Non-Technical Summary (Attachment-1-2)

Irish Distillers Pernod Ricard
IDL Midleton Distillery Expansion
IE0313231-22-RP-0025, Issue: B

Issue date: 13 May 2024

Document Sign Off

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IDL Midleton Distillery Expansion
IE0313231-22-RP-0025, Issue B

File No:IE0313231.22.040

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Contents

1 Introduction 5

2 Class of Activity 7

3 Environmental Impact Assessment & Appropriate Assessment 8

3.1 Environmental Impact Assessment (EIA) 8
3.2 Appropriate Assessment (AA) 9
3.3 Alternatives to the Proposed Development 10

4 Site Description 12

4.1 Site Location and Surrounding Land Use 12
4.2 Existing and Proposed Site Layout 13
4.3 Site Operations and Processes 15
4.4 Other Consents 18
4.5 Control of Major Accident Hazards (COMAH) 18

5 Environmental Site Conditions 19

5.1 Geology 19
5.2 Hydrogeology 20
5.3 Hydrology 21
5.4 Air Quality 22
5.5 Noise Environment 23

6 Materials, Resources & Energy 24

6.1 Materials 24
6.2 Water Use 25
6.3 Energy Use 26

7 Emissions Overview 29

7.1 Emissions to Air 29
7.2 Emissions to Surface Water 32
7.3 Emissions to Sewer 32
7.4 Storm Water Emissions 34
7.5 Noise Emissions 37

8 Waste Management 38

8.1 Waste Prevention 38
8.2 Waste Management Procedure 39
8.3 Waste Types 39

9 Pollution Prevention 41
9.1 Environmental Management System 41
9.2 Abnormal Operating Conditions 41

10 Best Available Techniques (BAT) 43

11 Cessation of Site Activities 44

Qualifying Statement (disclaimer)

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1 Introduction

Irish Distillers Limited (IDL) (CRO number 23732) has initiated a review of Industrial Emissions (IE) Licence P0442-02 for their installation located at Midleton Distilleries, Midleton, Co. Cork. In accordance with the requirements of the EPA's "*Licence Application Form Guidance: Industrial Emissions (IE), Integrated Pollution Control (IPC) and Waste (Version 2.1 – June 2021)*", the purpose of this report is to fulfil the requirements of Section 1, Subsection 1.2 of IE Licence Review Application No. LA010327, hereinafter referred to as the Application, which requires a Non-Technical Summary Report.

IDL propose to expand their installation with planning permission granted on 28th February 2024 (planning ref. 23/04602) for the Midleton Capacity Expansion development (see Figure 1-1) which includes:

1. Construction of additional production buildings and associated infrastructure on undeveloped greenfield lands located to the south-east of the existing distillery including:
    - 1.1. A 'Pot Still' building with ancillary pot still tank farm and Mechanical Vapour Recompression (MVR) building;
    - 1.2. A 'Column Still' building with ancillary column still tank farm and cooling tower;
    - 1.3. A 'Brew house' building and ancillary fermenter structures;
    - 1.4. A piperack structure connecting the proposed Pot Still, Column Still and Brew house buildings with the existing distillery; and
    - 1.5. An internal link bridge crossing of the Dungourney River connecting the existing distillery and the proposed distillery extension.
2. Within the existing distillery site it is proposed to upgrade the existing waste water treatment plant (WWTP) including construction of an Anaerobic Digestion (AD) Plant involving:
    - 2.1. Demolition of an existing industrial building, removal of existing hardstand areas and culverting of a section of the existing mill race, to facilitate the construction of a biogas/AD plant comprising a series of plant and tank structures, a single storey ammonia removal building and change of use and alterations of existing Workshop/Warehouse no.1 and Warehouse no. 3 to accommodate associated plant and equipment.
3. Other ancillary structures including the construction of a single storey 38 kV substation and associated electrical compound, security buildings, staff welfare buildings and car park shelters. All other ancillary site development works including the diversion of existing gas and ESB lines which traverse the greenfield site, attenuation basins, fire water retention basin, noise attenuation fencing, parking areas, planted boundary berm and signage.

The proposed expansion will facilitate an increase in production capacity of the distillery across the expanded site from 70 million litres per annum (MLA) to 133 MLA.

An IE Licence Review is required on the basis that the expansion project requires a grant of planning permission, is subject to Environmental Impact Assessment (EIA) by the Planning Authority and required the preparation of a Natura Impact Statement (NIS) for consideration by the Planning Authority. Relevant planning documentation is provided in full in:

- *Attachment-6-3-1-Planning Decision-Feb-2024* which presents planning documentation from Cork County Council for planning ref. 23/04602;
- *Attachment-6-3-6-EIAR-Planning-March-2023* presents the Environmental Impact Assessment Report (EIAR) prepared in support of the planning application; and
- *Attachment-6-3-5-NIS-Planning-March-2023* presents the NIS prepared in support of the planning application.

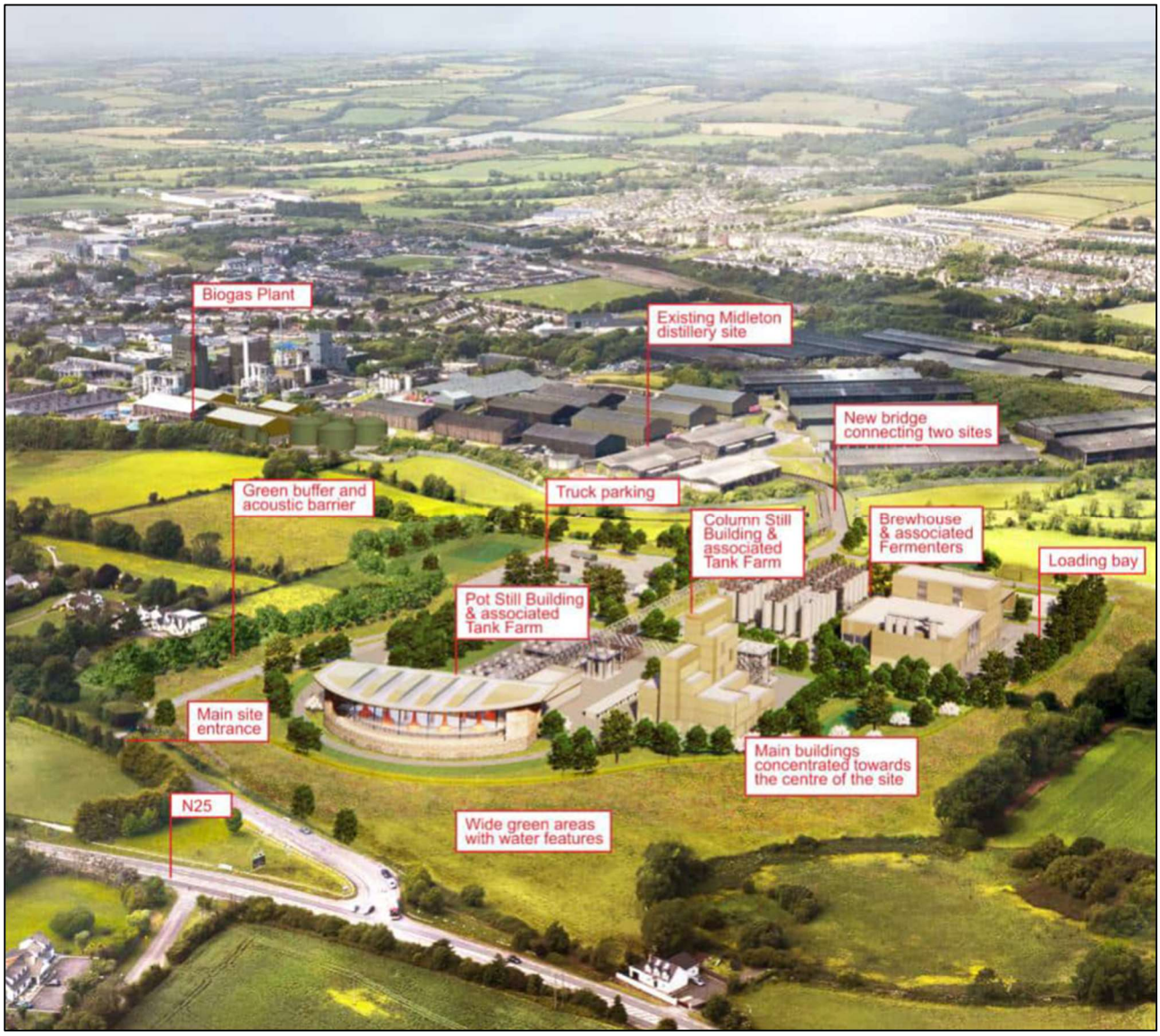

Figure 1-1 IDL Midleton, Overview of Proposed Midleton Capacity Expansion development

2 Class of Activity

IDL currently operates under revised Industrial Emissions (IE) Licence Reg. No. P0442-02 as issued on the 4th July 2013 including IE Directive (IED) Amendment January, 2014 and associated subsequent Technical Amendments.

The site is licensed for the following activities listed in the First Schedule of the EPA Act 1992 as amended:

> *IPC Activity Class 7.3.2 "Distilling in installations where the production capacity exceeds the equivalent of 1,500 tonnes per year measured as pure alcohol, not included in paragraph 7.8" and*
>
> *IED Activity Class 2.1 "Combustion of fuels in installations with a total rated thermal input of 50 MW".*

As a result of the expansion project and the associated increased production capacity, the current main Integrated Pollution Control (IPC) distilling activity, Class 7.3.2, will change to the following IED activity listed in the First Schedule of the EPA Act 1992 as amended:

> *IED Activity Class 7.8 (a) (ii) "The treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed from: only vegetable raw materials with a finished product production capacity greater than 300 tonnes per day or 600 tonnes per day where the installation operates for a period of no more than 90 consecutive days in any year."*

3 Environmental Impact Assessment & Appropriate Assessment

3.1 Environmental Impact Assessment (EIA)

An Environmental Impact Statement Report (EIAR) dated March 2023 was submitted to Cork County Council in support of planning application ref. 23/04602 and is provided in full in *Attachment-6-3-6-EIAR-Planning-March-2023* of this Application. A summary of residual effects associated with the proposed development as assessed in the EIAR is presented in Table 3-1.

Mitigation measures to prevent significant environmental effects during construction of the development are outlined throughout the EIAR. A Construction Environmental Management Plan (CEMP) has been prepared detailing necessary construction phase mitigation measures and environmental monitoring required. The CEMP will set the basis for ongoing management of construction activity and will incorporate the requirements of planning conditions specified for the protection of the environment (planning conditions are presented in *Attachment-6-3-1-Planning Decision-Feb-2024*). The Construction Management team will supervise all aspects of the construction phase and ensure mitigation measures and environmental monitoring detailed in the CEMP are implemented.

With regard to emissions generated during the operation of the expanded facility, mitigation and abatement measures have been incorporated in the design of the expanded facility. As such, the changes to on-site activities are not likely to result in significant residual effects on the environment with further information presented in both the EIAR and the Emissions Impact Assessment Report submitted as part of this Application (refer to *Attachment-7-1-3-2-Emissions Impact Assessment)*.

Table 3-1 IDL Midleton Capacity Expansion Development, Summary of Residual Effects Identified in EIAR (March, 2023) following Implementation of Mitigation Measures

EIAR Chapter	Residual Effects
Traffic and Transportation	No significant residual effects predicted.
Landscape and Visual	No significant negative effects are predicted.
Biodiversity	No significant residual effects predicted.
Noise and Vibration	No significant residual effects predicted.
Air Quality	The operational phase of the expanded facility will have imperceptible effects on air quality and odour.
Climate	The potential impact to climate due to embodied carbon emissions during the construction phase will be negligible and long-term (<0.5% of the baseline emission level). Regarding vulnerability of the proposed development to climate change, no significant residual impacts are predicted.
Archaeology and Cultural Heritage	No significant residual effects are predicted.
Population and human health	Overall, a direct moderate positive long-term residual effect on population and human health is predicted to occur as a result of the economic and employment opportunity associated with the proposed development.
Resources and Waste Management	No significant negative effects on resource use and waste management during the operational phase are predicted, with a positive, long-term impact on the circular economy due to the

EIAR Chapter	Residual Effects
	continued re-use of distillery by-products and the incorporation of an AD plant. During decommissioning, predicted effects will be negative, not significant and short-term.
Water	It is predicted that the risks relating to flooding can be managed to an acceptable level following implementation of proposed mitigation measures. There is, therefore, a low likelihood and minor negative effects are predicted in relation to flood risk. No significant residual effect on water, flooding or the WFD status of receiving water bodies is predicted.
Land, Soils, Geology and Hydrogeology	No significant negative effects are predicted.
Material Assets	While there will be an increase in hardstanding as a result of the proposed development and, therefore, an increase in storm water run-off, measures to restrict of storm water discharge to pre-development greenfield rates are incorporated in the design of the facility. Therefore, a long-term, imperceptible negative effect is predicted. While the development incorporates a robust landscape plan which includes natural features in the design, the proposed development will result in the loss of greenfield land on lands zoned for industrial development. A long-term, moderate positive effect is predicted.
Major Accidents and Disasters	Given the existing controls and monitoring measures in place, the standard best practice construction measures to be implemented and the stringent procedures and plans, which are currently in operation within the IDL Midleton facility, no plausible major accidents or disaster hazards were identified to which the proposed development will be vulnerable.

Finally, the EIAR includes an assessment carried out to identify whether any of the effects outlined under the various assessment headings has the potential to give rise to cumulative and/or interactive effects based on best scientific knowledge. The EIAR concludes that no significant cumulative impacts were identified. While several interactions between various environmental factors have been identified, no significant residual interactive effects are predicted.

3.2 Appropriate Assessment (AA)

The proposed development does not overlap with a Natura 2000 site. However, the IDL site is hydrologically connected to the Great Island Channel Special Area of Conservation (SAC) and Cork Harbour Special Protection Areas (SPA), both located 8.5 km downstream (following the flow path of the Dungourney River) of the IDL site.

A comprehensive assessment of the potential impacts on Natura 2000 sites within the likely zone of influence of the Midleton Capacity Expansion Project is presented in a project specific Natura Impact Statement (NIS) (refer to *Attachment-6-3-5-NIS-Planning-March-2023*). The NIS detailed a range of design and mitigation measures that have been incorporated into the project to ensure there will be no impact on local water quality during the construction and operation of the proposed development, which will serve to protect both the Great Island Channel SAC and Cork Harbour SPA.

The NIS concluded that:

'*following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted effects from the proposed development and with the implementation of the mitigation measures proposed, that the construction and operation of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects.*'

3.3 Alternatives to the Proposed Development

A number of alternative scenarios for the proposed development were considered, including alternative sites and alternative processes (with regard to renewable energy). Further details on alternatives considered are provided in full in *Attachment-6-3-6-EIAR-Planning-March-2023* of this Application.

