



PRACTICAL
WASTE SOLUTIONS

Independent Environmental Report

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Warrenpoint Harbour Authority

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1.0 Introduction

Practical Waste Solutions Ltd (PWS) was engaged by Warrenpoint Harbour Authority (WHA), to provide an Independent Environmental Report in relation to reports of odour and fly activity associated with the Waste Transfer Station operated by Re-Gen Ltd within the harbour site.

The port is bounded by the A2 to the north and the Newry Estuary, feeding into Carlingford Lough to the south, within the town of Warrenpoint, BT34 3JR.

The facility operated within the port, is used for the storage of Refuse Derived Fuel (RDF) bales, produced by Re-Gen at their waste facility located within Carnbane Industrial Estate, Newry. The RDF is subsequently exported by ship to various locations within Europe, for incineration as a sustainable, renewable energy source.

PWS was engaged by WHA on 1/11/2023. The scope of the remit was to carry out an Independent Environmental Report at the Waste Transfer Station (WTS) operated by Re-Gen Ltd, within the confines of the port. The report has been commissioned to address the odour and fly issues associated with this waste operation and to assist the board of WHA in their understanding of the nature of these issues and in their decision-making process thereafter.

This to include the following:

- Sources of factual data
- Independent monitoring of odours.
- Review of practices/activities by the waste operator within the port.
- Review of relevant documentation held/produced by the waste operator and their consultants.
- Review of Waste Management Licence and compliance conditions.
- Engagement with all pertinent stakeholders.
- Collation and interpretation of information received from pertinent stakeholders.
- Production of a factual report to the Board of WHA. This includes any recommendations and improvements which PWS see appropriate.

2.0 Executive Summary

Synopsis

This format of the executive summary is a synopsis of the scope, the findings and recommendations found in the extended executive summary below and in the full Independent Environmental Report and should be considered in this context.

Scope

- PWS engaged by WHA 1/11/23.
- PWS to produce a report on odour and fly complaints believed to be caused by the Waste Transfer Station operated by Re-Gen.
- Source data collated from multiple stakeholders/agencies.
- Data interpreted. Findings and recommendations produced.

Key Findings

- RDF stored at a licenced facility within WHA.
- Preliminary findings indicate instances of out-of-date bales, compromised bales, bales stored outside the licenced area, with associated odour and fly activity.
- Multifaceted improvement strategy implemented by Re-Gen.
- Significant reduction in the number of bales stored and an improvement in the condition of the bales, due to a much reduced 'dwell time'.
- Progressive improvements recorded in recent months with a reduction in reported odours and fly activity.
- Poor communication between Re-Gen and WHA with respect to regulatory correspondence. WHA did not and do not receive copies of non-compliances from either Re-Gen or the NIEA.
- Perceived lack of engagement with residents and local businesses by the two main stakeholders.
- Other potential sources of odour and flies identified.



Key Recommendations



time

Target of 6 weeks 'dwell time' for any bales.



height

Targeted reduction in bale height to a maximum of 8 bales.



sharing

All relevant regulatory correspondence to be shared by Re-Gen with WHA.



appoint

Appointment of Environmental Officer by WHA.



monitor

Ongoing and regular independent monitoring of the waste facility.



engage

Better stakeholder engagement.

The Way Forward

- ✓ Re-Gen have agreed, within reason, to accept the findings and recommendations of this report.
- ✓ WHA have agreed to accept the findings and recommendations of this report.
- ✓ To continue to maintain the current standards and explore areas of further improvement to mitigate the likelihood of a reoccurrence of the odour and fly problems experienced during 2023.

2.0 Full Executive Summary

Warrenpoint Harbour Authority commissioned Practical Waste Solutions Ltd to carry out an Environmental Audit at the Re-Gen Waste Transfer Station. The Terms of Engagement of this commission were to provide an independent review of the ongoing odour and fly complaints, believed to be as a result of activities carried out at the waste facility within WHA.

The intention of the report is to collate all available relevant information and data and analyse this data. The curation and the use of the data will inform the findings and thereafter any recommendations which PWS deems to be appropriate.

The sections covered in this report are generally Site Background, Data, Findings and Recommendations. The Site Background includes all aspects of the Waste Management Licence, Working Plan, implementation of the Working Plan and the day-to-day activities undertaken by the waste operator. Factual sources of information received from various agencies and external references are used to support the Data. The Findings have been obtained from a combination of onsite inspections, site visits and interviews. The Recommendations are informed by the Data and Findings.

PWS obtained information from multiple sources including Warrenpoint Harbour Authority, Re-Gen and their consultants, Northern Ireland Environment Agency, Newry Mourne & Down District Council, SAICA, N.I and Irish Water, Queens University Belfast, Residents. Information was provided in various formats such as emails, hard and soft copies of documents, telephone and face-to-face, Freedom of Information requests under Environmental Information Regulations. The information was collated and curated by PWS and interpretation of this information is presented throughout this report.

The main concerns established by PWS are specifically around odours and flies emanating from the Re-Gen facility and the impact this is having on residents' quality of life.

Findings

Refuse Derived Fuel is produced by Re-Gen at their Carnbane facility and transported to Warrenpoint Harbour for storage prior to export. Bales produced are subject to 14 wraps of plastic and treated with a larvicide and a deodouriser. The Waste Transfer Station is permitted for up to 500,000 tonnes of RDF with a maximum holding tonnage of 20,000 tonnes at any one time and for a storage period of up to 3 months. The licenced area is c4880m². No damaged bales are to be accepted at the site other than those with minimal damage.

Odour Control measures currently in place at the WTS are by way of an atomiser system producing an odour neutralising mist. Fly control measures currently in place are by way of insecticidal fogging. Both of these systems are overseen by a technically competent person. From the SDS provided by Re-Gen, the Odour Neutraliser and Insecticide were found to be fit for purpose.

