Pelagia Killybegs

Odour Management Plan

Client:	Pelagia Killybegs Ireland Ltd.
Author:	Frank Trearty, RPS, Odour monitoring Ireland
Document Title:	Odour Management Plan

Document Revision Log

Revision Number	Date	Responsibility	Nature of Revision
D01	10th January 2016	Frank Trearty	Compilation of OMP
D02	24th July 2016	Frank Trearty	Modify OMP
D03	26th July 2016	Frank Trearty	Added site locations
D04	17 July 2018	Frank Trearty	Updated to Pelagia from UFI
D05	06th September 2021	AMcL	Header: Updated Code to ENV400 1.0 Introduction updated to include production material and IEL Reg. Number 4.6 Monitoring - Added more detail on frequency of odour assessments & off-site monitoring Figure 4.1 Map showing odour monitoring locations onsite Figure 4.2 Map showing sensitive receptor locations 6.2 Included Pelagia Killybegs Weather app

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1. INTRODUCTION

This document sets out the Odour Management Plan (OMP) for the ongoing operations at the Pelagia Killybegs Limited facility in Donegal Road, Killybegs, Co. Donegal. Pelagia is a fishmeal and fishoil production company. This installation is licensed under the Industrial Emissions License system (Reg. P0416-04).

The plan has been devised to assist Pelagia Killybegs in effectively managing any odour risk at the Pelagia Killybegs facility to ensure compliance with the site's Industrial Emissions Licence. The plan covers all aspects of the site operation within the licensed boundary.

This Odour Management Plan (OMP) has been prepared in accordance with the following guidance documents:

- Odour Management Guidance (Environment Agency, 2011).
- Odour Impact Assessment Guidance for EPA Licensed Sites (EPA Guidance Note AG5, 2010).

The OMP has been designed to:

- Employ appropriate methods, including monitoring and contingencies, to control and minimise odour pollution.
- Prevent unacceptable odour pollution at all times; and
- Reduce the risk of odour releasing incidents or accidents by anticipating them and planning accordingly.

It should be noted that this is a live document that will be updated and reviewed by Pelagia Killybegs based on changes to operations, infrastructure, the efficiency of the mitigation measures as well as the results of the odour monitoring programme.

This document provides an overview of the odour management of the site and identifies the key roles and responsibilities that will ensure the operations are carried out in compliance with the system. All the information is presented in a comprehensive plan and the listed items in this system have been prepared to allow for ease of update of future versions of the documentation for changes to the site operation or infrastructure.

The OMP is a live document which will be continuously reviewed by Pelagia Killybegs on a periodic basis through regular auditing, monitoring and site inspections. This will ensure that the risk of odour from the site will be managed to mitigate the risk of odour nuisance at nearby residences.

2. SITE DETAILS

2.1 SITE LOCATION

The site is located on the outskirts of Killybegs in an area of agricultural, Housing and retail development. Located at the entrance to Killybegs town, Pelagia Killybegs Ltd is located on a 1.699 Ha site. The site is located half a mile east of Killybegs harbour in the town land of Corporation. The site encompasses the harbour foreshore and is approximately 5 metres above sea level.

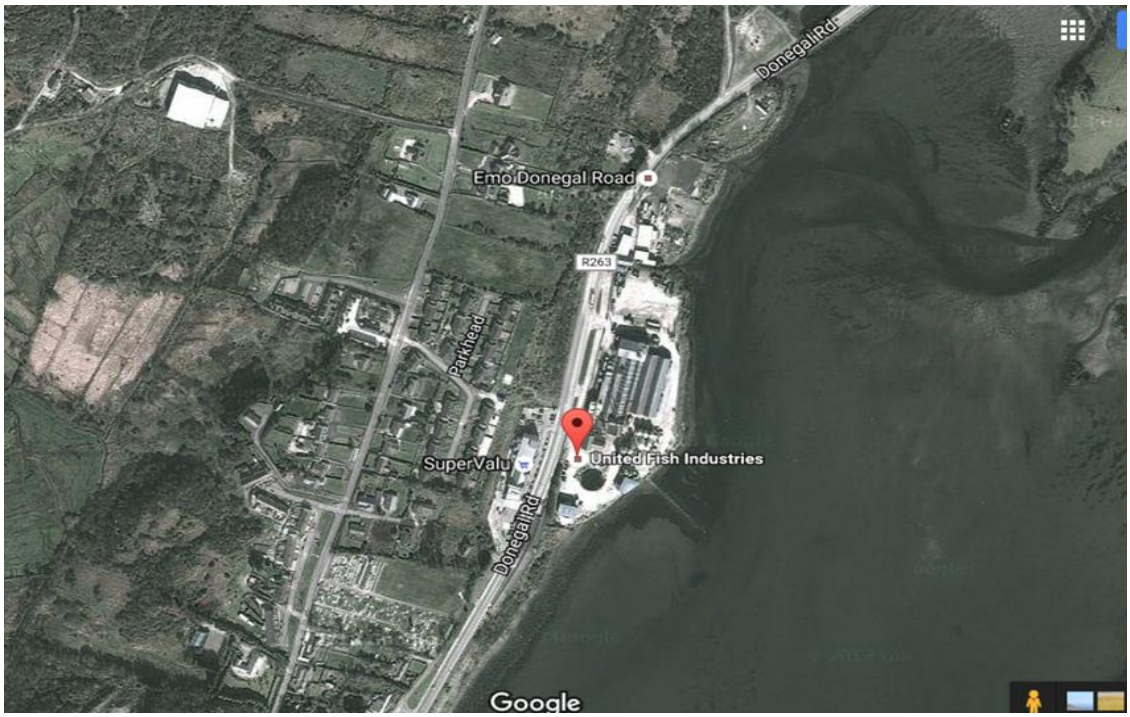
The site location is presented on **Figure 2.1**.