3.3.1 Alternative sites

IDL carried out a comprehensive evaluation of alternative sites, to identify the optimum location for the proposed development. 32 potential sites were considered in the southern part of the Country, and seven additional sites in the eastern part of the Country were reviewed. Initially, any sites outside an approximate drive of 45 minutes from IDL's existing maturation facility at Dungourney were discounted due to the additional requirement of establishing an additional maturation facility (which would be classified as a COMAH site[1]). Due to constraints on water supply or waste disposal requirements or due to environmental constraints, a significant number of sites were discounted at the second phase of evaluation and six sites were shortlisted for further consideration.

The shortlisted sites were then reviewed with regard to the potential synergies and efficiencies associated with proximity to the existing distilling activities in Midleton, and maturation activities in Dungourney, where the adjacent site was then chosen as the preferred option as it has significant environmental benefits, such as landscape and amenity, and the opportunities presented to screen and integrate the proposed development into the landscape, protecting the Dungourney River corridor, and minimising adverse visual and landscape impacts.

3.3.2 Alternative Processes

The production of Irish whiskey has well-established and tested processes, which IDL will continue to implement in the proposed development. No alternative whiskey-production processes were considered by IDL in the design of the proposed development, however, several renewable energy technologies suitable for a large industrial heat and power user were considered.

Most of the emissions to atmosphere on the existing IDL site are associated with the production of process steam from natural gas fired boilers on the site. Over the past four years IDL has investigated several low-carbon and renewable energy technologies suitable for a large industrial heat user, including:

- Heat recovery through mechanical vapour recompression (MVR) technology;
- Heat recovery of low temperature hot water using heat pumps;
- On-site anaerobic digestion of distillery by-products to produce biogas to fuel the on-site gas boilers;
- Wood biomass boilers;
- Electric boilers;
- Procuring "green gas" or biomethane through the gas network; and
- Procuring "green" hydrogen.

Of all the options assessed, the only feasible options using proven technology to reduce carbon dioxide emissions from steam production are:

[1] Under *Control of Major Accident Hazards (COMAH) Involving Dangerous Substances) Regulations, 2015*

- Heat recovery in distilling through MVR technology;
- Heat recovery of low temperature hot water using heat pumps; and
- On-site anaerobic digestion of distillery by-products to produce biogas to fuel the on-site gas boilers.

IDL has developed action plans to implement these three technologies at the existing site, and the proposed development, to enable the installation to reduce Scope 1 & 2 energy emissions across distilling operations on-site.

4 Site Description

4.1 Site Location and Surrounding Land Use

The IDL distillery site is located east of Midleton town, approximately 1 km from the town centre and approximately 25 kilometres east of Cork city. The proposed expansion of the installation will be partially located within IDL's existing distillery, with the majority of the development being located on greenfield lands southeast of the existing distillery. This land is currently used for livestock grazing. Figure 4-1 shows the location of the IDL site and the proposed development in the context of Midleton Town.

The town of Midleton is a relatively low-lying area surrounded by hills to the north and close to Cork Harbour and the coast to the south. As outlined in the EIAR, the town of Midleton has a mix of uses to support the local residential community with the distillery occupying a large area to the east of the town. Other local employers include retail, light manufacturing, food production and tourism. The chief commercial area of the town is on the Main Street. Several multinational retailers have outlets at the northern end of the town.

The Dungourney River flows from north east to south west through the site between the existing distillery and the expansion site and ultimately flows into Cork Harbour via the Owenacurra Estuary.

The existing Distillery is accessed by the R627, while the proposed expansion site will be accessed via a new entrance from the R907 Old Youghal Road. The expasion will be connected to the existing Distillery site via an extension of the existing internal road network and a new bridge over the Dungourney River.

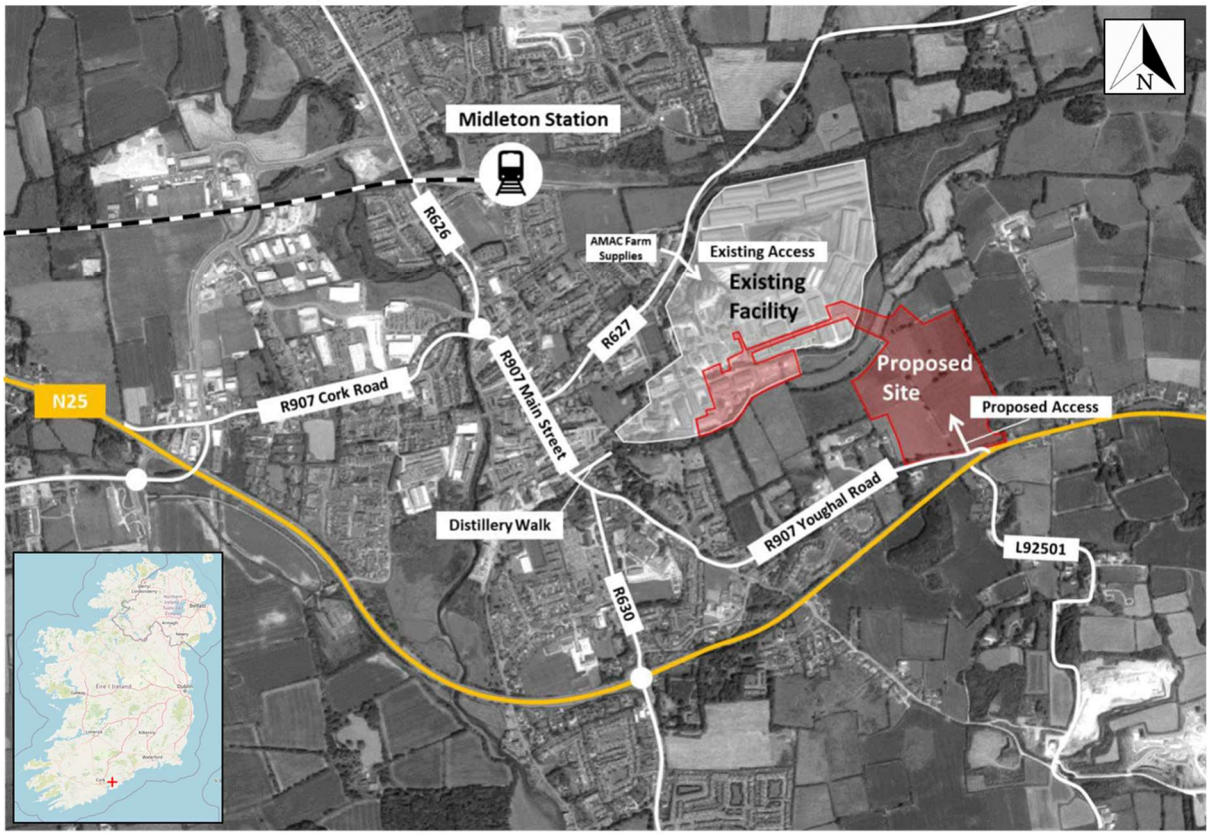

Figure 4-1 IDL Midleton, Site Location Plan (not to scale) (Source: ARUP EIAR, 2023)

The Distillery site lies outside the Midleton urban fringe in a predominantly semi-rural area. Agricultural land is located to the north, east and south of the site with scattered rural residential properties. Primary and secondary schools and their playing fields and some residential properties are located to the west with Middleton GAA grounds west of the greenfield expansion site. The north-western part of the site is bounded by the R627 with some residential development, a small established industrial / business estate and the grounds of Midleton Rugby Club located beyond.

4.2 Existing and Proposed Site Layout

4.2.1 Existing Distillery

The IDL distillery complex consists of the original historical distillery, which operated from 1825 to 1975, and the operational distillery which opened immediately adjacent to the original distillery in 1975. The complex occupies a 45 hectare site and employs 230 people.

Current site layout is presented in Figure 4-2. The operational Midleton Distillery comprises a number of distillery production buildings with 75% of the site area occupied by large scale warehousing used for the storage of large volumes of maturing spirit, i.e., non Industrial Emissions scheduled activity though within the site IE Licence boundary.

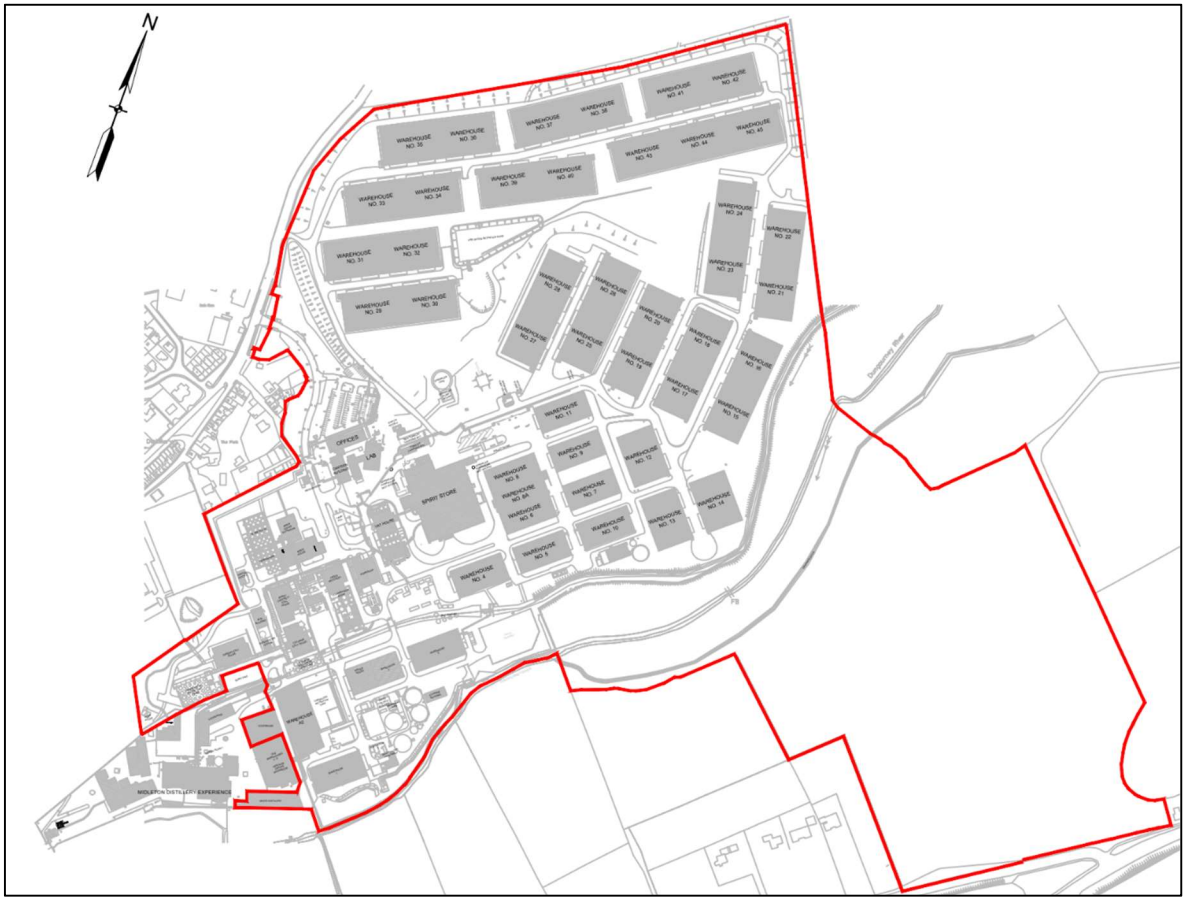

Figure 4-2 IDL Midleton, Current Site Layout Plan, Proposed IE Licence Boundary in red

The installation includes the following:

- **Production Buildings:** Grain intake and storage area, existing Brew house, Brew house Extension (batch brewing), 48 no. Fermenters, Barry Crockett Still House (pot & grain distillation), Garden Still House and tank farm (pot distillation), Distillation Column Building and tank farm (grain distillation), Vat House, Spirit Store, Micro-distillery.
- **Maturation Warehouses**

- **Utilities:** process water treatment plant, waste water treatment plant (WWTP), reverse osmosis plant, cooling tower, three natural gas fired boilers, ESB substation, gas supply station (above ground installation (AGI) owned and operated by Gas Networks Ireland) and eight groundwater production wells.
- **Associated infrastructure:** Weighbridge office and tanker loading area, road tanker parking area, office/administration building, central laboratory (including Quality Control, microbiology & new product development labs), canteen, maintenance workshop, engineering workshop, sprinkler tank and pumphouse, 2 no. firewater retention ponds (one in the production area (8,159 m^3) and another located in the lower fields warehouse area (7,800 m^3)).

The Midleton Distillery Experience (MDE) Visitor & Heritage centre, formerly referred to as the Jameson Experience Midleton (JEM) site, is located to the south west of the operational distillery outside of the IE Licence boundary.

Proposed alterations to the existing distillery site as part of the expansion project include upgrading and expanding the WWTP and construction of a new biogas/AD plant adjacent to the WWTP (see Figure 4-3). The feedstock for the biogas plant will come solely from on-site sources.

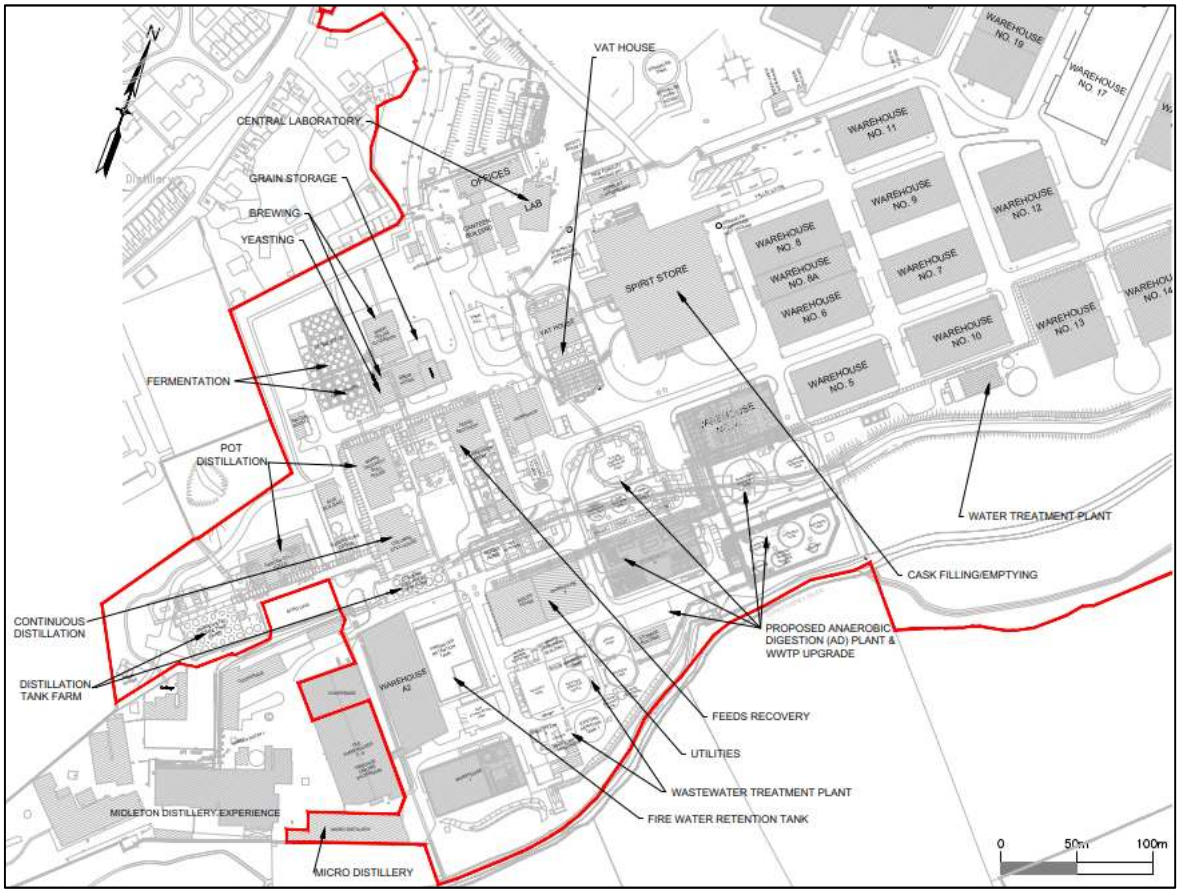

Figure 4-3 IDL Midleton, Site Layout showing Proposed upgraded WWTP and AD Plant, Proposed IE Licence Boundary in red

4.2.2 Expansion Site

The majority of the expansion works in terms of the new distillery will take place within greenfield lands located south east of the operational distillery and south of the Dungourney River. This greenfield site is currently used for livestock grazing.