The Digital Bale Management System, which has been deployed since January 2024, has the facility to track the movement of bales within the WTS. This system produces live data of the position and date of accepted bales, with a view to ensuring that bales follow the 'first in, first out' principle. Prior to the implementation of this system, some bales were found to be beyond the 3-month limit.

Odour Assessments by PWS commenced on the 09/11/23. General intensity of odours outside the port was found to be zero or very faint in 91% of the results. Faint, registered 7% and distinct, 2%. It should be noted

that, considering the time of year these surveys took place, they may well not be representative of the odour complaints during the summer/autumn period 2023. The odour control measures taken by Re-Gen have been improved since July 2023 by increasing the frequency of application and network of hoses and nozzles used to mist the neutraliser. This is in conjunction with raising the scaffolding height. The efficacy of this system should be continuously monitored particularly as we move into the warmer weather.

Independent evidence of fly activity has been difficult to obtain. As with the odour assessments, the time of year to a great degree precludes fly activity. Information obtained by PWS, other than fly counts from Re-Gen, are anecdotal. However, considering the level and degree of complaints it would be reasonable to say that this could be deemed second only to the odour issues. There should be ongoing monitoring of the effectiveness of insecticidal treatments as the ambient temperatures increase.

Based on information provided by the waste operator, ongoing improvements have taken place during the course of late 2023. It should be noted that the senior management team of WHA have been proactive in their efforts to have greater engagement with Re-Gen, especially around the sharing of information such as reports from regulators.

Recommendations

A reduction in the 'dwell time' of bales should have a significant impact on reducing odour at the facility. This in turn will reduce the height and extent of the bale stack. To that end, PWS would recommend that a 'dwell time' of 6 weeks be introduced, as best as is reasonable. This should also help to reduce the build-up of heat within the stockpile, mitigating fly activity.

As previously stated, because of the time of year this report has been authored, it would be a strong recommendation that ongoing independent monitoring of all aspects of the Re-Gen facility at WHA continues. This is to ensure that undertakings given by Re-Gen with respect to the overall recommendations made, are adhered to. This independent monitoring in collaboration with the soon to be appointed Environmental Officer, should provide robust oversight.

Historically WHA did not and do not receive copies of non-compliances from either Re-Gen or the NIEA. It should be noted that neither party is obliged to share such information with WHA. In our opinion it is crucial that this information is shared by Re-Gen with WHA, as WHA may be held liable for any non-compliances not correctly rectified. From the date of this report Re-Gen have agreed to share any such non-compliances with WHA. WHA have requested that the NIEA also share non-compliances. NIEA have agreed to consider this request. Further, the management at Re-Gen have agreed, within reason to accept the findings and recommendations of this report.

3.0 Site Background and Licence Conditions

The Waste Transfer Station (WTS) operated by Re-Gen Ltd lies within the curtilage of Warrenpoint Harbour. The current Waste Management Licence (WML) Ref No: LN/13/35/V3 issued by The Northern Ireland Environment Agency (NIEA) on 6th September 2023 (Appendix I), replaced the previous WML LN/13/35/V2.

As part of the application process, the operator initially must have obtained planning approval, prior to submission to the NIEA. Planning approval was granted under P/2012/0625/LDP. The WML issued by the NIEA is subject to various conditions, both general and specific. For the

purposes of this report, the general conditions will not be considered, except where their exclusion has a direct correlation to the specific conditions of the licence and operational impact.

The operator must produce a Working Plan to accompany and support the licence application. This deals specifically with the acceptance, storage and movement of waste at the site and controls which must be in place to ensure compliance and any appropriate mitigation measures, within the terms of the licence.

4.0 Sources of Data

The following sources of data were used to provide information considered to be relevant to the production of this report:

- Warrenpoint Harbour Authority (WHA)
- Taggarts
- Re-Gen Ltd
- NIEA
- Newry, Mourne & Down District Council
- PWS
- SAICA
- Queens University Belfast
- NI Water
- Uisce Éireann (Irish Water)
- Residents
- Time and Date Meteorological online resource

5.0 Scope of Data

Once the sources of data have been established, it follows that the scope of the data should be considered. This will inform how the data will be used and interpreted.

5.1 WHA

- Vessel movements.
- A list of vessel movements with specific dates/times and cargo.
- List of direct complaints received.
- Complaints received by the port by email/telephone.
- Drainage

5.2 Taggarts

- Waste Management Licence which details all aspects of the conditions under which the licence is granted.
- Working Plan.
- Odour Assessment Report 1
- Sample of odour assessment
- Odour Assessment Report 2
- Sample of odour assessment
- Odour Assessment Report Final October 2023
- Final Report detailing odour assessment activities.
- NIEA Compliance Acceptance Report – various.
- CARs are produced by an NIEA case officer, following site visits. CAR reports on findings and the compliance, or otherwise within the terms of the WML.

5.3 Re-Gen Ltd

- Safety Data Sheets (SDS) – various (Appendix XIII)
- SDS is a document containing information about specific chemical substances and the potential hazards of a product.
- Site Diary – various
- Samples of contemporaneous site diary records for activities carried out on specific days.
- Bale Management Plan
- Dynamic document for the correct management of bales accepted, bales stacked and bales transported and exported.
- Fly Counts/Pest Control Records
- Samples of daily fly counts carried out on site. Pest Control Records by external contractor.
- Entomologist's Report
- Report containing findings and recommendations submitted by external contractor.
- Resident correspondence received.
- Copy of letter sent to residents by Re-Gen
- Site visits carried out at Warrenpoint Harbour and Re-Gen Carnbane facility.
- Site visits conducted by PWS – various.
- Staff interviews undertaken by PWS during visits to the harbour facility
- Interviews of Re-Gen staff directly engaged in management of RDF production at the Carnbane facility and supervisors at the Waste Transfer Station.