The nearest sensitive receptors to the facility include the following:

- Parkhead Estate & Church Road to the West and South West of the site. These properties are circa 50 + metres from the Pelagia Killybegs site boundary.
- The individual properties along Donegal Road to the South West of the site These properties are circa 200 metres west of the site boundary.

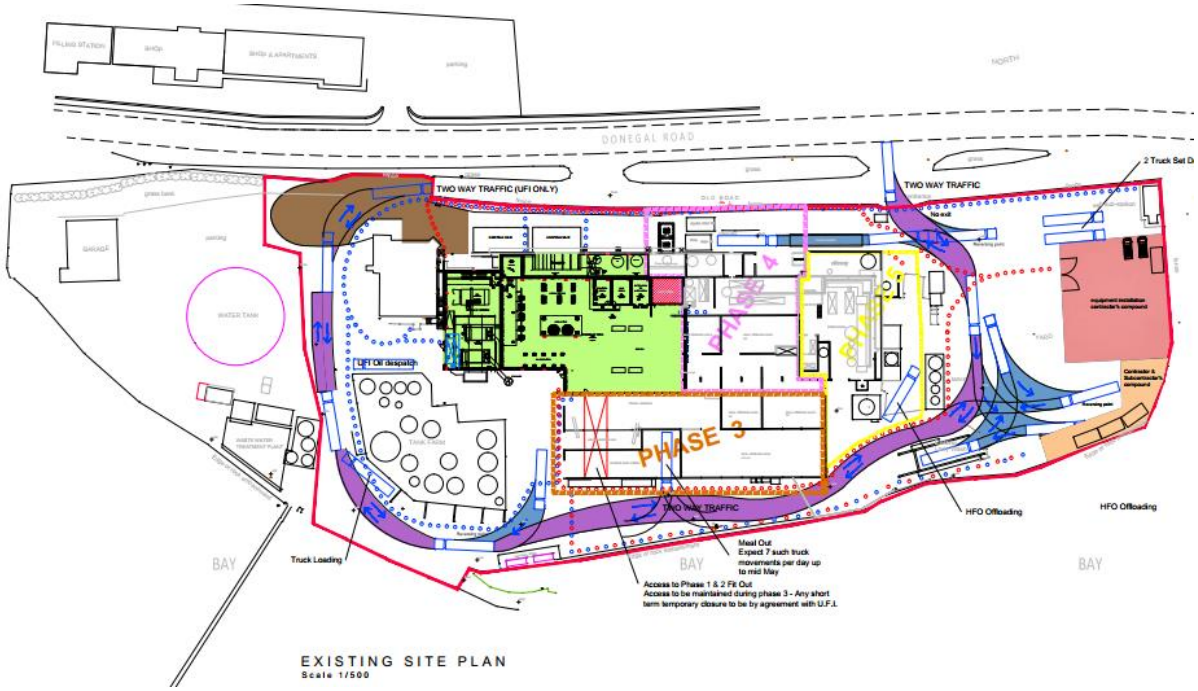
There are a number of other locations in the area where there is a risk of odour or where odour complaints have been raised but the two areas listed above would be the most sensitive receptors to odour risk at the site.