The proposed development will be an expansion of the existing distillery production operations occupying an additional 18 hectares and includes the following:

- **Production Buildings:** Brew house and fermenters, Pot Still Building and Grain Column Building;
- **Associated infrastructure:** distillation tank farms, cooling tower, pipe rack, a 38kV electrical substation, a truck parking area, additional parking, a security building; and
- A **new internal link bridge** to facilitate utility and transport connections between the existing and expansion site.

The proposed site layout of the new expansion is presented in Figure 4-4.

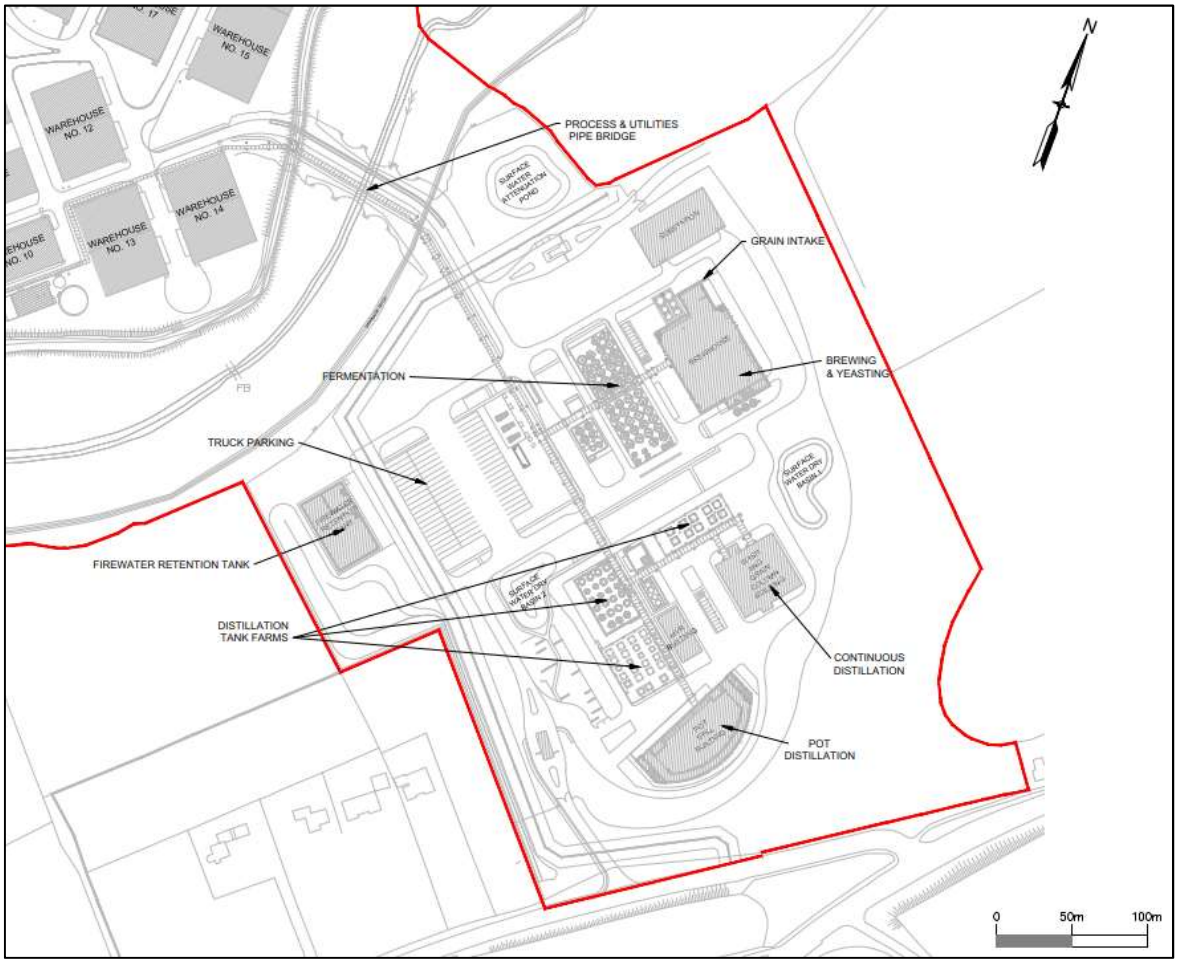

Figure 4-4 IDL Midleton, Proposed New Expansion Layout Plan, Proposed IE Licence Boundary in red

4.3 Site Operations and Processes

IDL produces a portfolio of leading Irish whiskey brands distilled and matured at Midleton site. In 2013, IDL completed an extensive expansion of Midleton Distillery and increased its capacity to 70 millions litres of alcohol per annum (MLA). The proposed development will facilitate a further increase in production capacity across the expanded site to 133 MLA.

Production operations run 24 hours a day, 7 days a week for an average of 49 weeks a year.

The manufacturing process can be divided into two distinct phases: spirits production and maturation.

Key process elements in spirits production include grain intake and milling, brewing, yeasting, fermentation, pot still distillation or continuous grain distillation as presented in Figure 4-5. Pot Still Whiskey is distilled in a batch process in copper pot stills from a mash of barley and malted barley. Grain Whiskey is distilled in a continuous process in distillation columns from a mash of corn (maize) and malted barley. In its simplest form, the barley/malted barley and corn/malted barley is first brewed and fermented with yeast to make beer and the beer is then distilled to concentrate the alcohol. Within the proposed new distillery expansion, IDL intend to replicate the specialist brewing and distilling technologies and processes already being used at the existing distillery.

Following production, spirits are transferred to the Vat House for blending and then filled into casks in the Spirit Store. Casks are stored in maturation warehouses (both on-site and off-site) for a period of at least three years, however, some premium whiskey products can be aged for 20 years and longer. Following this, matured spirits are returned to the Spirit Store / Vat House for cask disgorging, blending and tanker fill for transport to an off-site bottling facility.

Site utilities and support processes at the installation include:

- Water Recovery Plant comprising 2 no. reverse osmosis (RO) membranes to recondition / recycle a percentage of the WWTP treated liquid effluent for reuse in the site's cooling towers, with the option to send this recycled water to the recently installed replacement steam boilers as makeup water. As part of the expansion project, 2 no. new RO units will be installed after the aerobic membrane filtration units in the WWTP to produce additional reconditioned water;
- Water Treatment Plant to produce potable / process water by treating mixed raw water from the Dungourney River, groundwater boreholes, harvested rainwater and spent fermenter cooling water;
- Mechanical Vapour Recompression (MVR) Technology which is a closed loop system that captures, compresses and recycles steam generated in the distilling process to reduce the energy usage associated with the site’s process steam requirements;
- Boilers for steam production to supply plant steam to both the existing site and proposed distillery expansion;
- Cooling water system; Cavern water used as indirect cooling water in the existing Brew House, the fermenter tank farm and Still House areas. Borehole water sourced from abstracted groundwater from 8 boreholes (PW 2 – PW 9) is primarily used for fermenter cooling and subsequently reused in the onsite water treatment plant for conditioning as process water. A new closed loop chilled water system and cooling tower system will be installed at the distillery expansion site. Make up water to these systems will be provided from the existing process water of the onsite water treatment plant;
- Proposed Anaerobic Digestion (AD) Plant which will produce biogas (renewable gas mixture of methane and carbon dioxide) from the site’s liquid process residues (thin stillage) to replace natural gas used in the onsite steam;
- Proposed expanded WWTP to treat process waste water with the following treatment steps; screening, equalisation, neutralisation, a combination of aerobic, anaerobic and anoxic treatment, phosphorus precipitation and ultrafiltration in membrane bioreactors;
- Clean in place (CIP) system; and
- Central Laboratory including Product Quality Management Lab, Research & Development Lab, New Product Development Lab and Co-Packer Quality and Technical Management.

Comprehensive details on all site processes are provided within *Attachment-4-8-1-Operational Report*.

IDL are continually investing in Midleton Distillery and recent significant investment includes the construction of a Micro Distillery, installation of a reverse osmosis plant, installation of new plant steam boilers, and the installation of MVR building which allows for recycled steam to replace steam generated by Natural Gas allowing for an overall reduction of CO_2 emissions.

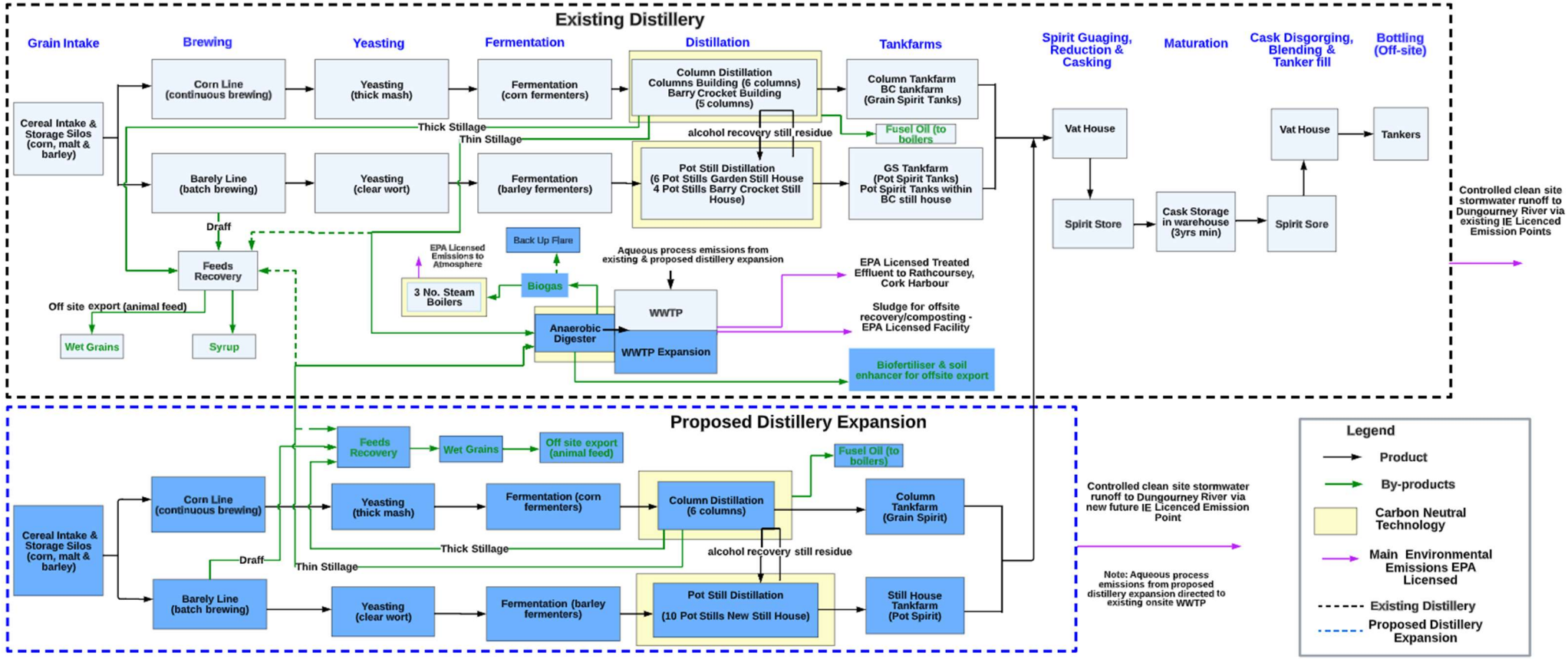

Figure 4-5 IDL Midleton, Basic Production Process Block Flow, Existing (light blue blocks) and Proposed (dark blue blocks)

As a result of implementation of significant energy reduction strategies on site, such as the above described MVR technology, there is no requirement to increase the boiler capacity at the installation to cater for the proposed distillery expansion.

4.4 Other Consents

In addition IE Licence P0442-02, the site holds a Greenhouse Gas (GHG) Permit (Register No. IE-GHG005-10338-5).

IDL have permission for water abstraction from 8 process water boreholes for industrial use EPA (EPA Water Abstractions Register No. R00479-01) and water abstraction from a cavern for industrial use (EPA Water Abstractions Register No. R00480-01).

4.5 Control of Major Accident Hazards (COMAH)

Under the Chemical Act (Control of Major Accident Hazards (COMAH) Involving Dangerous Substances) Regulations, 2015 or COMAH Regulations, the IDL site is classed as an “Upper Tier” COMAH site.

Health and Safety risks identified for the site are identified in the site’s Safety Report as approved by the Health and Safety Authority (HSA). The Safety report outlines the site's Major Accident Prevention Policy (MAPP) and the Safety Management System that implements it.

The site's emergency and response procedures are outlined in the *Internal Emergency Response Plan (ERP)* (QSE008) which includes the methodology employed by IDL to deal with emergency incidents occurring anywhere within the existing distillery to minimise risk to personnel, damage to the distillery property, upset to the community or damage to the environment.

As a result of the proposed expansion, IDL will revise the site’s Safety Report and associated Emergency Response Plans to demonstrate that all major accident hazards have been identified and assessed and that appropriate measures are in place to prevent and / or respond to such incidents.

5 Environmental Site Conditions

Detailed information on environmental site conditions is presented in the Site Condition Report submitted with this Application (refer to *Attachment-4-8-4-Site Condition Report*) with a summary presented below.