5.4 NIEA

- Teams meeting with Head of Waste Licencing.

5.5 Newry, Mourne & Down District Council

- Site Visit with Environmental Health Officers.
- Site visit conducted at the Waste Transfer Station in conjunction with Environmental Health Officers from Newry, Mourne & Down District Council, responsible for investigating complaints.
- Details of complaints received and status.
- Environmental Information Request made to Newry, Mourne & Down District Council, requesting details of complaints received and current status.

5.6 PWS Olfactory Reports

- Contemporaneous olfactory reports - see Appendix V

5.7 SAICA

- Site visit.
- Meeting with senior management.

5.8 Queens University Belfast

- Site visit.
- Site visit carried out in collaboration with Prof Jaimie Dick.
- Drone mapping.
- Independent hi-res video and thermal imaging of bale stack.

5.9 NI Water

- Disclosure Provisions of the Environmental Information Regulations (EIR)

5.10 Request to NI Water under EIR for details of discharge records for facilities at Mound Road and carpark adjacent to Port Office

5.11 Uisce Eireann (Irish Water)

- Omeath Waste Water upgrade information.

5.12 Residents

- Face to face and telephone interviews – various dates.
- Series of interviews with local residents, who have submitted complaints to the port.

5.13 Time and Date Meteorological

- Online resource providing data on meteorological conditions pertinent to this report.

6.0 Use and Interpretation of Data

6.1 WHA

- **Vessel movements**
The object of obtaining this information is to establish a potential correlation between potentially malodorous cargo, prevailing weather conditions, including wind direction and strength, temperature and air pressure and reports of malodours/flies.
- **List of direct complaints received by WHA.**
The tracking of this information has been used to provide data to establish correlation between malodours/flies. This information has been used to provide contact information to PWS, for interview purposes.
- **Drainage**
The drainage network at WHA was assessed, in order to understand the flow of storm and foul water within the port.

6.2 Taggarts

- **WML**
A detailed review of the WML was carried out to understand the site specific environmental protection conditions applied by the NIEA, for the operation of the WTS.
- **Working Plan**
A detailed review of the Working Plan was carried out, to understand site specific operations as carried out by the waste operator.
- **Odour Assessment Report 1**
Review of document, to establish historic records

- **Odour Assessment Report 2**
Review of document, to establish historic records
- **Odour Assessment Report Final October 2023**
Review of document, to establish historic records
- **Final Report detailing odour assessment activities**
Review of document, to establish historic records
- **NIEA Compliance Assessment Report – various**
Review of Compliance Assessment Reports (CARs), produced by the NIEA, to ascertain the occasion of any non-compliances by the waste operator.

6.3 Re-Gen Ltd

- **Safety Data Sheets (SDS) – various**
Review of SDS provided to establish suitability for use.
- **Site Diary – various**
Review of site diaries to establish good working practice and appropriate daily checks.
- **Bale Management Plan**
Review of Bale Management Plan records to ascertain compliance with Working Plan and required condition of Waste Management Licence.
- **Fly Counts/Pest Control Records**
Review of fly counts and pest control records to identify level of activity.
- **Entomologist's Report**
Review of entomologist's report to evaluate recommendations and execution of same by the waste operator.
- **Resident's letter**
Information only

- **Site visits** carried out at Warrenpoint Harbour and Re-Gen Carnbane facility Site visits to both facilities to understand the specific process for the production of RDF by the waste operator (Carnbane) and management of export of RDF at WHA.
- **Staff interviews**
Interview of Re-Gen staff to establish knowledge of process and execution of same.

6.4 NIEA

Teams meeting with Head of Waste Licencing.

6.5 Newry, Mourne & Down District Council

- **Site Visit with Environmental Health Officers.**
Site visit conducted at the WTS to understand Newry, Mourne & Down's position, if any, around direct complaints, how these are recorded and investigated.
- **Details of complaints received and status.**
Response to EIR submission by PWS to Newry and Mourne Council

6.6 PWS

Olfactory reports, generating an interpretation of data in graphical form.

6.7 SAICA

- **Site visit**
Meeting to establish potential impact upon SAICA as a near neighbour.

6.8 Queens University Belfast

Various hi-res videos and thermal imaging were carried out, to identify potential heat sources within the bale stack. This was to establish if there was sufficient innate heat to allow fly reproduction during low ambient temperatures.

6.9 NI Water

To establish if there is a correlation between reported malodours and discharge by NI Water pumping stations.

6.10 Uisce Eireann (Irish Water)

To establish is there is a correlation between reported malodours and discharge by Uisce Eireann to Carlingford Lough.

6.11 Local Residents

To retrieve information from residents via telecom and face to face discussions.

6.12 Time and Date Meteorological

Information only, in support of other data sources.

It should be noted that whilst use and Interpretation of data has been detailed and attached as appendices, the information may be combined, summarised and interpreted in the General Findings, Observations, Site Specific Findings and Recommendations sections of this report.

7.0 General Findings

Refuse Derived Fuel (RDF) is currently produced by Re-Gen at the Carnbane MRF (Materials Recovery Facility) in Newry and transported to the port by road haulage. Upon arrival at the port, the bales are off-loaded and placed within the licenced area, awaiting export to various points throughout Europe.

7.1 Shepherds Drive MRF

PWS conducted a site visit at the Carnbane facility, to better understand the processes employed by Re-Gen for the production of RDF. The visit took place on 21st November 2023 and two representatives of Re-Gen (Business Development Director and SHEQ Manager) were in attendance to conduct the visit and to answer any questions arising.