FIGURE 2.1 SITE LOCATION



2.2 SITE LAYOUT

FIGURE 2.2 – SITE LAYOUT



2.3 SITE OPERATIONS

Pelagia Killybegs Ireland Ltd is authorised for the operation of Production of Fishmeal & Fishoil at the site including the following:

- Fish Raw Material Reception
- Raw Material Storage
- Processing: Cooking, Pressing, Decanting, Separating, Drying, Evaporating, Cooling, Milling
- Finish Product Storage
- Product Dispatch

According to internal data some 100,000 tonnes of Raw Material were processed on-site in 2020.

The facility was first authorised by IPC licence (PO416-01) in 1999. The IPC licence was replaced by a IED Licence in December 2015 (PO416-04).

3.0 LEGAL FRAMEWORK AND REQUIREMENTS

3.1 LICENCE REQUIREMENTS

Pelagia Killybegs Ireland currently operates under Industrial Emissions Licence PO416-04 from the EPA for activities under Class 7.8:

In this regard, Pelagia Killybegs are obliged to manage the risk of odour nuisance from the facility and this condition as well as local odour complaints made in relation to the facility underpin the preparation of this OMP.

3.2 BEST AVAILABLE TECHNOLOGY

The relevant BREF note for the Pelagia Killybegs facility is the Integrated Pollution Prevention and Control Reference Document on Best Available Techniques for the Slaughterhouses and Animal By-Products

In accordance with pending best practice guidance this OMP has been prepared to manage odour risk at the site.

4.0 ODOUR RISK ASSESSMENT

The risk of odour from the Pelagia Killybegs operation is assessed based on the standard source-pathway-receptor model. Each area is outlined in the following section to provide an assessment of overall risk. This plan outlines the odour risk at a given time in the operation and as the document is live the reader should consult the most up to date version of the plan to identify the current risk profile.

4.1 SOURCE

There is a range of potential odour source and odour types at the Pelagia Killybegs facility that need to be considered and these are largely broken down into four distinct areas as follows:

- Raw Material reception, handling and storage
- Processing of Raw material –negative extraction and treatment of foul vapours
- Cooling milling and storage of final product
- Treatment of process airs though odour abatement systems

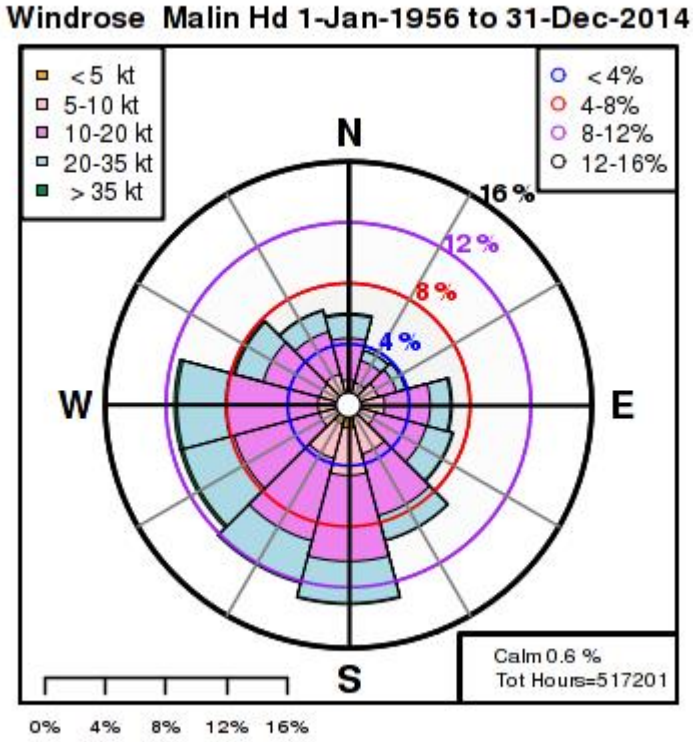
These sources may be modified, reduced or supplemented through the periodic review process.

4.2 PATHWAY

In the event that any odours become airborne the odours will dilute and disperse in the air. The direction of dispersion and extent of dilution is largely dictated by the wind speed and direction. Higher winds will lead to greater dilution than lower winds and calm days (such as temperature inversion) will restrict dilution/dispersion and increase odour risk.

Wind direction in the Killybegs area is predominately South westerly. These South westerly winds will direct odours from the plant in the direction of single dwellings in the townland of Corporation. Easterly winds in the direction of the residential areas to the West are very infrequent (circa 6%) as are calms (0.6% of the time).

FIGURE 4.1: WINDROSE FOR MALIN MET STATION (SOURCE WWW.MET.IE)



4.3 RECEPTOR

The nearest sensitive receptors to the facility include the following:

- Parkhead Estate to the west of the site (above Donegal Road that bounds the site to the west). These properties are circa 50 metres from the Pelagia Killybegs site boundary.
- The individual properties along Donegal Road and Church Road to the south west of the site (On the way into Killybegs town) These properties are circa 200 metres (+) south west of the site boundary.