5.1 Geology

Existing Distillery

Site specific ground conditions underlying the existing distillery site are summarised as follows:

- Topsoil / made ground was encountered across the existing distillery site at a thickness varying from 0.1 m to 5 m overlying Glacial Deposits;
- Ground investigations confirmed that subsoil thickness and permeability varies across the site. Variable subsoil thickness within short distances is due to the irregular surface of the underlying Waulsortian Limestone Formation:
  - Drilling of the test wells in the Lower Field area in the northern part of the site indicate glacial till and gravels in excess of 9 to 16 m. Drilling along the eastern site boundary indicated depth to bedrock in this area is between 25 and 30 m below ground level (bgl). Subsoil in this area of the site generally consists of clay, sand, silt and gravel sediments. A large deposit of gravel was encountered in the eastern region of the site. Depth to bedrock in the south-eastern part of the site near the Dungourney River is between 4 and 8 m bgl;
  - Geological logs indicate that subsoil thickness in the western part of the site ranges between 5.4 m and 18.5 m with a relatively thin silt and clay overburden in the central and southern regions of the site. Recent ground investigation in the WWTP plant area in 2022 indicates the presence of made ground up to 2.6 m bgl and is described as brown or purple, brown clayey gravelly sand with occasional presence of plastic wire, core block and brick fragments.
- Site investigation confirmed that underlying bedrock is composed of highly fractured, karstic limestone. Various karst features such as caves and fractures have been encountered during drilling works on-site.

Project specific ground investigation[2] in the WWTP expansion and AD Plant site within the existing distillery confirmed the presence of made ground in this part of the site. Localised slightly elevated concentrations of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs) and metals were identified in samples of made ground soils across the WWTP and proposed AD Plant site likely as a result of historical activities at the distillery site prior to the issue of the Integrated Pollution Control (IPC) Licence in 1999. However, the investigation found that the reported concentrations of contaminants did not exceed assessment criteria protective of human health considering a commercial land-use.

Asbestos containing materials (ACM) in the form of probable small fragments of roof tiles were observed within the made ground at 7 locations surrounding Warehouse No. 3 located in this part of the site. The likely source is the historical asbestos roof of this warehouse, which has now been replaced. The ACM present in soil does not pose a risk unless disturbed during excavation works.

Remediation of this localised area of contamination will be completed during proposed development works including excavation of impacted soils using appropriate occupational health and safety precautions to protect construction workers. Spoil from these excavations will be removed from site for disposal at an appropriately licensed landfill.

[2] Priority Geotechnical Limited (PGL), October 2022. Refer to Appendix 17.2 in the ARUP EIAR (2023). Arup Geo-environmental Investigation, November 2023.

Greenfield Site

Site specific ground conditions underlying the greenfield site are summarised as follows:

- Topsoil across the proposed development site has a thickness varying from 0.27 m to 0.37 m and is generally described as loose brown, sandy, slightly gravelly silt. Made ground was found in one of the trial pits located near the western boundary of the site, with a thickness 0.28 m and described as a mix of topsoil, gravelly silt and some plastic cards;
- The greenfield site is underlain predominantly by either topsoil overlying recent alluvial deposits in the vicinity of the Dungourney River which are underlain by Glacial Deposits including fluvioglacial sands and gravels and glacial till. The subsoil is generally described as reddish brown gravelly sandy clay at shallower depths, while sand and gravel (fine to coarse) are generally present in deeper subsoil;
- Depth to bedrock varies significantly across the site with subsoil thickness increasing from 4.2 m in the north, near the Dungourney River, to over 34 m, in the central - southwest region of the greenfield site. The variation in the thickness of subsoil and depth to bedrock would appear to indicate an infilled palaeochannel transects the centre of the greenfield site aligned in a broadly north-south direction. This palaeochannel is infilled with gravel deposits at depth, which are in turn covered with lower permeability boulder clay (till). A decrease in the subsoil thickness is observed further south near the greenfield site boundary with a subsoil thickness of 2.0 m encountered in the southwest corner where the subsoil is light reddish brown, very gravelly sand; and
- Bedrock is highly karstified including an upper highly weathered bedrock transition zone (epikarst) between the subsoil and competent bedrock. Karst features were encountered within the bedrock which in some cases were up to 1.5 m wide and infilled with glaciofluvial sands and gravels. Deeper fractures and fissures encountered during drilling were more open and produced significant quantities of water.

Review of available historical records indicates that there are no previous land-uses associated with the greenfield site that are likely to give rise to soil contamination. The project specific ground investigation[3] concluded that all 21 soil samples collected were suitable for disposal to a soil recovery facility with no evidence of elevated contaminants within the shallow sediments underlying the greenfield site.

5.2 Hydrogeology

Existing Distillery

The main aquifer unit underlying the existing distillery site is the regionally important limestone bedrock aquifer together with the locally important gravel aquifer unit in the north-eastern and south-eastern region of the existing distillery site.

Groundwater flow occurs in an upper shallow highly karstified weathered bedrock zone (epikarst) in which groundwater moves quickly in rapid response to recharge. Groundwater flow also occurs in a zone of interconnected solutionally-enlarged or karstified fissures and conduits which can provide relatively rapid through flow and minimal attenuation properties.

Based on groundwater levels measured during biannual groundwater monitoring completed at the site, inferred groundwater flow direction in the bedrock aquifer follows topography in a south westerly direction towards the Owenacurra Estuary. Due to the presence of shallow karst features on and off-site the groundwater flow direction varies locally, such as a southerly flow direction from the College Cave to the Garden/Wall Cave and the Cavern in the south-western part of the existing distillery site. Abstraction data collected between 2014 and 2023 show that when production wells are operational there are localised capture zones around the pumping wells, however, no noticeable change in the regional groundwater flow regime beneath the site is observed.

Greenfield Site

[3] Priority Geotechnical Limited (PGL), October 2022. Refer to Appendix 17.2 in the ARUP EIAR (2023).

Similarly, the main aquifer unit underlying the greenfield site is the regionally important limestone bedrock aquifer together with a locally important gravel aquifer unit in the vicinity of the Dungourney River to the north. The Dungourney River flows across the north of the site in an east-west direction and is considered to be in direct hydraulic continuity with the underlying gravel and bedrock aquifers.

Groundwater levels measured at the greenfield site indicates the groundwater flow is from southeast to northwest, towards the Dungourney River. It also shows there is a local flow towards the southeast, where an ephemeral pond is located.

5.2.1 Groundwater Quality

In line with Industrial Emissions Licence No. P0442-02, Schedule C.6.2, annual groundwater monitoring is completed at the existing distillery site at monitoring wells GW1, GW2B, GW3, GW4B, GW5(B), PW1 and MW3.

Groundwater analytical results are compared with the following assessment criteria:

- Groundwater Threshold Values (GTVs) in Schedule 5 of *EC Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010* as amended by *EC Environmental Objectives (Groundwater) (Amendment) Regulations 2016, S.I. No. 366 of 2016*; and
- Interim Guideline Value (IGVs) in '*Towards Setting Guideline Values for the Protection of Groundwater in Ireland, Interim Report*' published by the EPA in 2003.

Based on review of annual groundwater monitoring reports for the period 2021 to 2023, groundwater quality has been consistent during recent monitoring rounds. Alcohols were not detected above laboratory detection limits. Reported concentrations of analytical parameters in groundwater samples collected are generally below the assessment criteria.

5.3 Hydrology

There are three watercourses located within the boundary of the existing distillery and the proposed Midleton Capacity Expansion greenfield site including (see Figure 5-1):

1. The Dungourney River which flows through the part of the IDL site connecting the existing operational distillery and the greenfield site and along the southern boundary of the existing distillery;
2. An historical mill race (also referred to as the mill stream) located in the existing distillery site, north of the Dungourney River; and
3. A drainage ditch located in the northern part of the undeveloped greenfield site and south of the Dungourney River.

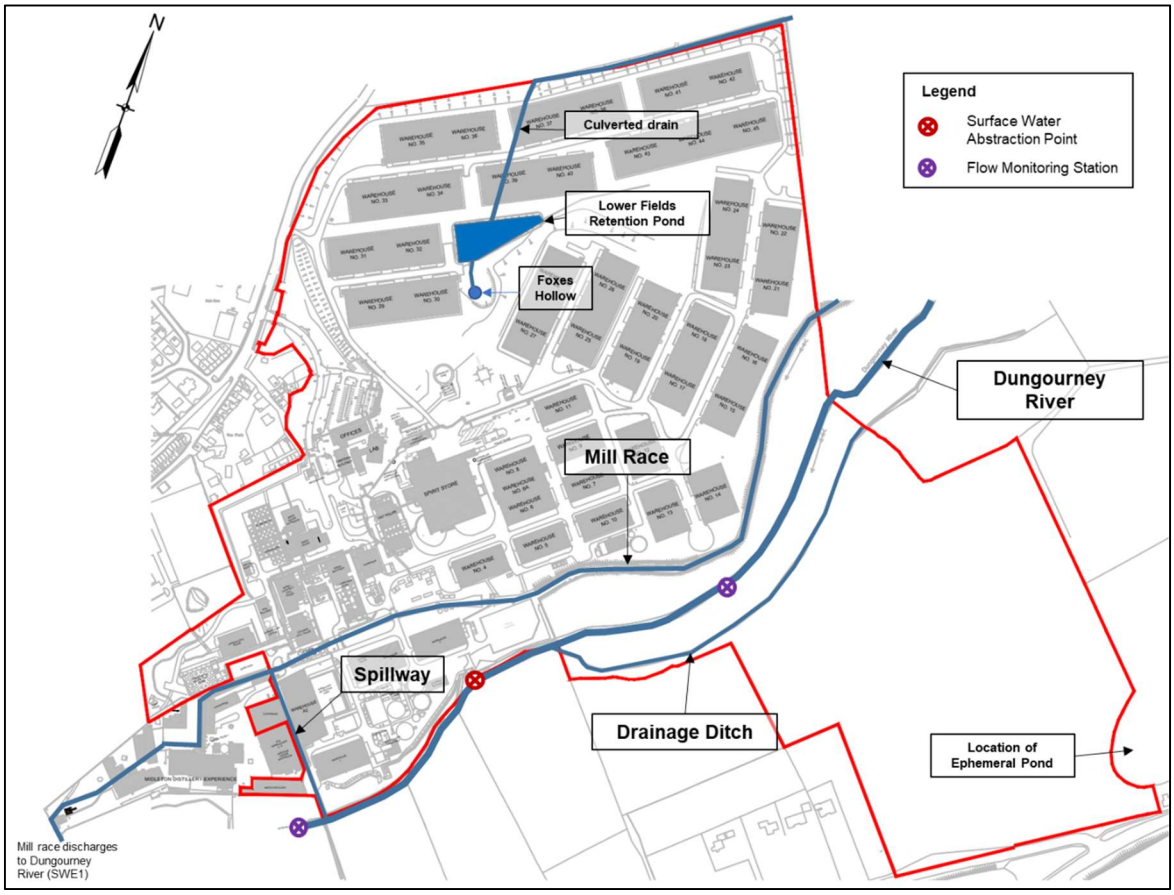

Figure 5-1 IDL Midleton, Surface Water Features (not to scale)

According to EPA Maps, the current Water Framework Directive (WFD) Status (2016-2021) for Dungourney River is classified as '*Poor'.* For the purposes of achieving objectives under the WFD, this river waterbody is classified as '*At Risk*' of not achieving '*Good*' status by 2027.

The closest national water monitoring station on the Dungourney River is located downstream of the IDL site in Midleton town (Station ID: RS19D070700, Bridge in Midleton). The Q-value from this monitoring station has a score of Q3-4 during the most recent monitoring completed in 2023, indicating 'Moderate' biological status or slightly polluted.

5.4 Air Quality

Midleton and its environs are classified as falling within Zone D under the *Air Quality Standards (AQS) Regulations* (S.I. No. 739 of 2022) air quality zoning system of Ireland.

Background level pollutants as measured by the EPA in Zone D between 2019 and 2021 are in compliance with Air Quality Standards, as presented in Table 5-1 and is considered representative of background air quality at the site.

Table 5-1 Annual Average Ambient Air Quality Data for Monitoring Stations (2019 – 2021) (**Extracted from:** ARUP (2023), Table 11-2)

Parameter – Zone D unless otherwise stated	Annual Average Year 2019 (µg/m^3)	Annual Average Year 2020 (µg/m^3)	Annual Average Year 2021 (µg/m^3)	Notes
Oxides of nitrogen (NO_2) (Zone D)	5.67	7.6	7.52	EPA Baseline reports - Air quality in Ireland 2019, 2020, 2021
Sulphur dioxide (SO_2) (Zone D)	3.1	4.15	4.16	EPA Baseline reports - Air quality in Ireland 2019, 2020, 2021
Particulate matter PM_{10} (Zone D)	14.25	11.17	11.94	EPA Baseline reports - Air quality in Ireland 2019, 2020, 2021
Particulate matter $PM_{2.5}$ (Zone D)	9.29	7.75	8.71	EPA Baseline reports - Air quality in Ireland 2019, 2020, 2021
Benzene (Zone C)	0.12	0.04	0.18	EPA Baseline reports - Air quality in Ireland 2019, 2020, 2021
Carbon monoxide (CO) (Zone C)	100	400	300 (Zone D)	EPA Baseline reports - Air quality in Ireland 2019, 2020, 2021

5.5 Noise Environment

The site of the proposed Midleton Capacity Expansion development is adjacent to the existing IDL distillery and a National Road and does not fall into the category of a Quiet Area or an Area of Low Background Noise, as defined in EPA guidance[4].

As part of the EIAR, baseline noise surveys in line with *ISO 1996: Acoustics – Description, Measurement and Assessment of Environmental Noise (Part 1 and Part 2)* (ISO, 2003 & 2007) were undertaken on 28th September 2022 and 18th January 2023 to quantify the existing noise environment within and near the proposed development site.

Baseline noise levels recorded on the site were typical of such locations, with the noise principally associated with traffic noise generated by vehicles on surrounding roads (R907 and N25) and industrial noise at the existing IDL installation.

[4] Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (2016)

6 Materials, Resources & Energy

6.1 Materials

Substances used in the manufacture of whiskey at the installation include:

- Grains including corn, malt and barley; and
- Process additions such as yeast and enzymes.

Other chemicals used on site include:

- Clean-in-Place (CIP) cleaning solutions containing acids such as citric acid and phosphoric acid and alkalis such as sodium hydroxide
- WWTP dosing chemicals;
- Cooling tower chemicals;
- Boiler water treatment chemicals;
- Reverse osmosis plant chemicals;
- Water treatment chemicals;
- Lubricants for engineering and maintenance equipment;
- Fuels such as diesel;
- Bench top quantities of laboratory reagents; and
- Refrigerants.

Products generated by the activity include:

- Pot Whiskey (Ethanol 60-64% v/v);
- Grain Whiskey (Ethanol 65-70% v/v);
- Blended spirits stored in casks (approx. 64% v/v); and
- By-products including ‘syrup’ and ‘wet grains’ produced from process residues in the feeds recovery plant and fusel oil produced as a by-product of the distillation process.

IDL maintains an inventory of all materials and chemicals (hazardous and non-hazardous) used and stored on site. This inventory will be updated following the development of the expansion site.