For the purposes of this report, whilst various waste streams are accepted by Re-Gen at the Carnbane facility, observations and comments will be restricted to the material accepted for the production of RDF. Black bin waste (European Waste Code (EWC) code 20 03 01) is accepted at the Carnbane MRF from various sources within Northern Ireland and is confined to household council waste. The waste is tipped into dedicated bays and processed by mechanical and manual means. Contaminants are removed from the waste stream as part of this process. Prior to final production of bales, a controlled dose of deodouriser and larvicide is introduced to the waste. This is to mitigate any potential odours emanating from the bales and to inhibit fly reproduction during the ongoing storage/movement of the bales. From records observed, the addition of these two agents has been in place since 2013, with an increase in dosing rates of both in late August 2023. End of production is the formation of bales, which are wrapped in plastic film and labelled with the week number of production. The industry standard for wrapping of bales is deemed to be 8 wraps per bale. Re-Gen have adopted the following additional mitigation systems since August 2023:

1. *Larvicide is applied to the RDF bales at the Shepherds Drive production MRF, August 2023. The ratios of these products would be commercially sensitive as they are part of the Re-Gen treatment process. The application of the larvicide was witnessed during the PWS site visit of 21/11/23.*
2. *Deodouriser is applied to the bales prior to wrapping at the Shepherds Drive production MRF August 2023. The ratios of these products would be commercially sensitive as they are part of the Re-Gen treatment process. The application of the deodouriser was witnessed during the PWS site visit of 21/11/23.*
3. *The number of wraps of plastic on the bales was increased from the industry standard of 8 to a minimum of 14. The 14-bale wrap process was observed during the PWS site visit of 21/11/23.*

Potential organic contaminants, such as food waste which may be contained within the managed waste, are removed by way of mechanical screening and processing. Re-Gen have requested that commercially sensitive elements of the production process be excluded from this report and as PWS had full access to the process at the Carnbane facility, we are satisfied that this is robust. PWS have had sight of the NIEA reports for the facility and can confirm that, as of the site visit 21/11/23, the site is operating in compliance with the current licence. The most recent CAR carried out by the NIEA on 30/01/2024, confirms that the site is operating in full compliance with its licence.

7.2 Warrenpoint Port Waste Transfer Station

Re-Gen have been operating a Waste Transfer Station at Warrenpoint Port since 2013. The permitted tonnages have increased from that time, to the current maximum throughput of 500,000 tonnes per annum, with a maximum holding tonnage of 20,000 tonnes at any one time. The maximum storage period for bales is 3 months. The Working Plan, produced by Taggarts (April 2023) Appendix II outlines the procedures for Re-Gen Waste Ltd to operate their waste storage facility for baled waste (EWC code 19 12 12) and should be referred to for full context.

The site is comprised of two main storage areas, covering a total area of approximately 4,880m. The site is authorised under a Certificate of Lawfulness of Existing Use of Development granted on 7 August 2012.

Synopsis of acceptance, storage and export of RDF is as follows:

RDF bales are transported from the MRF by road.

Upon arrival at the WTS, bales are unloaded and stacked by a forklift/grab operator. The bales are stacked in a pyramid structure to ensure maximum stability.

The bales will be stacked to a maximum height of 9 metres. Measures will be taken to ensure stack stability and operative safety.

Storage Conditions: -

- No damaged bales will be accepted.
- Bales will be stored in the designated area.
- Warrenpoint Harbour is under 24-hour security surveillance.
- A spillage procedure will be followed.
- All damaged bales will be returned to Re-Gen Waste once loading has been completed.

Refuse Derived Fuel (RDF)/ Solid Recovered Fuel (SRF) and waste similar in nature (EWC Code 19 12 12) is produced through the processing of mixed municipal waste streams. The final dry waste product, collected for baling at the end of the automated processing line, will contain insignificant quantities of putrescible materials.

In addition, the waste is baled and wrapped 14 times prior to storage at the site.

Further odour control measures include the use of an odour neutralising spray. A spray system is attached to the scaffolding surrounding the site. This odour neutralising spray will be used as and when necessary if a potential for odour is detected by site staff.

In order to prevent the presence of vermin, regular inspections/ monitoring will be carried out by designated personnel and all operatives will remain vigilant to the presence of pests. The site staff will take the necessary action to eliminate the cause of any evidence of vermin activity discovered or reported. If rodents, or evidence of rodents, is seen at any time on the site, it will be immediately reported to the site manager who will take the necessary action to eliminate the rodents. If required, a pest contractor will be commissioned to eradicate the vermin.

All bales will be treated at the site of production, Carnbane, with insecticide. This will prevent the potential for flies to generate. The bales will then be further sprayed on site to ensure any potential flies are killed.

The surface water drainage from the area of hard standing is directed to sealed drains. All gullies and drains will be inspected and maintained on a regular basis by Warrenpoint Harbour Authority.

On or before the 3-month storage period, bales are transported from the main storage area to a holding area on the quayside for export. The void area is washed down by power-hose using a surfactant/water mix.

8.0 Factual Considerations

- WML
- Working Plan
- Consultant Reports
- Sources of Odour
- Mechanical Monitoring
- Olfactory Checks
- Odour
- Bale Tracking & Rotation
- Bale Inspection
- Bale Conditions
- Leachate
- Stack Height
- Bale Pressure
- Wash Down
- Scaffolding
- Odour Mitigation
- Pest Control Reports
- Flies
- Insect Control
- Rodent/Birds
- Heat Source
- Drone Footage
- Bin Strike
- Loading Times

9.0 Observations

9.1 Bale rotation/management plan/bale tracking

A Bale Rotation Plan in conjunction with a Bale Storage Risk Assessment has been developed for the WTS and this is contained with the Working Plan (Appendix II). In essence, this allows for bales to be stacked up to 9 metres high and formed into a pyramidal structure to ensure operative safety and stack stability.