There are a number of other properties in the area where there is a risk of odour or where odour complaints have been raised but the two areas listed above would be the most sensitive receptors to odour risk at the site.

4.4 RISK ASSESSMENT

Table 4.1 itemises all the potential odour sources on the Pelagia Killybegs site and assesses the potential for odour generation, subsequent dispersion by wind (pathway) and impact on sensitive receptors. Where mitigation measures have been implemented (either operational practices or infrastructural abatement) these are noted and each potential source is categorised as a high, moderate or low odour risk.

Through the development of the site and changing work practices, any new operation should be assessed in the following manner to determine the potential for odour risk and the need for mitigation.

In addition, in the event that the ongoing monitoring and auditing determines that the nature of the source, efficiency of the mitigation or any other measure documented in this plan is not valid ***Table 4.1*** should be modified accordingly.

Table 4.1: Odour Risk Assessment

Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
Fish unloading in collection hopper in reception building.	Reception area to be fully enclosed. Rapid roller door to ensure unloading of fish within contained area. Tipping to be performed within enclosed reception area. Reception area to be placed under negative extraction to prevent the release of odours.	Visual observation of building integrity Close Hopper lid after unloading Visual observation of rapid door functioning. Check sheet included in OMP	To minimise the release of odours from failure in the containment and extraction system.	**Low**
Spillage management	Conveyor system considered a sealed unit and fish dewatered to minimise excess water carryover in conveying system. Adequate drainage to allow odorous material to be cleared quickly. Large organic matter filtered before entry to drain system.	Visual observation of drips, spills etc from conveying system. Visual observation of all drains and traps to ensure no deposition of organic matter resulting in odour formation. Visual observation of all drains points to ensure no blockages and to ensure they are charged. Check sheet included in OMP	To ensure the effectiveness of the spillage management system and the reduction of the formation of fugitive odours. To minimise the release of fugitive odours to atmosphere during operations.	**Medium**

Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
House keeping	High pressure washer access to all potential spillage locations. Regular cleaning cycle implemented within the fish reception area. All surfaces finished to high standard for ease of cleaning.	Visual observation of all potential contamination surfaces on a daily basis. Visual observation of the integrity of all surfaces to ensure effective cleaning. Overall cleaning cycle to be included in the Environmental Management system from the operating site. Check sheet included in OMP	To minimise the formation of odours from decomposing material on surfaces.	**Low**

Fish quality	TVN values will be measured and used as alert system for processing. Value of product related to TVN value to ensure consistent high quality product received.	TVN monitoring in onsite laboratory, TVN alert system to allow for the prioritising of high TVN material for fast processing. TVN quality of product used as mechanism to ensure sufficient, preservation and handling techniques are followed. Integrity of containment system and extraction system dictates the TVN value allowable on the particular day. Check sheet included in OMP	To ensure the proper procedures for handling, and processing of raw material. To minimise the overall emissions of odours independent of raw material quality through containment and extraction techniques.	**Low/Medium**
Raw Material Storage	Carbon filter units to be placed on displacement air. Leaks at Glands and Seals to be repaired in timely manner. Immediate Housekeeping of any leaks	Check Carbon –odours assessment Visual check during Odour Patrol.	To ensure the proper procedures for handling, and processing of raw material. To minimise the overall emissions of odours independent of raw material quality through containment and extraction techniques.	**Low**

Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
Raw material conveying	Raw material screw fed to conveying system and conveyed to roto drain and cooker distribution hopper. Conveying system to be sealed, and gasket lid covered.	Visual observation that all hatches closed	To prevent the emissions of odours from the conveying of stored fish within the intake bins	**Low**

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Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
Air/Vapour displacement from cookers, seals and gaskets	Sealed and gasket to prevent the release of odour emissions. Negative extraction upon process equipment to ensure no leakage of odours from system (i.e. at exit point). Ensure spillage trays provided as easy access to under equipment for ease of cleaning.	Visual inspection of gaskets and seals. Preventative maintenance on all gaskets and seals on a regular basis.	To minimise and prevent the release of odours from equipment that requires routine maintenance and with mechanical running whereby gaskets may be weakened.	**Low/medium**
Post cooker straining and maintenance	Sealed and gasket to prevent the release of odour emissions. Negative extraction upon process equipment to ensure no leakage of odours from system. Ensure spillage trays/drains provided as easy access to under equipment for ease of cleaning.	Visual inspection of gaskets and seals. Preventative maintenance on all gaskets and seals on a regular basis.	To minimise and prevent the release of odours from equipment that requires routine maintenance and with mechanical running whereby gaskets may be weakened.	**Low**