Attachment-4-6-2-Raw-Material-Interm-Products of this Application lists the raw and ancillary materials, substances, preparations and fuels which will be produced by or utilised within the revised installation boundary. The list of raw materials and chemical substances to be used within the proposed expansion site including the WWTP Expansion and Anaerobic Digester (AD) Plant have been provided by the design team and included in this attachment.

In general, there is minimal use of hazardous substances during the production process with most hazardous substances used in the water and wastewater treatment plants to ensure that the site meets the required water and wastewater quality parameters. Hazardous substances will generally not be stored in the proposed expansion site with the exception of small quantities of cooling tower chemicals.

Hazardous materials are stored across the existing installation in warehouses and bunded areas in Integrated Bulk Containers (IBCs), drums, vessels or tanks. The storage and containment of hazardous materials on site is governed by the conditions of the existing IDL IE Licence P0442-02. Under Condition 3.6.1, all tank, container and drum storage areas are rendered impervious to the materials stored therein. Bunds are designed having regard to Agency guidelines ‘*Storage and Transfer of Materials for Scheduled Activities*’ (2004). Under Condition 6.10, IDL tests the integrity and water tightness of all underground pipes, tanks, bunding structures and containers at least once every three year.

Procedure HSP153 *Management of Chemical Agents* ensures that materials are used and stored in the correct manner and segregated according to material class. Hazardous material storage locations are identified in the emergency response plan (QSE008 *Internal Emergency Plan*) and the *Bund Register* maintained at the installation.

Approval of any new chemicals required at the site takes into account the substance's Safety Data Sheet (SDS), along with food safety and environmental safety considerations. The dangerous properties of chemicals used on site are assessed as part of HAZOPs (Hazard and Operability study) and HACCPs (Hazard Analysis & Critical Control Point), which looks to minimise or avoid the use of harmful chemicals.

Refer to *Attachment-4-7-2-BREF-EFS*, which assesses practices at the site against the Emissions from Storage Best Available Techniques (BAT) Reference (BREF) document[5], for further details on measures implemented to ensure appropriate storage, transfer and handling of liquids and solids at the IDL installation.

6.2 Water Use

Water used at the installation is sourced from:

- Abstraction of groundwater from an existing cavern source in the south-western part (abstraction limit of 3,640 m^3/day);
- Abstraction of groundwater from eight production wells in the eastern part of the site (abstraction limit of 4,300 m^3/day); and
- Abstraction of surface water from the Dungourney River (abstraction limit of 2,275 m^3/day);
- Public supply mains water.

The on-site Water Treatment Plant produces process and utility water by treating mixed raw water from the Dungourney River, groundwater boreholes and spent fermenter cooling water.

Previous hydrogeological pumping test investigations undertaken on the production wells identified safe sustainable yields for each production well, which includes taking into account potential drought periods. The individual sustainable yields identified specific drawdown levels which are not to be exceeded during abstraction to avoid excessive drawdown in the bedrock and gravel aquifers underlying the site. No increase to these permitted abstraction rates is proposed as part of the proposed development.

Based on review of Annual Environmental Reports (AERs) submitted to the EPA, actual water use at the site between 2021 and 2023 is summarised in Table 6-1 below. Water use following the completion of the Midleton Capacity Expansion development has been estimated and included in Table 6-1 (refer to *Attachment-4-6-1-Water-Energy-Usage* for further detail).

Table 6-1 Total Water Use (2021 – 2023) and Proposed Water Use

Water Used	2021 (m^3)	2022 (m^3)	2023 (m^3)	Predicted Future Use (m^3)
Groundwater	122,0511	1,314,489	1,433,733	2,898,100
Surface Water	602,541	644,433	440,981	830,375
Public Supply	85,587	86,386	106,491	180,000
Recycled Water	463,838	512,081	671,284	TBC
Total water used	**1,908,639**	**2,045,308**	**1,981,206**	**3,908,475**

[5] *Reference Document on the Best Available Techniques on Emissions from Storage* dated July 2006.

6.2.1 Measures to Reduce Water Consumption

A water usage map has been completed for the existing distillery with water usage determined from flow meters, either from totalised flowrates or from the difference between flowmeters. The proposed expansion will tie into the site's existing water supplies, therefore, usage will be tracked with the existing water meters. Water flow meters will also be installed for users in the new installation, e.g., the new cooling tower.

Water usage reduction is part of the site's Environmental Management Programme, with targets to reduce water usage by 20% by 2030 relative to 2019 baseline and to achieve a target water usage value of 15 l/LPA (litre of produced alcohol). IDL are on track to achieve these water usage targets.

To reduce overall water consumption, a percentage of the WWTP treated liquid effluent is reconditioned/recycled in a Water Recovery Plant through the use of 2 no. reverse osmosis (RO) membranes and reused in the site's cooling towers and as makeup water in the on-site steam boilers.

Currently, c. 18 m^3/hr is treated within the two existing RO units which combines with towns water (municipal supply) (<10% v/v to increase conductivity) before being sent to the cooling towers, thereby reducing purified water demand.

A rainwater harvesting system was installed at the site in early 2024, whereby uncontaminated rainwater collected from the warehouse storm water catchment at the site is diverted to the Water Treatment Plant, therefore, reducing the amount of surface water abstracted from the Dungourney River.

As part of the expansion project, 2 no. new RO units will be installed after the aerobic membrane filtration units in the WWTP to produce additional purified water to the quality required for re-use within the distillery for cooling, boiler make up water and certain cleaning activities.

In summary, water reduction features associated with the proposed expansion development include:

- Doubling the amount of water to be recycled from the treated WWTP effluent by the installation of additional RO units; and
- A closed loop chilled water system will be used, which will be independent of groundwater abstraction.

6.3 Energy Use

Sources of energy at the installation include mains electricity, the combustion of natural gas, combustion of limited amounts of diesel supplied to the fire water pumps and a small quantity of renewable fuel, which is produced as a by-product of grain whiskey production, called fusel oil.

Electricity is used to power all drives, lighting systems, alarm and security systems, computer systems, instrumentation and sundry appliances. Natural gas is combusted in the 3 no. plant steam boilers. Fusel oil, which is a by-product of the column distillation process, has a calorific value slightly lower than ethanol and is used to co-fire with natural gas to produce process stream in one of the on-site boilers.

Following development, the proposed anaerobic digestion (AD) system will produce biogas (approx. 60% by volume methane) from the site's liquid process residues (thin stillage/waste syrup). Biogas from the AD plant will ultimately replace natural gas used in the on-site boilers that will supply steam to both the existing site and proposed new distillery. As a result of implementation of significant energy reduction strategies on site there is no requirement to increase the boiler capacity for the site to cater for the proposed distillery expansion.

Based on review of Annual Environmental Reports (AERs) submitted to the EPA, actual energy use at the site between 2021 and 2023 is summarised in Table 6-2 below. Energy use following the completion of the Midleton Capacity Expansion development has been estimated and included in Table 6-2 (refer to *Attachment-4-6-1-Water-Energy-Usage* for further detail).

As a result of the implementation of heat recovery projects, electricity usage will increase while use of natural gas will decrease as it is replaced by biogas produced on-site once the AD Plant is operational.

Table 6-2 Total Energy Use (2021 – 2023) and Proposed Energy Use

Energy used (GJ)	2021 (GJ)	2022 (GJ)	2023 (GJ)	Predicted Future Use (GJ)
Electricity	123,928	130,915	129,010	576,000
Light fuel oil	113	70.47	64.95	100
Natural Gas Note 1	730,177	800,924	747,941	65,860
Renewable Biomass	0	0	0	0
Renewable Energy Generated On-site	9,108	12,405	11,724	807,500
Total	**863,326**	**944,315**	**888,740**	**1,449,460**

Note 1 - Natural gas will be replaced by biogas produced in the onsite AD plant following development

6.3.1 Energy Management System

IDL has implemented an Energy Management System (EnMS) certified to ISO 50001 Standard and, as such, the site is subject to annual external auditing and recertification audits every three years to assess compliance with the standard. The ISO 50001 EnMS includes the following features:

- A requirement to continually improve energy performance, including energy efficiency, energy use and consumption;
- Definition of an energy policy, which is reviewed annually, and documentation of an energy planning process;
- Review of energy usage, consumption and efficiency at defined intervals;
- Documentation of the methodology and criteria used to develop the Energy Review considering facilities, equipment, systems or processes;
- Establishment of an energy baseline and identify EnPIs (Energy Performance Indicators) appropriate for monitoring and measuring energy performance; and
- Establishment, implementation and maintenance of documented Energy Objectives and Targets.

An Energy Review is performed annually or in the event of a major change to the site, based on site procedure ENP001 *'Energy Review, Baseline Selection and EnPIs (Energy Performance Indicators)*'.

Energy efficiency improvement targets and related actions are identified in the *Energy Action Plan - Carbon Neutrality* and are recorded on the site's EnMS spreadsheet.

An Energy Opportunities Register is maintained at the site and is reviewed periodically to move forward projects deemed feasible as outlined in site procedure ENP004 *'Energy Project & Opportunity Management Register'*.

There is an ongoing project that will use Mechanical Vapour Recompression (MVR) technology to recover heat from the distillation still pots, along with the Wash Columns and Rectifier Columns located in the Garden Still House and the Barry Crocket Still House. There are also plans to implement this MVR Technology for the Column Building Distillation Columns. There are multiple other examples on-site where heat recovery is employed, e.g. in batch brewing, heat is transferred from the strong Wort Cooler to Mashing. All new distillation columns and pot stills in the proposed expansion will utilise MVR technology.

A project is also under way reviewing the feasibility of an advanced heat recovery pump system whereby waste heat from chillers and cooling towers will act as the heat source for a two-stage heat pump system that will deliver the required heat at 93℃ for various process users in the expansion site. The chillers, heat pump system and the steam system will be powered by electricity and will align with the site's Scope 1 & 2 energy emissions reduction programme.

Refer to *Attachment-4-7-2-BREF-ENE*, which assesses energy use at the site against the Energy Efficiency BREF document[6], for further details on efficient energy management at the installation.

[6] *Reference Document on the Best Available Techniques for Energy Efficiency* dated February 2009 (corrected version as of 09/2021)

7 Emissions Overview

Emissions/discharge thematics applicable to activities at the IDL site include emissions to air, surface water and sewer, storm water emissions and noise emissions. This section describes sources and monitoring of emissions from the installation and outlines control measures and abatement in place to minimise effects on the surrounding environment. Further details of the assessment of potential effects on the environment associated with emissions from the expanded installation is also discussed in *Attachment-6-3-6-EIAR-Planning-March-2023* and *Attachment-7-1-3-2-Emissions Impact Assessment*.

7.1 Emissions to Air

7.1.1 Main Emissions Points to Air

Existing Distillery

Main emissions include all emissions of environmental significance. Waste gas streams from main emission points to air at the existing IDL installation include:

- Boilers flue gases from 3 no. low NO_x natural gas fired steam boilers (emission points A1-1, A1-2 & A1-3). In accordance with Schedule C.1.2 of IE Licence P0442-02, as amended, monitoring of Oxides of Nitrogen (NO_x), Carbon Monoxide (CO) and volumetric flow is completed on an annual basis at main emission points A1-1, A1-2 and A1-3 to demonstrate that emissions to air comply with emission limit values (ELVs) specified in Schedule B.1.
- Process waste gases associated with grain intake and the brew house milling contain innocuous grain particulates. These emissions are filtered through high separation efficiency filters and emitted through vents from the grain intake hoppers, malt, barley and corn mills and combi cleaners. In accordance with Schedule C.1.2 of IE Licence P0442-02, as amended, monitoring of particulates is required on an annual basis at emission points A2-12, A2-19, A2-24, A2-30, A2-31, A2-32 and A2-95[7] to demonstrate that emissions to air comply with ELVs specified in Schedule B.1.

Drying of wet grains from the brewing process to produce distillers dark grains (DDG) by-product ceased in 2020 and as a result main emission point A2-1 (Feeds Recovery Stack), regulated by IE Licence P0442-02, was not monitored between 2020 and 2023. This activity has ceased in order to reduce natural gas usage at the installation and, as such, main emission point A2-1, the associated stack, driers and cyclones were decommissioned in 2023 (A2-1 to be surrendered as part of this Licence Review). Distillers dark grains (DDG) by-product is no longer produced on site, wet grains and syrup will continue to be produced as by-products from the feeds recovery process.

In the original IPPC licence application for P0442-01 and IE Licence Review 2012 P0442-02, carbon dioxide (CO_2) emissions from the fermentation tank farm (45 tanks in total: 18 wash fermenters (barley line) and 27 beer fermenters (corn line) were considered as one main emission point (A2-2)). For continuity, main emission point A2-2 has again been included in *Attachment-7-4-1-Emissions-to-Air-Main.*

Expansion

No additional boilers are required as part of the proposed Midleton Capacity Expansion. Main emissions points to air associated with the proposed expansion are detailed in *Attachment-7-4-1-Emissions-to-Air-Main* and include:

- Emission points where grain dust particulates can arise associated with the proposed grain intake system (A2-601 to A2-615), malt and barley mills (A2-616 to A2-618) and malt and

[7] Note that these emission points are currently classified as minor emission points. As part of the current Licence Review, it is proposed to reclassify these as main emission points and, as such, they have been relabelled to begin with the main emission to air designation A2; previously their labelling commenced with the minor emission to air designation A3. Refer to *Attachment-7-4-1-Emissions-to-Air-Main* for further details.

barley grist bins (A2-619 to A2-622). Vents will be filtered as detailed in *Attachment-7-4-1-Emissions-to-Air-Main*;

- Emission point from the proposed odour abatement system on the AD plant (emission point A2-3001) (see Section 7.1.5 below for further details); and
- In line with previous IPPC / IE Licence Applications completed for the installation, CO_2 emissions from all future fermentation tanks on the expansion site (38 no. in total: 15 wash fermenters (barley line) and 23 beer fermenters (corn line)) will be considered as one CO_2 emission point (A2-600).

Monitoring of proposed emissions will be in line with Best Available Techniques (BAT) Conclusions for the Food, Drink and Milk industries (FDM BATC).

Chapter 11 of the EIAR, 'Air Quality', provides information on the assessment of potential impacts of the proposed Midleton Capacity Expansion Project on the receiving environment. Air dispersion modelling (ADM) completed as part of the EIAR predicted ground level concentrations (GLC) of carbon monoxide, oxides of nitrogen, sulphur dioxide, particulate matter as PM_{10} and $PM_{2.5}$, total organic carbon (TOC) as C (as benzene) and odours at each of the 44 identified sensitive receptors did not exceed relevant air quality assessment criteria[8]. All emissions were assumed to occur at maximum potential emission concentration and mass emission rates for each scenario and were assumed to occur for 100% of an operating year, simultaneously, when the proposed plant is in operation.

The ADM assessment demonstrates that emission levels as a result of the operation of the proposed expanded installation will not result in exceedances of relevant Irish and European air quality standards and guidelines.