In discussions with the operator, consultant and paperwork observed, the rotation plan is on a 'first in – first out' basis, working in a clockwise direction. The Bale Rotation/Management Plan has been refined over the course of the latter part of 2023, to its current iteration in January 2024, which is a digital/tablet-based system.

9.2 Bale Management Plan

The bales are delivered to the Warrenpoint site on a daily basis and placed in the next free block on a clockwise orientation. The licenced area is broken down into smaller blocks, representing the size of a bale. As bales are off-loaded, the placement of these is recorded and the quantity which equates to a day's production of bales is allocated on the digital interactive map. The date the bales are placed in each block is recorded on the digital interactive map. This allows Re-Gen staff to view the acceptance date of the bales placed at the site. This is monitored to ensure that bales do not exceed the storage limit of 3 months. As the individual weight of bales can vary, the calculation produced by the digital mapping is on a tonnage and not a bale quantity basis. This is to ensure that accurate records are maintained of the actual tonnage stored at the facility, so that the operator does not exceed the 20,000 tonne limit imposed by the licence conditions.

The process was proposed by Re-Gen to the NIEA and on that basis, agreed with the regulator. The Digital Bale Management Plan is a dynamic document and is reviewed daily, taking into account projected tonnage to be received, available void space and projected export schedule.

When it comes to export of bales, Re-Gen staff consult the digital bale management plan. From this document they can see the location of the oldest bales on site. This block of bales, up to ship capacity, is then removed from the stockpile and loaded onto the ship for export.

This process is rotated on a clockwise basis ensuring that the date delivered, and age of the bales can be easily tracked.

9.3 Bale Condition

As part of the Working Plan, no damaged bales are to be accepted. This has been clarified by Taggarts on behalf of Re-Gen as:

As a first step all bales to be dispatched from the MRF in Shepherds Drive to Warrenpoint are inspected before they are taken to Warrenpoint. If there are any issues with the bales, the bales do not leave for Warrenpoint, and the bales are sent for re-wrapping in the MRF. This ensures that all bales dispatched to Warrenpoint do not have defects in the plastic wrap.

On arrival at Warrenpoint the grab operator has responsibility for inspecting the bales prior to removing them from the trailers and placing them in the stockpile. If there are small tears in the wrap, i.e., up to a fist sized tear, these are patch repaired before they are placed in the

9.0 Observations Continued.

stockpile. If the bales are significantly damaged, the grab operator leaves these bales on the trailer. In turn, these bales are rejected from acceptance at Warrenpoint and sent back to the MRF in Shepherds Drive for reprocessing.

Daily inspections of the stockpile are completed by the Re-Gen staff at Warrenpoint. If tears in the bales are observed these are patch repaired as soon as possible.

During ship loading operations each bale is inspected as it is removed from the stockpile. If a small tear, is observed, then this is patch- repaired. If a larger tear in the bale wrap is observed, then this bale is re-wrapped using the bale wrapper onsite. The onsite bale wrapper is only used during boat loading operations.

Odour

Before discussing odour and odour control, it is valuable to understand the background to odour perception. By way of context, extracts have been taken from a publication Review of Odour Character & Thresholds authored by the Environment Agency England & Wales – 2.1, 2.2, 2.24. The full document can be found in Appendix III.

How we sense odour

Odour is perceived by the brain, being the response to our sensing, through smell, some of the chemicals present in the air we breathe. It forms part of the human ability for chemoreception – the sensing of smell (olfaction) and of taste (gustation). Humans have a sensitive sense of smell and can detect odour even when chemicals are present in very low concentrations. This is an important point – odours in the ambient air can often result from only small traces of these chemicals occurring intermittently.

Most odours are a mixture of many chemicals that interact to produce what we detect as an odour. A distinction needs to be made between odour-free air and fresh air. Odour-free air contains no odorous chemicals at all.

Fresh air is usually perceived as being air that contains no chemicals or contaminants that could cause harm, or air that smells 'clean'. Fresh air may contain some odour, but these odours will usually be pleasant in character or below the human detection limit.

The likely effect from background odours and existing odours depends primarily on the nature of the odours and the location in which they are occurring. If the nature of the odour is quite different to the background odour, then the background odour will probably not affect the perception of odour from a new odour source. In an area where levels of background odour are high, people can become desensitised to certain odours and the addition of other similar odours may then go unnoticed. In other areas this may not happen and the cumulative effects from additional odour may result in the odour becoming unacceptable.

The human sense of smell is caused by an interaction between molecules in the air and receptor cells located in the sinus cavity. These cells are attached to the olfactory bulb, which lies at the top of the nose, at the base of the brain. This bulb is sometimes viewed as an extension of the brain itself. There are up to a thousand different types of odour receptor compared to four, or at most five, types of taste receptor. Stimulation of an odour receptor leads to the generation of a nerve impulse in the olfactory bulb. Preliminary signal processing in the olfactory bulb is followed by association within the memory centre of the brain, association in the emotional centre of the brain, and identification within the cerebral cortex. This leads to the experienced impression of an odour. The direct connections between the olfactory organ and memory and emotional centres of the brain go some way towards explaining the often emotional response to odours and the way in which they can often be evocative.

How we perceive odour

Odour causes an emotional response How an odour is perceived and its subsequent effects are not

straightforward. An odour can often cause an emotional response, which can be very evocative. The human perception of odour is governed by complex relationships, complicated by the presence of background odours and the mental and physical state of the affected person. The earlier Environment Agency research (Environment Agency 2002) describes important factors to consider, which are summarised below. Odour perception is often related to the source of an odour and whether the activity causing it is considered acceptable in a particular location.