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Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
Wet mill/hammer mill operation and maintenance	Sealed and gasket to prevent the release of odour emissions. Negative extraction upon process equipment to ensure no leakage of odours from system. Duct to Wet seawater scrubber	Visual inspection of gaskets and seals. Preventative maintenance on all gaskets and seals on a regular basis. Inspect Media periodically and after storms as soon as practically possible.	To minimise and prevent the release of odours from equipment that requires routine maintenance and with mechanical running whereby gaskets may be weakened.	**Low/medium if scrubber media gets fouled**
Fish oil, Bloodwater, stick water, soluble and condensate storage and processing	Sealed tank with dedicated fresh air intake. Negative extraction upon the headspace of the tank.	Visual inspection of access hatched and preventative maintenance on all gaskets and seals on a regular basis.	To minimise and prevent the release of odours from tankage.	**Low**

Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
Air/Vapour displacement from SD drier, seals and gaskets	Ensure negative air extraction applied to the SD drier raw materials entry and finished product exit. Excess vapour to be transferred to waste heat evaporator for conditioning.	Visual inspection of access hatched and preventative maintenance on all gaskets and seals on a regular basis. Static pressure sensor SCADA linked to ensure integrity of extraction system. Written process record of vacuum control.	To minimise and prevent the release of odours from process equipment.	**LOW –if Vacuum is retained, loss of Vacuum can cause a severe localised odour impact.**

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Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control	Odour Risk Post Mitigation
Meal grinding and cooling air displacement	Sealed process. Equipment to be negatively extracted to dust filtering technology (interlink with existing bag plant) to remove particulate and to prevent odorous particles from contaminating building atmosphere. Excess air generated by milling to be negatively extracted to odour control system for treatment	Visual inspection of maintenance procedures and ensure gaskets/seals have good integrity. Static pressure sensors inline to monitor particulate and negative extraction system.	To minimise potential particulate contamination of building headspace to control contamination of surfaces. To prevent the release of odorous air to atmosphere.	**Low**
Meal storage	Enclose top of conveying system to prevent particulate emissions to building headspace. Close Store doors	Visual inspection of enclosure integrity.	To minimise potential particulate contamination of building headspace to control contamination of surfaces. To prevent the release of odorous air to atmosphere.	**Low**

Maintenance for all mechanical equipment-	Negative extraction to odour control system, were possible. Odorous equipment to be washed immediately and stored appropriately.	Visual inspection of enclosure integrity.	To prevent the release of odorous air to atmosphere. To ensure the integrity of the containment and extraction system	**Low**
Pumping of all liquors to all tankage	Enclose all tankage and allow for only dedicated pressure/vacuum release valves. Ensure negative extraction	Visual inspection of enclosure integrity.	To prevent the release of odorous air to atmosphere. To ensure the integrity of the containment and extraction system	**Low**

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Odourous source categories	Activity that produces odour and the point of emission risk	Considered BAT Principle of odour control	Monitoring technique for assessment of risk	BAT effect on odour control
Source category 6	All odorous materials tankage management to include, Fish oil, Stick water, condensate, Blood water, soluble, Press water and Decanted press water process tanks	Sealed tank with dedicated fresh air intake. Negative extraction upon the headspace of the tank. Approx. the maximum fill rate of the tank per unit time + 1 AC/hr the volume of the tank. Maintain high face velocity across the fresh air intake vent.	Visual inspection of access hatched and preventative maintenance on all gaskets and seals on a regular basis. Static pressure sensor SCADA linked to ensure integrity of extraction system. Linear valves to be considered for flow control from each equipment piece. Poor control on butterfly/ball valves for air.	**To minimise and prevent the release of odours from tankage.**

5. MONITORING AND AUDITING

5.1 AUDIT

This plan includes for the periodic odour audit of the facility by a suitably trained person to identify all sources on site together with nature and scale of the odour release and associated construction details. This will be to both validate the sources listed in **Table 4.1** coupled with the identification of any new sources.

The auditing programme should be risk based and will consider the following:

- The nature of the audit (i.e. routine or reactive to a complaint).
- The nature of the operations being undertaken on the audit date relevant to those listed in **Table 4.1**.
- The weather conditions at the time of the audit, including but not limited to wind speed and direction.
- The nature of odour complaints, if any, received by the site management since the previous audit.
- Any new infrastructure installed at the site.
- Any modification to working practices, accepted material, etc. since the previous audit.

All audits will be recorded and where necessary a corrective action will be issued to the relevant personnel including the General Manager as a minimum.