7.1.2 Minor Emission Points to Air

Minor emission points are those which on the basis of their nature, frequency and duration are not considered environmentally significant to be classified as a main emission point to air. Minor emission points associated with the existing distillery are detailed in *Attachment-7-4-2-Emissions-to-Air-Minor-Potential* and include:

- Very low levels of alcohol vapour may be discharged from vents from various process tanks/vessels/receivers in the Brew House, fermenter tank farm, Barry Crockett Still House, Garden Still House & tank farm, Distillation Columns Building & tank farm, Vat House, Spirit Store and the Micro Distillery;
- Dust generated from innocuous material from malt / barley weigh bin in the Brew House, from the Feeds Recovery Plant (outloading bay dust extract vent, storage tanks vents, wet grains silo vent, centrifuge vents, cake conveyor vent and draff tank vent) and from the Spirit Store (wood coring dust collection system & wood shaving);
- Low quantities of caustic (NaOH) vapours from Clean-in-Place (CIP) vents and bulk storage caustic tank vents;
- CO_2 and water vapour from the Brew House bub tanks common vent;
- Flue gases from a number of natural gas space heater boilers (rated thermal input of 0.34 MW or lower) and the sprinkler pump diesel engine exhaust (rated thermal input of 0.56 MW each);
- Water vapour from vents from various process tanks/vessels in the brew house, Barry Crockett Still House, MVR Vacuum Pump Vents, Hot Water Condensate Tank Vent, flash condensate tray tower vent and De-aerator Feed Tank Vent; and

[8] Air Quality Standards (AQS) for air pollutants in Ambient Air Quality Standards Regulations 2022, S.I. No. 739 of 2022 and Directive 2008/50/EC and Guideline Limit Value for Odour in *Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)*, EPA (2020).

- Minor emissions from the offices / laboratory including the Pilot Plant distillation unit vent, fumehood vents, laboratory chemical storage vents, QSE Lab Nederman arm extract, air handling units, steam steriliser & autoclave.

Minor emission points associated with the proposed expansion are detailed in *Attachment-7-4-2-Emissions-to-Air-Minor-Potential* and include:

- Very low levels of alcohol vapour may be discharged from vents from various process tanks/vessels/receivers in the brew house, fermenter tank farm, Pot Still Building & tank farm and Distillation Column Building & tank farm;
- Dust generated from innocuous material from malt / barley weigh bin in the Brew house and from the new Feeds Recovery Plant;
- Low quantities of caustic (NaOH) vapours from CIP vents and bulk storage caustic tank vents;
- CO_2 and water vapour from Brew house bub tank vents;
- Water vapour from vents from various process tanks/vessels in the brew house, Pot Still Building and Mechanical Vapour Recompression (MVR) building; and
- Vent from biogas system to allow purging of the biogas system for periodic equipment maintenance.

7.1.3 Diffuse Emissions to Air

Fugitive emissions include emissions from non-point sources and diffuse sources. The distillery is designed and operated in a manner that prevents fugitive emissions to air at source as far as possible. Fugitive emissions at the IDL installation[9] include standing and working losses of ethanol. Equipment, site storage and pipework are on planned routine inspection programme (Risk Based Inspection programme) in accordance with IE Licence Requirements and maintained under the site's preventative maintenance system, which reduces ethanol losses caused by a loss of tightness. The expansion site will come under the remit of the site's preventive maintenance system.

In order to minimise dust generation at the site all grain intake and transfer activities take place indoors within the existing Brew House and will similarly take place within the proposed new Brew House on the expansion site. In addition, the speed of vehicles on site is reduced to 10 km/hr in the unloading zone to prevent generation of air borne dust and all roads regularly used on site are hard surfaced with a programme of maintenance in place that monitors the status of roads and uses road-sweepers as required.

7.1.4 Potential Emissions to Air

Potential emissions are those which only occur under abnormal operating conditions and include emissions from pressure relief vents and bursting discs on vessels / equipment at the IDL installation.

In addition, following the development of the AD plant, a biogas waste gas burner / flare system will be installed. Use of the waste gas burner (flare) will be a means of reducing the digester head space pressure, combusting excess biogas generated in the digester when not utilised by the steam boilers (e.g. during ramping down on production, out of service due to malfunction or for maintenance) to reduce the risk of relieving biogas to the environment through the digester pressure relief valves.

Refer to *Attachment-7-4-2-Emissions-to-Air-Minor-Potential* for further details on potential emissions to air.

[9] IDL's brewing and distilling activities do not come under Chapter V (for installations using Organic Solvents) of the Industrial Emissions Directive (2010/75/EU) for VOC solvent emissions.

As the occurrences of this type of emissions are infrequent and only operational for very short periods, no significant negative effect on ambient air quality is expected.

7.1.5 Odour Emissions

Odours from process operations arise mainly from the release of odorous gases from brewing and fermentation. However, brewing odours are not considered offensive.

Potential odours may arise from the proposed AD plant displaced during cycling of the tanks, and, as such, odour control measures and abatement will be put in place to reduce off site impact. All tanks associated with the WWTP and AD plant will be covered (with the exception of the expanded WWTP anoxic tank). Air flow from potential odour sources will be passed through a centralised odour control unit (OCU) located in Warehouse No. 3. There will be one main emission point to air from this system (emission point A2-3001).

The OCU will be designed to treat the air flow from the phosphorous precipitation system (Multiflow Clarifier), Nutrient Removal Balance tank, Ammonia Removal System (ANITA MOX), the anaerobic sludge holding tank and the digester membrane blower exhausts. The main emission point from the OCU will be monitored twice a year in line with FDM BATC for ammonia, hydrogen sulphide and odour concentration.

Hydrogen sulphide and volatile organic sulphur compounds are the main odourous sources in biogas which will be supressed to a low level by passing the biogas produced through a scrubber unit prior to combustion of the gas. Operation of the biogas waste burners/flares (for back up purposes only) at 850°C eliminates any potential for odour.

7.2 Emissions to Surface Water

Existing Distillery

At the existing distillery site, groundwater abstracted is from an existing cavern source located in the south-western part of the site and used for non-contact once-through cooling of fermenters. Spent cooling water is then discharged to the Dungourney River at existing licensed emission point SWE1. Controls are in place to cease discharge if any out of specification reading for TOC or temperature is recorded, to ensure the protection of the Dungourney River.

Expansion

The distillery expansion site will not use borehole or cavern water for cooling purposes, as such, the discharge of spent cooling water will not increase as a result of the proposed expansion. Instead, a new closed loop chilled water system and cooling tower system will be installed. Make up water to these systems will be provided from existing process water supply from the on-site water treatment plant.

7.3 Emissions to Sewer

Waste water generated on-site, including aqueous production waste water, laboratory waste water utility waste water, is treated in the onsite WWTP. As part of the proposed development, the WWTP will be expanded and upgraded. Following development, waste water treatment will consists of the following treatment steps; screening, equalisation, neutralisation, a combination of aerobic, anaerobic and anoxic treatment, phosphorus precipitation and ultrafiltration in membrane bioreactors.

The discharge from the site's WWTP at SE1 is monitored for COD (daily), TOC (continuously), Suspended Solids (daily) and Fats, Oils and Greases (FOGs) (monthly). Monitoring is also performed at the point where the liquid effluent leaves the site (emission point SE2[10]) for COD (daily), BOD (fortnightly), Suspended Solids (weekly), Total Nitrogen (fortnightly), Orthophosphate (fortnightly), Total Oxidised Nitrogen (monthly), Total Ammonia (monthly), faecal coliforms (weekly)

[10] Previously referred to as SE Final in IE Licence P0442-02

and FOGs (quarterly). This monitoring is performed in compliance with Schedule C.3.2 of the site's IE Licence.

Regular monitoring for chloride is not currently a requirement of the IE Licence. Monitoring for chloride is to commence on a monthly basis at SE2, in accordance with the relevant EN standards, upon update of the site's IE Licence with the requirements of these FDM BATC.

Treated effluent is discharged to the Uisce Éireann (UÉ) Sewer at existing licensed emission point where it combines with treated effluent from both the Midleton Municipal WWTP and Dairygold Tine (P1103-01). The UÉ sewer ultimately outfalls in North Channel Great Island transitional water body at Rathcoursey Point.

It is noted that sanitary domestic effluent collected from offices, canteen, toilets, etc. at the existing distillery site is not treated in the on-site WWTP but is instead discharged to the UÉ foul sewer at emission point SE3[11] and directed to the Midelton Municipal WWTP for treatment. Similarly, sanitary domestic waste water from the proposed expansion site will be collected in a separate foul drainage system which will discharge to UÉ foul sewer located on the Old Youghal Road at emission point SE4 and ultimately directed to the Midleton MWWTP for treatment.

The production areas within the proposed development, i.e., the Brew house, Column Still, Pot Still buildings and associated tank farms, cooling towers etc. will generate waste water streams which will be collected in dedicated process effluent drainage systems. As is the case on the existing distillery site, there are two separate process effluent networks proposed:

- Organic process effluent drainage system collecting waste water from brewing and distilling operations which will go to the on-site WWTP for treatment; and
- Inorganic process waste water drainage system collecting cooling tower blow-down which is discharged along with the treated organic process effluent at licensed emission point SE2.

In accordance with existing licence P0442-02, the volumetric and qualitative emission limits values (ELVs) for discharges of treated effluent at SE2 have been set to ensure protection of the environment. No change to licensed ELVs is proposed as part of the Midleton Capacity Expansion Project. Monitoring is completed by IDL in accordance with Schedules B.3 and C.3.2 to demonstrate compliance with ELVs.

Currently, the pumping station, which discharges to the UÉ sewer at emission point SE2, receives treated organic effluent from the WWTP, inorganic effluent from process areas and storm water collected from the production area storm water catchment. It is proposed to divert clean uncontaminated storm water collected in the production area and anaerobic digestion Plant/WWTP catchment to storm water emission point SWE2.

The removal of clean uncontaminated storm water from this effluent stream will facilitate the additional process drainage flow generated by the proposed development, for treatment in accordance with the current conditions and licensed limits of the site’s IE Licence. As discussed in Section 7.4 below, control and monitoring is in place to ensure diversion of storm water from this catchment in the event that trigger values for TOC and pH are exceeded.

The outfall at Rathcoursey Point is operated by UÉ under licence from the EPA[12], with discharge periods limited to the ebb tide. Discharges from municipal WWTPs are required to meet water quality standards specified in EC Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009 (as amended).

In 2023, UÉ commissioned an up-to-date, strategic numerical water quality model of Cork Harbour that can be used as a singular point of reference to undertake the assessments as required for planning and Wastewater Discharge Authorisation (WWDA) licensing purposes. Modelling considers input loads representative of the proposed future characteristics of UÉ discharges from

[11] Previously referred to as SE2 in IE Licence P0442-02
[12] Waste Water Discharge Licence D0056-01 (currently under review as part of Midleton Wastewater Load Diversion Project which entails the amalgamation of Midleton and Carrigtwohill agglomerations (Register No.D0056-02))

the Midleton MWWTP and maximum permitted flow and concentration for industrial discharges (i.e. discharges from IDL and Dairygold Tine).

This Water Quality Modelling assessment was submitted to the EPA as part of a WWDA review application (Register No. D0056-02) in July 2023 and is available in full on the EPA website[13].

7.4 Storm Water Emissions

Existing Distillery

In line with FDM BATC, uncontaminated rainwater run-off is separated from other waste water streams that require treatment. There are a number storm water catchment areas within the IDL site, i.e., separate storm water networks with different discharge locations (see Figure 7-1).

As part of the proposed development works, a number of modifications to the existing storm water management system will be completed, including:

- A new 3,600 m^3 storm water attenuation tank will be installed south of the existing firewater retention tank (FWRT) which will discharge storm water through a fixed flow control device at SWE2. Storm water flows which are collected in the inlet tank of the FWRT, where TOC and pH will be monitored continuously, will be pumped to the new attenuation tank;
- At present, the pumping station, which discharges to the UÉ sewer at emission point SE2, also receives storm water collected from the production area catchment (production area, Warehouse no. 1 to 3 and the WWTP). It is proposed to divert clean uncontaminated storm water run-off in this area to storm water emission point SWE2 with rainwater flows from this catchment initially conveyed to the storm water inlet tank of the FWRT. Out of tolerance storm water will be diverted to the WWTP for treatment;
- Storm water emission point SWE3 and associated monitoring will be relocated to facilitate the construction of the AD Plant. It is proposed to culvert a 260 m section of the mill race to facilitate the development of AD Plant with the relocated SWE3 east of the newly culverted section (c. 50 m east of the original SWE3 location); and
- Minor modifications to the storm water network in the vicinity of Warehouse no. 3 to facilitate the construction of the AD Plant.

Following development, clean uncontaminated rainwater run-off at the existing distillery site will be discharged at the following licensed locations with controls in place to divert contaminated storm water to the WWTP for treatment to ensure that negative effects on water quality in the Dungourney River are prevented:

- Storm water from the Vat House catchment and the production area catchment will be conveyed to the storm water inlet tank (800 m^3) within the production area FWRT where TOC & pH is continuously monitored. Clean storm water collected in the inlet tank will be sent to the spillway, via the new storm water attenuation tank, before reaching the Dungourney River at SWE2. Discharge to the spillway will be prohibited if the storm water 'Action Limit'[14] is reached or exceeded and storm water will be diverted to the WWTP for treatment;
- Storm water run-off from the warehouse catchment area (Warehouses 4 to 28) flows to a retention chamber at emission point SWE3 where TOC and pH are continuously monitored. Clean storm water collected is routed to the Water Treatment Plant as part of a rainwater harvesting system or discharged to the bed of the Mill Stream. If the storm water 'Action

[13] Intertek Energy & Water Consultancy Services (2023) *Uisce Eireann, Midelton / Carrigtwohill Licence Review, Water Quality Modelling Report, P2443_R6056_Rev2,* dated 21 July 2023. Available at: https://epawebapp.epa.ie/licences/lic_eDMS/090151b280882aac.pdf

[14] On the basis of correspondence as agreed with EPA 03/08/2017, trigger values for storm water discharges from the Vat House catchment are Warning Limit: 65 mg/l TOC and Action Limit: 80 mg/l TOC. The same trigger levels apply to other storm water catchments at the existing distillery site.

Limit' is reached or exceeded, discharge is prohibited and storm water is diverted to the storm water inlet tank within the production area FWRT;

- Storm water collected in the Lower Fields storm water catchment (rainfall runoff from roofs and roadways) discharges to groundwater at Fox's Hollow (emission point GE-1), a karst swallow hole, via a flow control chamber and Class II bypass oil interceptor. Prior to discharge, TOC is continuously monitored. In the unlikely event that that the storm water 'Action Limit' is reached or exceeded, storm water will be diverted for collection within the Lower Fields fire water retention pond; and
- Rainfall run-off in car park / offices storm water catchment drains via a Class I full retention separator to an underground cavern network (via soakaway) located close to the main vehicle entrance to the site (emission point GE-2). As the car park / offices catchment is considered to be a low risk area, there is no requirement for continuous monitoring of this discharge. Monthly visual inspections are undertaken together with quarterly samples for hydrocarbon analysis if sufficient storm water is present.