An odour associated with a natural source, such as mudflats or geothermal activity, may be accepted whereas a similar odour from an industrial activity may not. Perception and acceptability are also affected by whether people believe an odour contains harmful chemicals. In such cases a person is more likely to consider the odour to be objectionable or offensive – even dangerous – despite the likelihood that the concentrations of the chemicals in the odour are too low to cause direct health effects. This was demonstrated by Dalton (1999) who found that, when exposed to the same odour at the same concentration, a group of subjects who were told that the odour was of industrial origin consistently rated it as higher intensity and irritability than another group who were told the odour was of natural origin.

Annoyance can also be influenced by how involved the public is, and how they have been 'sold' the plant or installation. Engaging residents in the odour management process of an installation is known to be an effective means of reducing complaints in some circumstances. The emotional response (positive or negative) of people to an odour is due, in common with other species, to its evolutionary origins to provide vital information for evaluating the environment.

Perception of odours can trigger two basic responses, avoidance or approach, occurring for example with judging food, water or air and in a social and sexual context. As

well as this inherited aversion linked to survival (e.g. rotten flesh), some responses are learned through cultural or social norms (e.g. a particular perfume), or learned through personal experience (e.g. good or bad experiences associated with a particular smell). Cultural and social sensitivities about certain sites should also be considered.

Perception is an important factor where the activity generating the odour is considered culturally offensive or is offensive in nature (e.g. cremation and sewage treatment). This can cause an adverse reaction in the people who detect odours from such activities regardless of other factors. In essence, the function of our smell sensor is similar to that of all our senses: to translate environmental information into nerve signals transmitted by neurons firing in our brain. This information is then evaluated in the brain.

Sensitivity to odours

The perception of any particular odour is typically the result of the simultaneous stimulation of several different types of receptors. This means that humans can distinguish between thousands of odours. Different life experiences and natural variation in the population can result in different sensations and emotional responses by individuals to the same odorous compounds. Because the response to odour is synthesised in our brains, other senses such as sight and taste, and even our upbringing, can influence our perception of odour and whether or not we find it acceptable or objectionable and offensive.

Odour sensitivity across the population varies widely. Some individuals have little sensitivity to any smells – anosmia is the condition where an individual has no sense of smell at all. Other people may be unable to smell specific odours. Some people will be many times more sensitive than the population average.

Various medical conditions (e.g. colds) can suppress the sense of smell and others (pregnancy) can enhance it. The effects from medical conditions may be short-lived

9.0 Observations Continued.

or permanent. The variation in odour perception between individuals in a population has been reviewed in detail in earlier Environment Agency research (Environment Agency 2002).

Perception of the intensity and synergistic effects

The perception of the intensity of odour in relation to the odour concentration is not a linear but a logarithmic relationship. The same relationship is known to occur for other human senses such as hearing and sensitivity to light. This means that if the concentration of an odour increases ten-fold, the perceived increase in intensity will be by a much smaller amount, say two-fold. The perception of odours may be enhanced or suppressed by the presence of other odorous or non-odorous chemicals (e.g. ammonia suppresses the perception of hydrogen sulphide). These interactions between odorous compounds or mixtures of odorous compounds are known as synergistic effects.

An example is where one odorous compound disguises or masks the presence of other compounds, an effect that forms the basis of masking agents used to try and mitigate odour impacts by, for example, releasing masking agents into the air around the perimeter of a landfill site to try and reduce odour impact on nearby residents. The odour intensity experienced by an observer is, in general, not equivalent to the sum of the intensities of the odorous compounds: the perceived intensity may be greater, or less than, the components depending on the synergistic effects of the compounds present. Furthermore, as the odour concentration reduces through dilution, different compounds may dominate the perceived effect, changing the nature of the odour. For example, mushroom-composting odour has been observed to have a distinctly different odour character at source than when diluted downwind.

Sensitisation and adaptation

Sensitisation of individuals to olfactory stimulants may occur after acute exposure events or as a result of repeated exposure to nuisance levels of odours. Sensitisation changes a person's threshold of acceptability for an odour. This can result in a high level of complaint over the long term and a general distrust within the community of those perceived as responsible for the odour.

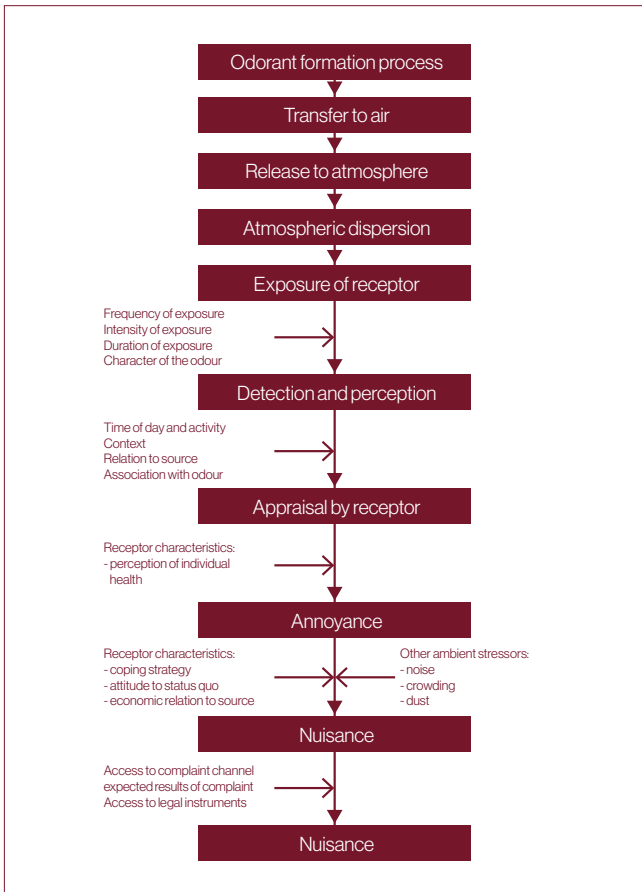
Desensitisation can also result from exposure to an odour. A person may become unable to detect the odour, or there is a reduction in the perceived odour intensity and/or effect, even though the odorous chemical is still present in the air. For example, people working in an environment with a persistent odour are often unaware of its presence and may not be aware that the odour is having an impact on the surrounding community.

