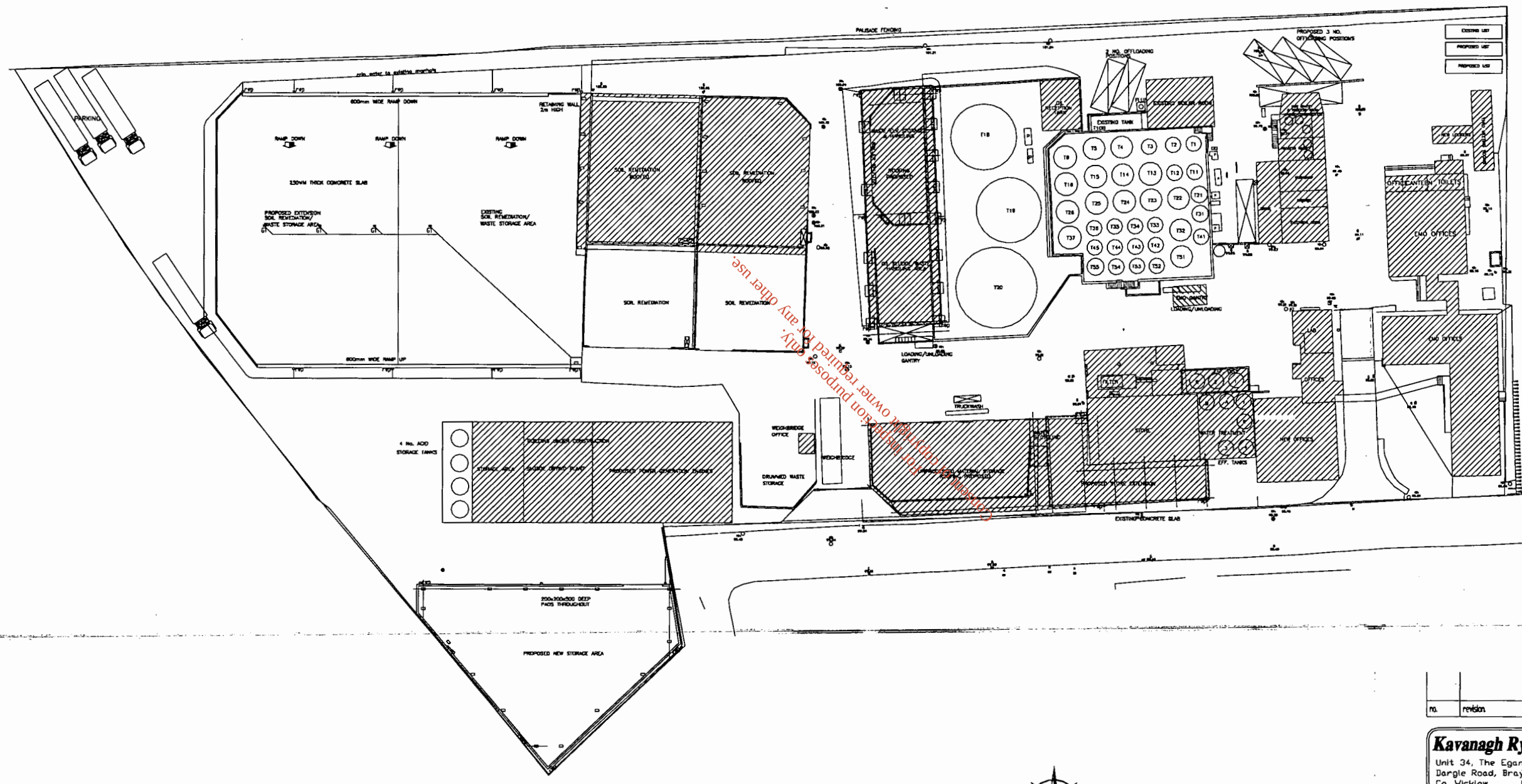
For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

EPA Export 26-02-2016:00:50:23



no.	revision	date

Kavanagh Ryan & Associates.
Unit 34, The Egan Centre,
Dargle Road, Bray.
Co. Wicklow.
Tel. 2765661/662 Fax. 2765663
E-mail. kryan@eircom.net

DRAWING TITLE

SITE LAYOUT
(including proposed developments)

ATLAS ENVIRONMENTAL IRELAND
CLONMINAM IND. EST.
PORTLAOISE, Co. LAOIS.

DRAWN GKR	SCALE 1:400	DRAWING No. FIGURE 2.2
JOB. No.	DATE AUG – 02	

Consent of copyright owner required for any other use.
For inspection purposes only.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 26-02-2016:00:50:23