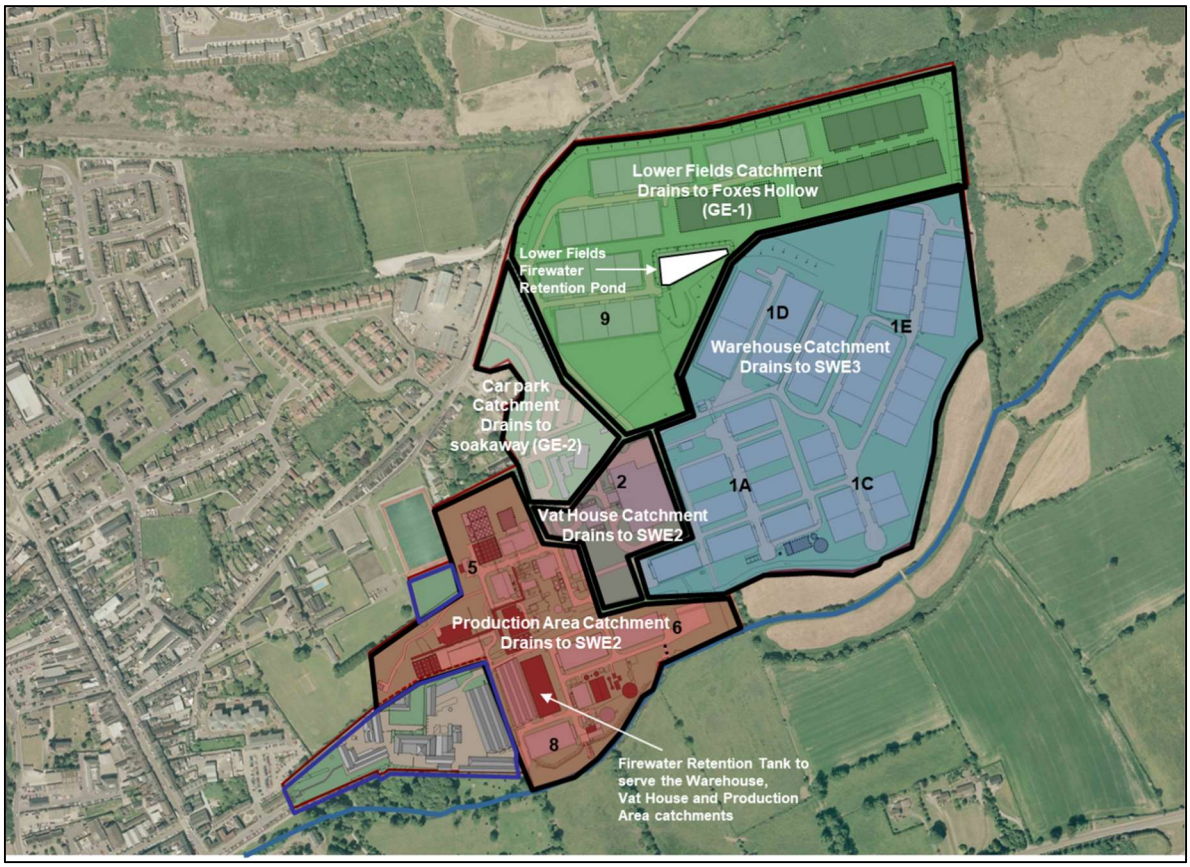

Figure 7-1 IDL Midleton, Existing Distillery Site, Storm Water Catchment Areas and Emissions Points following development

Expansion site

Clean uncontaminated rainwater collected at the production area of the proposed expansion site will discharge via hydrocarbon interceptors to an existing drainage ditch in the northern part of the greenfield site (proposed emission point SWE4), which ultimately outfalls to the Dungourney River at the point where the drainage ditch meets the River.

Storm water collected in the production area of the proposed expansion site drains to emission point SWE4. The production area will be divided into three internal storm water catchments with TOC and pH of the storm water collected continuously monitored at three separate monitoring points SWE4-MP1, SWE4-MP2 and SWE4-MP3 (see Figure 7-2):

- The Pot Still Building, Column Building and Tank Farm area (Catchment A with continuous monitoring at SWE4-MP1);
- The Truck parking area (Catchment B with continuous monitoring at SWE4-MP2); and
- The Brew house & Fermenters Tank Farm area (Catchment C with continuous monitoring at SWE4-MP3).

TOC and pH of storm water will also be continuously monitoring at the outfall of the surface water attenuation pond located in the northern part of the greenfield site at monitoring point SWE4-MP4 prior to emission point SWE4. Should out of tolerance TOC or pH readings be detected during monitoring, discharge to the Dungourney River will be prohibited and the flow will be diverted to the new fire water retention pond and pumped to the WWTP for treatment prior to discharge.

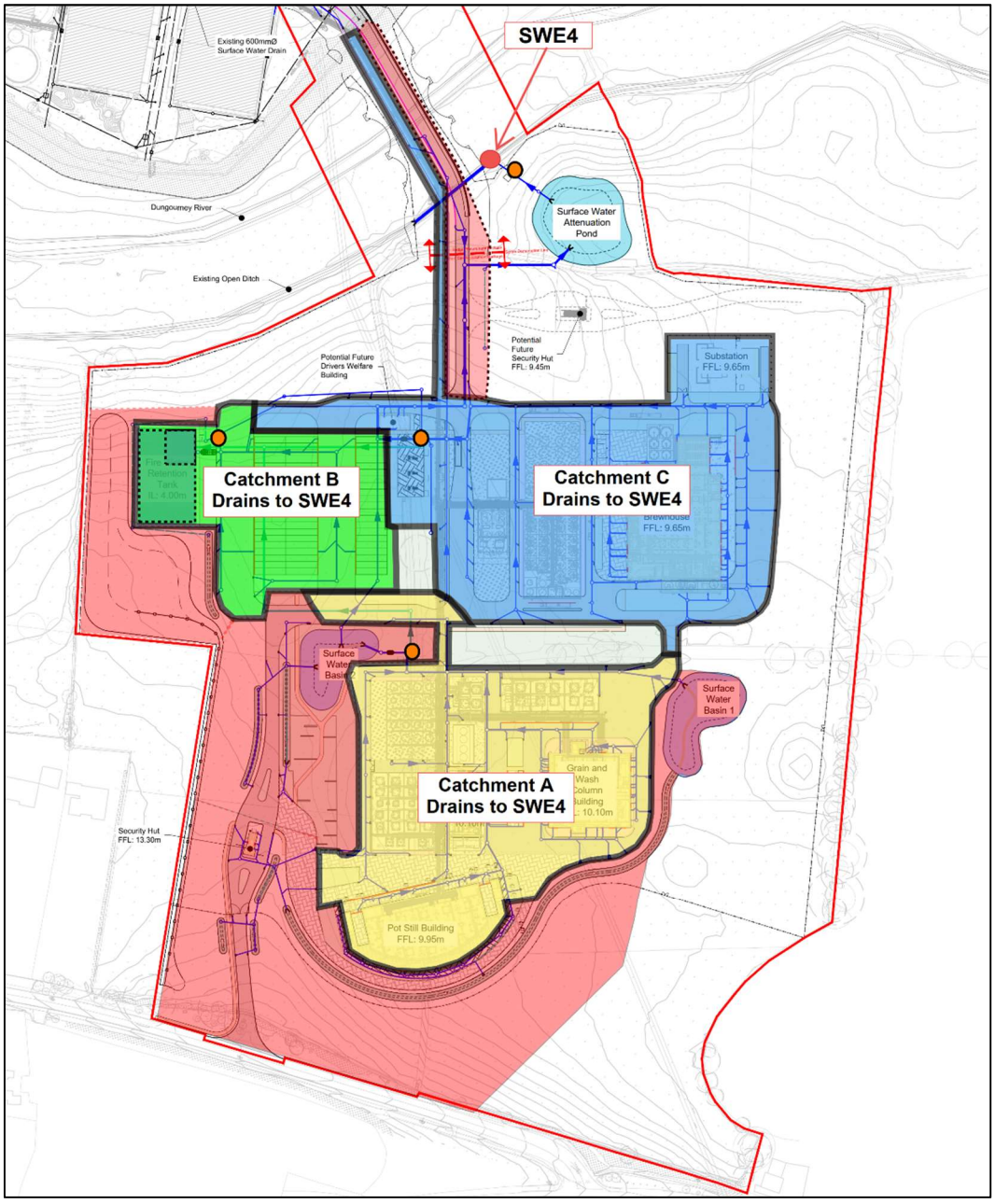

Figure 7-2 IDL Midleton, Proposed Expansion Site, Production Area Internal Storm Water Catchment Areas and Emissions Point (SWE4)

In the event of an incident which generates contaminated firewater runoff at the proposed expansion site, contaminated firewater and storm water will be contained and directed to the new firewater retention pond preventing release to the external environment. Contaminated fire water run-off will then be tankered off-site for appropriate licensed disposal by a specialist contractor.

The controls described above will ensure that negative effects on water quality in the Dungourney River will be prevented.

7.5 Noise Emissions

Noise emissions from operations at the expanded IDL site will be required to comply with IE Licence conditions in relation to noise including implementation of control measures and compliance with noise limits criteria at identified noise sensitive locations in the vicinity of the site.

A continuous noise barrier, comprising a combination of earth berm and fence, along the southern part of the western boundary has been included in the design of the proposed development. In addition, measures to reduce noise emissions compliant with BAT 1, BAT 13 and BAT 14 within the FDM BATC will be implemented at the existing distillery and the proposed expansion (refer to *Attachment-4-7-1-CID-2019-2031 FDM BATC* for further details). A noise management plan for the existing facility in line with BAT will be put in place by Q4 2024. Following development, the expansion will be incorporated into this noise management plan.

Chapter 10 of the EIAR, 'Noise and Vibration', details a Predicted Noise and Vibration Impact Assessment for the operational phase of the proposed development in Section 10.6.2. All noise levels at residential receptors are predicted to be in compliance with the IE Licence noise limits. A change in noise level of less than 3dB is generally not perceptible to the human ear, and, as the predicted change in noise level at all identified sensitive receptors is less than 3dB, the predicted impact in all cases is imperceptible.

8 Waste Management

8.1 Waste Prevention

Prevention and reduction in waste generated has been maximised through the efficient use of raw materials in the brewing and distillation process. By-products associated with the existing and proposed expansion are outlined in Table 8-1. Both the animal feed and fusel oil meet the by-product criteria under Section 27 of the EC (Waste Directive) Regulation 2011 as amended and are therefore considered to fall outside the definition of waste.

Residues from the process are used to produce two animal feed by-products, namely 'Syrup' and 'Wet Grains':

- 'Syrup': It is produced by evaporating a mixture of thin stillage and centrifuge liquid from dewatering thick stillage, both of which arise from Column Distillations; and
- 'Wet Grains': Draff (spent grains) from the Brewing Process is combined with the centrifuge solids from dewatering thick stillage, along with some syrup to produce the Wet Grains by-product.

As part of the proposed expansion project some of the distillation residue i.e. thin stillage generated across the expanded site will be diverted to the new AD Plant to generate biogas for use in the onsite steam boilers as part of the site's overall ambitious roadmap to reduce Scope 1 & 2 energy emissions across distilling operations on-site. Capacity to send the thin stillage to the Feeds Recovery system will also remain in place.

A large proportion of phosphorous in the thin stillage feed will be precipitated in the AD Plant and separated from the liquid phase by the Ultrafiltration step post AD, which will form part of the dewatered solids to be removed off-site.

Table 8-1 Distillery By-products – Existing and Proposed.

By-products	
Existing Distillery	**Distillery Expansion including Anaerobic Digestion Plant and WWTP Expansion**
1. Fusel Oil from distillation process for use as a fuel in the existing on-site boilers – EPA Approved Article 27 Notification January 2013	1. Additional quantities of fusel oil
2. Animal feed i.e. syrup and wet grains from the feeds recovery process. EPA Article 27 Notification approved in May 2013 (Note distillers dark grains were also approved, however the onsite drier and associated stack (air emission point A2-1) were decommissioned in 2023).	2. Additional quantities of animal feed (syrup and wet grains)
	3. Phosphate biofertiliser from the biogas generation process
	4. Digestate solids / soil enhancer from the biogas process
	5. Biogas for use in the on site boilers

In July 2022, the Government issued into law the *Circular Economy and Miscellaneous Provisions Act 2022*[15]. As illustrated in Figure 8-1, the proposed development and operation of the anaerobic digestion plant supports the principles of the Waste Hierarchy in Directive 20008/98/EC and aligns with the Circular Economy Act.

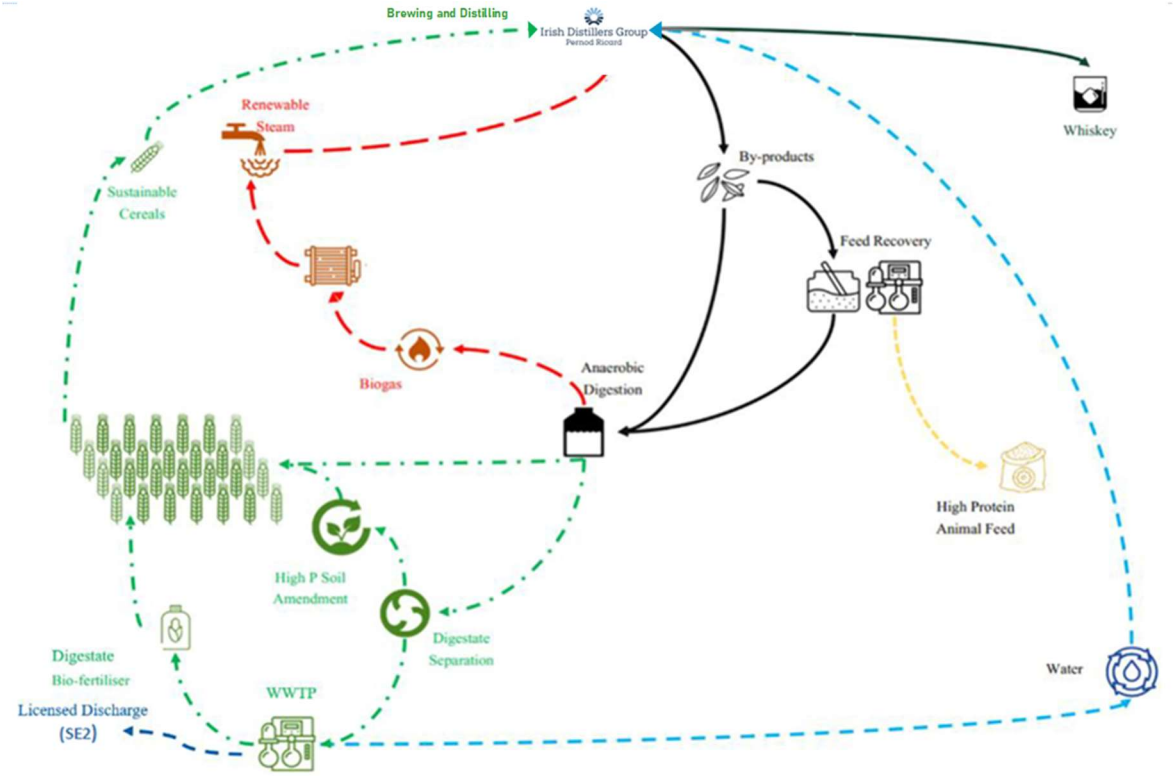

Figure 8-1 Role of By-Products & Waste Minimisation in IDL's Circular Economy

8.2 Waste Management Procedure

A detailed Waste Management procedure is in place "*EPP004 Waste Management at Midleton Distillery*" to ensure that all hazardous and non-hazardous waste generated at the distillery is handled, stored and prepared for re-use, recycling, recovery or where that is not possible disposal, in accordance with the Waste Hierarchy in Directive 2008/98/EC.