There are various mechanisms for desensitisation: some of these operate over very short time periods (seconds) while others develop over weeks or longer. The term 'olfactory fatigue' is sometimes used to describe desensitisation that occurs on a short-term basis.

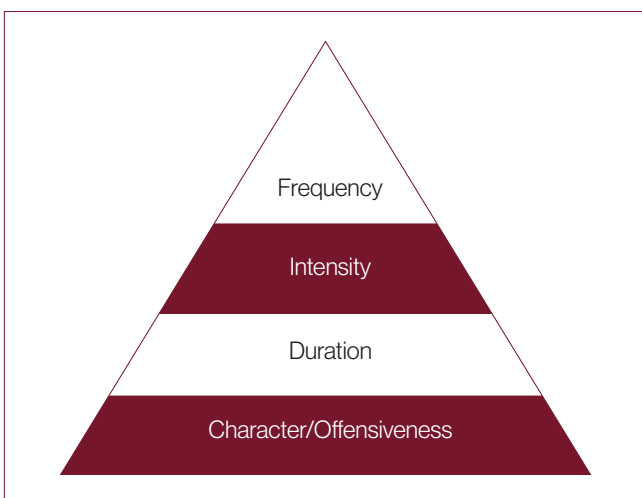
Adaptation is a long-term process that can occur when communities become increasingly tolerant of a particular source of odour, which is primarily a psychological response to the situation. For example, where odours are associated with a local industry that is considered to be important for the wellbeing of the local community and the industry maintains a good relationship with community members, then adaptation to the odour effects can occur over time. The normal loss of sensitivity due to adaptation is proportional to the odour concentration and the duration of exposure. Some adaptation mechanisms may be at least partially overridden by the brain.

Adaptation is very specific and a person can temporarily lose sensitivity (become adapted) to one odour while retaining full sensitivity to others. Some activities, for example smoking, can desensitise or mask odour responses in certain situations for relevant individuals.

**From odour formation to complaint
(Van Harreveld 2001)**



FIDOL PYRAMID



The FIDOL is a conceptual model used to help define what makes an odour episode become a citizen complaint is the pyramid-style hierarchy (above) consisting of four parameters:

- (1) Character/Offensiveness,
- (2) Duration - The length of a particular odour event
- (3) Intensity - The individual's perception of the strength of the odour
- (4) Frequency - How often an individual is exposed to odour

The cumulative effect of these four parameters is said to create the nuisance experience and give rise to a complaint.

The parameters that determine whether an odour has an objectionable effect are collectively known as the FIDOL factors, the additional parameter being the Location of the odour event. The 'Location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio-economic factors.

Odours may occur frequently in short bursts, or for longer, less frequent periods, and may be defined as having 'chronic' or 'acute' effects. Depending on the severity of the odour event, one single occurrence may be sufficient to deem that a significant adverse effect has occurred. In other situations, the duration may be sufficiently short and the intensity sufficiently weak that the frequency of events would need to be higher before an adverse effect would be deemed to have occurred.

Whilst it is important to understand the mechanics of odour perception, in the context of this report the most pertinent consideration is the sensitisation/desensitisation of individuals to odours, as detailed previously. By way of explanation, from information garnered by PWS during interviews with residents/stakeholders, the responses confirmed that, in some instances the odours remained at a level or were worse than before, whilst in other instances,

9.0 Observations Continued.

odour was imperceptible. This in no way denigrates the individual's response to odour, but rather supports the proposition that individual's experiences reflect this model. Furthermore, the independent olfactory surveys carried out by the various agencies concerned, would indicate that the frequency, intensity and duration of odour has decreased since its height in the summer period.

9.4 Olfactory reports

Reviewing the data presented in Appendix IV, Site 6 and Site 7 recorded the highest scores due to their proximity to the WTS. There were the only three sites to receive a distinct odour score and Site 7 was the only one to record a strong odour score. Site 3 only recorded very faint score. Sites 1 & 2 did not record past faint.

Site 4 was observed to have an odour on a few occasions. This could be seen as abnormal due to it containing the Newry Street pumping station. Site 5 also has a considerable high value, which can be attributed to its location at the small marina and the regular presence of a fish vendor. The raw data producing Table 1 and Fig 1 are found in Appendix IV. Site 8 produced a zero result, with no report of odour.

The pie chart – appendix IV (1), shows the percentage of the olfactory assessment scores recorded on all sites, over the entire survey period. This is good for a general overview of the various sites but does not show how each site contribute certain results more than others. For example, there were very few days that no odour was detected in the port (Sites 6 & 7) and these sites largely contribute to the Faint, Distinct and Strong olfactory scores. Sites outside the port, majorly contributed to the No Odour scores over the course of the surveys.

Additionally, graphical representations have been further broken down into outside WHA (Appendix IV (2)) and inside WHA (Appendix IV (3)).

9.5 Odour Control

Odour control measures include the use of an odour neutralising spray. A spray system is attached the scaffolding surrounding the site. This odour neutralising spray will be used as and when necessary if a potential for odour is detected by site staff.