5.2 MONITORING

Odour Monitoring onsite is carried out on all days of production. Odour monitoring may also take place on days when there is no production if there is an odour identified on site that would cause a possible or significant nuisance or in response to a complaint.

There are four main monitoring locations on site detailed in Appendix A; these were chosen from the recommended sequence of sampling locations outlined in the EPA "*Odour Impact Assessment Guidance for EPA Licensed Sites*" (Guidance Note AG5, 2010). However, depending on wind direction these monitoring locations are not limited to 4.

The periodic off-site odour monitoring and investigation aspects of the OMP will follow the procedures presented in the EPA "*Odour Impact Assessment Guidance for EPA Licensed Sites*" (Guidance Note AG5, 2010). The number and frequency of audits will be dictated by the frequency of complaints (if any) coupled with any direction provided by Pelagia Killybegs Management and/or the EPA through the IED Licence.

Off-site odour monitoring must be carried out if an onsite odour persistence or intensity signals a possible or significant nuisance according to the assessment matrix (Appendix A). Sensitive receptors off-site are dependent on wind direction at the time of the odour assessment. The four main sensitive receptors are included in Appendix A; SuperValu shop across the road from the facility, Parkhead residential estate, the graveyard and the bridge.

The monitoring protocol to be adopted will follow that presented in AG5 and the relevant field data sheet is presented in Appendix A. In addition, the map of the options for monitoring locations is also presented in Appendix A.

The location and number of locations to be included in any monitoring event will be dependent on the wind direction at the time of the survey. Wind direction data may be derived from the site's met station or from www.met.ie.

All routine or reactive odour monitoring carried out will be documented and all files maintained on site for inspection.

The results of the monitoring events will be communicated to the Operations Manager to advise of any changes to the working practices or abatement measures to mitigate odour risk.

6. COMMUNICATIONS

6.1 AWARENESS TRAINING

Pelagia Killybegs shall ensure that all on-site staff undergo suitably tailored odour awareness training programmes. All new staff will receive an odour induction before commencing work on the site and existing staff will receive refresher training.

The training will be tailored to suit the tasks and responsibilities of site personnel from management and supervisory level through to site operatives. All staff will receive training on a scale relevant to their work activities. On completion of the training, the trainees will sign a form to provide a record of their attendance at the odour training.

During the training the contents and requirements of the OMP and IED Licence will be explained and discussed as well as any additional requirements. The training programme will cover the following aspects as a minimum:

- That ALL personnel in the organisation must be aware of their personal responsibilities for environmental and odour matters.

- That key individuals on-site have specific responsibilities to the environment.
- That regular communication shall be made via site signage and regular toolbox talks.
- **Employee responsibilities:** That all employees are responsible for their acts and omissions and shall be held accountable if their actions result in environmental harm, including odour nuisance.
- **Control of nuisance:** That odour, noise and dust require particular control measures to minimise impact on the surrounding environment.
- **Emergency response procedures:** That the procedure, if safe to do so is: STOP, CONTAIN, NOTIFY in the case of an environmental emergency on-site.
- **Environmental incident and near miss reporting:** Those environmental incidents, such as loss of containment, spills, etc. must be reported immediately to the Operations Supervisor/Manager or to HSE personnel to identify the cause.
- **Odour Complaints:** That a procedure is in place to deal with complaints and that every assistance must be provided to close out any active complaint.
- **General environmental good practice**: Materials management, storage, site upkeep, maintenance, handling and refuelling of plant and machinery

Following training all personnel must familiarise themselves with their place of work and the responsibilities associated with their position. If there are any uncertainties the employee will contact the Plant Manager for clarification.

6.2 COMPLAINT INVESTIGATION

As part of the plan, a dedicated recording system will be put in place to allow for the management of odour complaints. One of the most important factors associated with odour complaint recording includes the use of an easily contactable phone number for complainants to raise their complaints. During normal working hours, an experienced person who is familiar with the processes should be available by phone. Only during out of hours should an external answering service or answer phone be used. The out of hours service should gather the information required of the complainant. The complainant should always be contacted back unless specifically requested not to. The relevant information to be recorded includes:

- Date and time of complaint
- Name of complainant
- Location of complainant

- Duration of odour
- Where and when odour was detected
- How strong the odour was/is (Intensity on a scale of 0 to 5 where 0 is not perceptible, 1 is very weak, 2 is weak, 3 is distinct, 4 is strong and 5 is very strong)?
- What did the odour smell like - A number of random descriptors should be proposed by the facility representative or offered by the resident (saying that the odour smells bad is not sufficient).
- Details of the responses made to the complainant.
- Details of the existing met conditions, in particular wind speed. Up to date met data is available on: http://www.met.ie/latest/reports.asp or Pelagia Killybegs weather cloud app on: https://app.weathercloud.net

An odour complaint log must be maintained and record all available details of each complaint

Where possible the location of the complaint should be visited immediately to verify the nature of the odour. Where the source is confirmed to relate to the works, the Site Management or HSE personnel should be contacted immediately to cease or modify the operation causing the odour until suitable mitigation measures are devised.