The site's Waste Management Procedure provides details on Storage, Segregation, Loading, Waste Collections, Waste Tracking, Records & Reporting and Auditing of Waste Records. Details are also provided on the relevant regulations and documentation required for the management of Hazardous Waste. A dedicated waste storage compound is in place adjacent to the wastewater treatment plant, with secondary containment for any liquid waste (Refer to drawing IE0313231-22-DR-0041). Here all waste is prepared for removal off site with appropriate classification, packaging and labelling in accordance with legislative requirements.

8.3 Waste Types

Operational waste types generated at the IDL site, together with List of Waste (LoW) codes, are detailed in *Attachment-8-1-Waste-Generated* of the Application.

Non-hazardous waste generated at the site includes:

- WWTP Sludge;

[15] https://www.irishstatutebook.ie/eli/2022/act/26/enacted/en/html

- Spoilt wet grains, waste beer, biodegradable waste, waste yeast, waste stout;
- Drop Tank & Lines residue;
- Mixed dry recyclables;
- Empty intermediate bulk containers (IBC)/Yeast Bags;
- Non-hazardous aqueous waste;
- Waste timber;
- Waste glass;
- Food waste and waste cooking oil;
- Iron and steel, scrap metal;
- Charcoal filters; and
- Non-Hazardous Electrical & Electronic Equipment

Hazardous waste generated on site include:

- Laboratory wastes;
- Interceptor sludge;
- Off-specification raw materials;
- Hazardous Aqueous liquid washings;
- Contaminated solid wastes e.g. IPA/Ethanol wipes; and
- Miscellaneous minor sources including waste oils, batteries, unused paints, waste ink etc.

Based on review of Annual Environmental Reports (AERs) submitted to the EPA, total waste generated at the site between 2021 and 2023 is summarised in Table 8-2 below.

Table 8-2 Waste Generated (2021 – 2023)

Type	2021 (tonnes)	2021 % Recovery	2022 (tonnes)	2022 % Recovery	2023 (tonnes)	2023 % Recovery
Hazardous	41.54	0.29%	217	15%	161	10%
Non-hazardous	4,780	99.71%	3,963	99%	3,480	98%
Inert	9,458	100%	5,417	100%	18,679	100%
Total	14,279	99.67%	9,633	97%	22,321	99%

Operational waste from the distillery expansion will be similar to those generated at the existing distillery and will be managed in accordance with the site's existing waste management procedure, IE Licence requirements and the waste hierarchy system. It is estimated that the waste volume will essentially double once the expansion site is fully operational. However, it is projected that hazardous waste will not double following development as the recent increase in hazardous waste on the existing site is related to asbestos disposal as a result of works to upgrade warehousing roofs. All waste from the expansion site will be routed through and managed from the dedicated waste storage compound located within the existing site.

9 Pollution Prevention

9.1 Environmental Management System

IDL implements an Environmental Management System (EMS) certified to ISO 14001:2015 which demonstrates the distillery's commitment to continuous improvement of environmental performance over time as outlined in the site's environmental policy. The EMS is regularly reviewed to ensure its continuing suitability and effectiveness. Following development, the expansion will be incorporated into the EMS. Further details on environmental management techniques implemented at the site are provided within *Attachment-9-1-EMT*.

Environmental key performance indicators (KPIs) for the site are maintained with their effectiveness reviewed regularly as outlined in procedure QSE010 *'Procedure for Setting & Monitoring Objectives & Targets Programme*'. The identification of relevant compliance obligations, including legal requirements is addressed by site procedure QSE004 *'Management of Compliance Obligations'*.

Staff training in line with Procedure QSE003 '*Competency Assessment & Training*' ensures the necessary competence and awareness of staff whose work may affect the environmental performance of the installation.

The EMS is subject to annual external ISO 14001 auditing and recertification ISO 14001 audits. In additions, a system of internal audits are carried out, in line with procedure QSE002 '*Internal Audits'*, against each element of the EMS to verify whether the stated activities comply with the planned arrangements, and to determine the effectiveness of the system.

The results of the audits are recorded and brought to the attention of the personnel having responsibility in the area audited. Where discrepancies are identified by the audit, corrective/ preventive action is implemented.

All corrective and preventive actions raised are stored on the Entropy Action Plans database. If a corrective or preventative action arises from an incident, it is recorded through the incident investigation record on Entropy. If a corrective or preventative action arises from a non-conformance, it is recorded through the non-conformance record on Entropy. Site procedure QSE011 *'Incidents, Corrective & Preventive Action and Control of Non-Conformances'* is used to describe the actions required to identify and eliminate the cause of detected nonconformities, to prevent recurrence, and to bring the system back into control after nonconformity is encountered.

The control measures in place for new, or changes to existing plant or equipment are included in procedure QSE006 *'Change Management - Control of New Processes & Materials and Changes to Existing Processes*'. As part of this assessment the site's Environmental and Energy Manager contributes to the change management approval form in terms of environmental considerations.

9.2 Abnormal Operating Conditions

A '*Register of Environmental Aspects and Impacts'* is maintained at the installation in accordance with Site Procedure *QSE022 Identification of Environmental Aspects & Evaluation of Impacts* as part of the EMS and is updated on an annual basis. The Register considers impacts likely to arise as a result of abnormal operating conditions, accidents and potential emergency situations.

9.2.1 Process Malfunctions

Processes at the installation have been subject to hazard and operability assessments (HAZOPs) with a representative of the environmental team present at all HAZOPs for the new installation.

The method of HAZOP is designed to ensure that safety, health and environmental hazards of a process are understood, assessed, and are adequately controlled. HAZOP studies also identify operability problems that although not hazardous, could compromise a plant's ability to achieve design productivity. The guidewords utilised during the HAZOPs include a number of possible scenarios that may arise due to a departure from normal operating conditions (e.g. increase in temperature, reduced pressure, static, low flow, etc.). Any recommendations made and actions

arising from these HAZOPs have been incorporated into the final design of the installation. The design philosophy followed is that in the event of failure (e.g. of lower or compressed air actuation), the equipment fails to a safe position.

9.2.2 Fire water run-off retention

In the event of an incident which generates contaminated firewater runoff, contaminated firewater and storm water will be contained and directed to the firewater retention tank preventing release to the external environment. Contaminated fire water run-off will then be tankered off-site for appropriate licensed disposal by a specialist contractor. Similarly, during development of the greenfield expansion, a fire water retention tank will be installed to contain potentially contaminated run-off during operations.

9.2.3 Potential Spillages

Comprehensive spill prevention measures are implemented at the installation to prevent soil and groundwater contamination including:

- The loading and unloading of materials is carried out in designated areas protected against spillage and leachate run-off (Procedure for the *Bulk Unloading of Oils & Chemicals* (EPP016)) ;
- Chemical and waste storage areas are bunded and leak detection systems in place in line with EPA guidance and best available techniques (BAT) requirements;
- Training is provided to personnel for identifying leaks;
- The integrity and water-tightness of all tanks, bunding structures, containers and underground pipelines is carried out at least once every three years in accordance with IE Licence requirements and remedial action identified during survey is carried out in a timely manner;
- A drainage system that segregates storm water, foul waste water and process waste water is maintained with integrity testing and necessary remedial works completed every three years in line with IE Licence requirements;
- Continuous TOC & pH monitoring of storm water at SWE2 and SWE3 monitoring points facilitates diversion of the contaminated storm water to the WWTP for treatment preventing discharge to the Dungourney River;
- Two buffer tanks with an available volume of 900 m^3 each, can store waste water in the event of an upset condition. An additional high strength effluent tank with a capacity of ca. 1,000 m^3 will be installed as part of the WWTP upgrade to divert and store any high strength wastewater that may be produced at the expanded installation; and
- A preventative maintenance programme is in place to ensure the timely repair or replacement of equipment. IDL mainly use an electronic software package (PEMAC) to operate its planned and preventative maintenance (PM) programme. Maintenance routines are established by the Engineering Supervisor (EP 001 *'Engineering Maintenance & Control'*).

The installation has an Emergency Response Plan (HSP006) which includes detailed plans on the measures to be taken in the event of a major incident. Spill kits are provided for storage areas as per site *Spill Control Procedure* (EPP050) and training in emergency procedures is provided to all personnel on the site.

These same spill prevention and management measures will be implemented at the proposed expansion site following development.

10 Best Available Techniques (BAT)

Section 4.7 of the application presents detailed assessment of activities at the installation against applicable published Best Available Techniques (BAT) Conclusions and BAT Reference (BREF) documents available on the European IPPC Bureau website[16] and demonstrates that all the appropriate pollution prevention measures are implemented at the installation. Under Articles 14 and 15 of IE Directive 2010/75/EU, the Competent Authority in each Member State shall use BAT Conclusions as a reference for setting permit conditions. BAT Conclusion and BREF documents applicable to the IDL installation are summarised below:

1. Relevant **CID BATC** Documents:
   - *Commission Implementing Decision (CID) (EU) 2019/2031 of 12 November 2019 establishing the Best Available Techniques (BAT) Conclusions for the Food, Drink and Milk Industries (FDM BATC)*.
2. Relevant **Horizontal BREF** Documents:
   - *Reference Document on the Best Available Techniques on Emissions from Storage* dated July 2006;
   - *Reference Document on the Best Available Techniques for Energy Efficiency* dated February 2009 (corrected version as of 09/2021);
   - *Reference Document on the application of Best Available Techniques to Industrial Cooling Systems* dated December 2001; and
   - *Reference Report on Monitoring of Emissions to Air and Water from IED Installations, Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control)* dated 2018.

The three existing on site boilers have an individual rated thermal input of 16.2 MW each (i.e. only these combustion plants are greater than the 15 MW aggregation threshold specified in the Industrial Emissions Directive), the sum of the total rated thermal input for these three boilers is 16.2 MW × 3 = 48.6 MW. As this summation is below 50 MW, the boilers and therefore the site are outside the scope of Chapter III of the IED and, therefore, the Large Combustion Plant BAT Conclusions[17]. Further discussion is provided within Section 4.10 of the Application.

[16] https://eippcb.jrc.ec.europa.eu/reference
[17] *Commission Implementing Decision (EU) 2021/2326 of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants*

11 Cessation of Site Activities

Section 9 of the application includes a Decommissioning Management Plan (DMP) which was recently updated in May 2023 (refer to *Attachment-9-2-3-Site Closure*). This report was prepared in accordance with Condition 10.2 of IE Licence P0442-02 and the methodology for the development of the Decommissioning Management Plan in EPA Guidance Document "*Guidance on Assessing and Costing Environmental Liabilities 2014*".

In light of significant investments in the site, the current proposed capacity expansion development and the unique nature and market share of the industry itself, closure of the installation is a highly unlikely event in the foreseeable future given the long term planning strategy of the site.

Upon cessation of operations and subsequent decommissioning at the installation, it is anticipated that there will be no remaining environmental liabilities, i.e. clean closure is expected. Due to the nature of activities on site, there are no difficulties envisaged in achieving this objective.

To comply with Licence Conditions 10.2 and 10.3, IDL have prepared the following DMP focusing primarily on the production area and scheduled activities. The DMP looks at the costs for decontamination and decommissioning of plant and equipment associated with the scheduled activities. Due to the unique nature of the IDL site, approximately 75% of the site is allocated for maturation purposes. Maturation is not a scheduled activity and as such is not included in the decontamination and decommissioning costs within this DMP.

The purpose of the closure process is to ensure that the site no longer poses a risk of environmental pollution. Ethanol is the primary material produced and stored on site, it is the main component of alcoholic beverages.

It is not envisaged that any of the plant and / or equipment will have to be demolished and all will remain intact as part of the asset which can be repurposed. These elements, once decommissioned and decontaminated, will be tested to ensure there is no risk of environmental pollution remaining. The following steps will be carried out in sequential order to achieve closures of the production area and maturation area of the site.

- Decontamination and decommissioning of production buildings using standard Clean-In-Place (CIP) procedures. All wash waters will be discharged to the WWTP for treatment. All residual hazardous and non hazardous waste and materials will be removed to the waste storage area and segregated accordingly. The state of cleanliness would be verified through a visual inspection.
- Emptying, decontamination and decommissioning of the following tank farms: fermenters, Garden Still House and Distillation Columns Building. No residue to remain in tanks or pipelines. Residuals to be treated on site in the WWTP or recovered/disposed of off-site at appropriate facilities.
- Shutdown, decontamination and decommissioning of boilers and cooling tower following normal maintenance procedures. Residual fuels to be removed from tanks and pipelines.
- Shutdown, decontamination and decommissioning of the Water Treatment Plant (WTP). Residual treatment chemicals to be removed from tanks and pipelines.
- Shutdown and decommission contractors compound. Removal of all residual waste to waste storage area.
- Decontamination and decommissioning of laboratories. Removal of all residual waste to waste storage area.
- Clear and clean all office and administration areas. WEEE (waste electrical and electronic equipment) to be removed by a suitably permitted operator. All other wastes to be dispatched to waste storage areas.
- All wastes to be segregated, labelled and removed for waste recovery/disposal by suitably permitted operator. Clear and decontaminate waste storage areas.

- Fuel tanks: before final site closure, all fuel tanks and their bunds will be cleaned by specialists. Any storm water drains in the vicinity of the tanks will be blocked to prevent any discharge to controlled water during this clean up process.
- Rinse through process and foul water drainage networks to WWTP. Pump any residual process water from sumps to WWTP.
- Clean silt traps and interceptors in the surface water network.
- Decontamination will extend to the WWTP and all associated drains and sewers will be washed out and drained to CCC industrial sewer under controlled conditions. All sludge residues will be removed from the site and appropriately disposed of.
- Groundwater production wells will be decommissioned to ensure no residual exposure of groundwater resource.
- Completion of groundwater and soils (if required) monitoring survey.
- Mains water and electricity into the site will be maintained for as long as it is required.

It is estimated that full closure will take 6 months to complete following shut-down.

Upon completion of implementation of the DMP, IDL will conduct an independent validation audit to demonstrate to the EPA that the DMP has been implemented.

The DMP estimates maximum realistic cost of closing a fully operational installation with immediate effect with no demolition of buildings or sale of equipment. IDL will put in place the necessary Financial Provision to cover this Closure Cost.