APPENDIX A
Odour Monitoring Form

PELAGIA™	Code	R-059
	Revision	6
	Issued by	QM
	Page	1 of 2
BOUNDARY ASSESSMENT	Date issued	31/08/2020

Ref Proc. ENV500 — Routine assessments to be completed when plant is in production

Day/Date																					
Start time																					
Wind ↗/Strength (Note 1)																					
Assessed by																					
Type - Routine(R) Complaint(C)																					
Location	Odour assessment: P=Persistence (Note 2), I=Intensity (Note 3), D=Description (Note 4) (see assessment matrix on page 2)																				
	P	I	D	P	I	D	P	I	D	P	I	D	P	I	D	P	I	D	P	I	D
Front Street (W)																					
Trailer yard (N)																					
Shoreside (E)																					
Carpark/Garage (S)																					
Additional locations to check in the event of medium and high level nuisance odour assessments																					
Shop																					
Parkhead																					
Graveyard																					
Bridge																					
Surface water points - Colour/odour																					
W2 (Front street/carpark)																					
W4a (Large interceptor)																					
W4b (Bund interceptor)																					
W4c (Roof water)																					
W5 (Yard water NE)																					

PELAGIA™ BOUNDARY ASSESSMENT	Code	R-059
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	Date issued	31/08/2020

Note 1 - Wind strength

0	Calm	Smoke rises vertically
1	Light air	Direction of wind shown by steam/vapour drift, but not wind sock
2	Light breeze	Wind felt on face; leaves rustle, wind sock moved by wind
3	Gentle breeze	Leaves and twigs in constant motion
4	Moderate breeze	Raises dust and loose paper; small branches are moved
5	Fresh breeze	Small trees in leaf begin to sway
6	Strong breeze	Large branches in motion; use of umbrella difficult
7	Near gale	Whole trees in motion; inconvenience felt when walking against wind
8	Gale	Twigs break off trees; progress generally impeded
9	Strong gale	Slight structural damage occurs (chimney pots/slates removed)

Note 2 - Odour persistence (nuisance indicator threshold 1 or 2)

0	No odour	
1	Intermittent	Detected intermittently during the period of assessment
2	Persistent	Detected throughout the period of assessment.

Note 3 - Odour Intensity (nuisance indicator threshold ≥2)

0	None detectable	
1	Faint	Barely detectable, need to stand still and inhale facing into wind
2	Moderate	Easily detectable while walking and breathing normally, possible offensive
3	Strong	Bearable but offensive - might make clothes/hair smell
4	Very strong	Unbearable, difficult to remain in area affected by odour

Note 4 - Odour type

F	Fish/fish offal
P	Processing
M	Meal
S	Silo residue
C	Condensate
E	Effluent
I	Heavy fuel oil/grinding

Assessment matrix

P/I	1	2	3	4
1	Low	Low	Med	High
2	Low	Med	High	High

Low	No nuisance
Med	Possible nuisance - Conduct wider assessment of the
High	Significant nuisance - Conduct wider assessment of the locality, investigate cause and initiate corrective action

Additional comments/details of

APPENDIX B
Odour Complaint Form

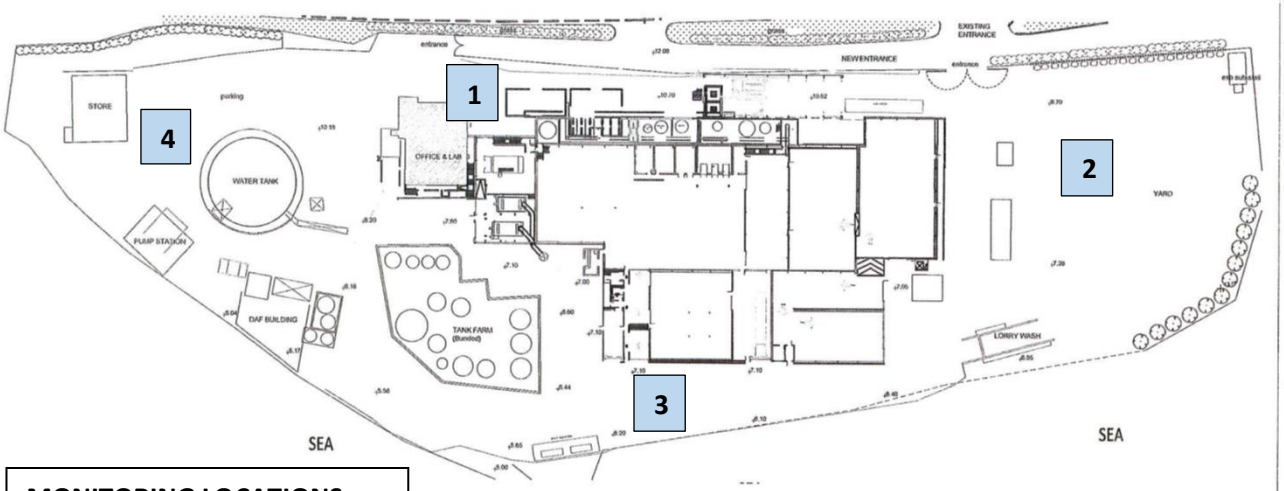
PELAGIA™	Code	R-063
	Revision	2
	Issued by	QM
	Page	1 of 1
ENVIRONMENTAL COMPLAINTS LOGSHEET	Date issued	03/01/2018

Ref procedure: ENV500

Date	No.	Complainant	Nature of complaint	Immediate action taken	Findings/Conclusion	Further action taken	By

FIGURE 4.1 ODOUR MONITORING LOCATIONS

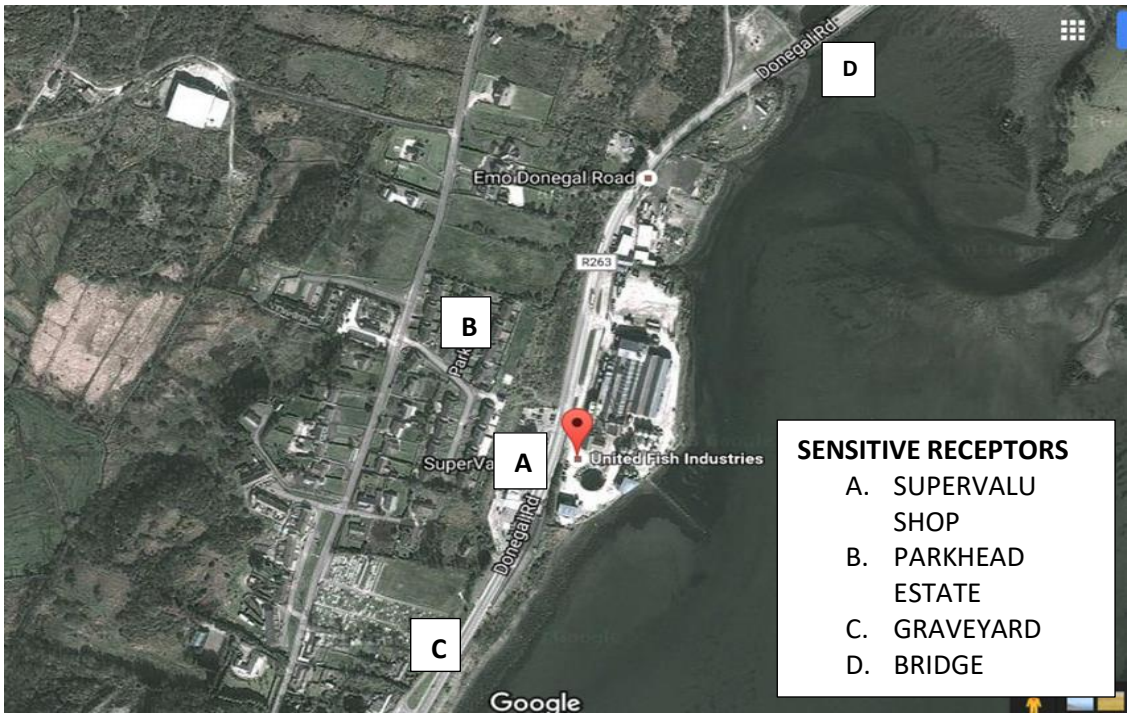
PELAGIA KILLYBEGS ON-SITE MONITORING LOCATIONS



MONITORING LOCATIONS

1. **FRONT STREET**
2. **TRAILER YARD**
3. **SHORESIDE**
4. **CARPARK/GARAGE**

FIGURE 4.2 SENSITIVE RECEPTOR LOCATIONS



SENSITIVE RECEPTORS

A. SUPERVALU SHOP
B. PARKHEAD ESTATE
C. GRAVEYARD
D. BRIDGE