9.6 Additional Odour Mitigation Measures Deployed

Evidence Observed

The following additional odour mitigation measures have been deployed since August 2023:

- Larvicide applied to the RDF bales at the Shepherds Drive production MRF
- Deodouriser applied to the bales prior to wrapping at the Shepherds Drive production MRF
- The number of wraps of plastic on the bales was increased from the industry standard of 8 to 14.
- Digital Bale Management System implemented January 2024. This stock rotation plan is currently in use to ensure the most efficient means of tracking bales to ensure the oldest stock is always dispatched first.
- The deodouriser used in the misting system at Warrenpoint was amended in January 2024, to see if an alternative brand would provide a greater ability to mitigate the potential for odours from the site.
- The odour misting system operational hours were changed from only during westerly wind conditions to include a number of other factors such as prevailing wind direction, onsite assessment by the technically competent person in charge of the potential for odours, based on current dwell time.
- The height of the scaffolding and netting around the stockpile was extended in height in September 2023 to the current height of c9 meters. In addition to this, the mist system was extended to cover the north, east

and southern boundaries of the stockpile.

- The number of ships was increased therefore ensuring that RDF was exported faster resulting in a shorter retention time on site. Faster stock rotation.

9.7 Fly Species

From anecdotal evidence provided by various stakeholders and as no speciation has been carried out, the contention is that the main species of insects of concern encountered at the port facility and its environs are:

- House fly *Musca domestica*
- Blow fly – Bluebottle/Greenbottle Calliphoridae
- Drain fly – Psychodidae
- Fruit fly – *Drosophila melanogaster*

House Fly

The house fly has a complete metamorphosis with distinct egg, larval or maggot, pupal and adult stages. The house fly overwinters in either the larval or pupal stage under manure piles or in other protected locations. Warm summer conditions are generally optimum for the development of the house fly, and it can complete its life cycle in as little as seven to ten days. However, under suboptimal conditions the life cycle may require up to two months. As many as 10 to 12 generations may occur annually in temperate regions, while more than 20 generations may occur in subtropical and tropical regions.

Maximum egg production occurs at intermediate temperatures, 25 to 30°C. Often, several flies will deposit their eggs in close proximity, leading to large masses of larvae and pupae. Eggs must remain moist or they will not hatch.

The optimal temperature for larval development is 35 to 38°C, though larval survival is greatest at 17 to 32°C. Larvae complete their development in four to 13 days at optimal

temperatures, but require 14 to 30 days at temperatures of 12 to 17°C.

Pupae complete their development in two to six days at 32 to 37°C, but require 17 to 27 days at about 14°C

The house fly is 6 to 7 mm long, with the female usually larger than the male.

The female can be distinguished from the male by the relatively wide space between the eyes (in males, the eyes almost touch). The head of the adult fly has reddish-eyes and sponging mouthparts. The thorax bears four narrow black stripes and there is a sharp upward bend in the fourth longitudinal wing vein. The abdomen is gray or yellowish with dark midline and irregular dark markings on the sides. The underside of the male is yellowish.

Adults usually live 15 to 25 days, but may live up to two months. Without food, they survive only about two to three days. Longevity is enhanced by availability of suitable food, especially sugar. Access to animal manure does not lengthen adult life and they live longer at cooler temperatures. They require food before they will copulate, and copulation is completed in as few as two minutes or as long as 15 minutes. Oviposition commences four to 20 days after copulation. Female flies need access to suitable food (protein) to allow them to produce eggs, and manure alone is not adequate

The flies are inactive at night, with ceilings, beams and overhead wires within buildings, trees, and shrubs, various kinds of outdoor wires, and grasses reported as overnight resting sites. In poultry ranches, the nighttime, outdoor aggregations of flies are found mainly in the branches, and shrubs, whereas almost all of the indoor populations generally aggregated in the ceiling area of poultry houses. (University of Florida Institute of Food and Agricultural Sciences).

9.0 Observations Continued.

Blow Flies

These flies are strong fliers and range many miles from breeding places. They are abundant during the warm summer months.

Blow flies and bottle flies can breed on dead rodents and birds in attics or wall voids of barns. They usually breed in meat scraps, animal excrement, and decaying animal matter around houses. The adult flies are active inside and are strongly attracted to light. The mature larvae are often a problem when they migrate from breeding areas to pupate.

Blow flies usually lay eggs on dead animals or decaying meat. The life cycle usually lasts 9-21 days from egg to adult.

Drain Fly

These are small and mothlike and are commonly found around the openings of drain pipes. No more than 5 mm (0.2 inch) long, these flies have broad hairy wings that are held rooflike over the body when at rest, so that they resemble tiny moths.

The larvae, which feed on decaying matter, inhabit drain pipes and can tolerate a wide range of water temperatures. Most species are harmless (Britannica).

It takes about a full month for the drain fly to go through its entire life cycle. This gives them plenty of time to reproduce in the moist, organic matter they can find in your house. To be more precise, they start by spending time in the larval stage for 8-24 days. They go through the pupal stage and then continue to live about two weeks as adults. The time moth flies spend in the larvae stage depends on temperature, oxygen concentration and other environmental factors.

Although they live as adults for two weeks, they are certainly not going to disappear after that time period. What makes moth flies so annoying is that new adults are constantly going to appear, making pest control inevitable. Although adult drain flies do not bite, they can transmit a wide range of bacteria.

For drain flies, any standing water or organic matter they can find is ideal for breeding. They start to lay their eggs randomly in the polluted water. You are most likely going to find them in the gelatinous film that can be found in any uncleaned drain. In households, drain fly larvae typically develop in bathrooms and kitchens. A single female can lay up to 100 eggs after mating.

They can survive without oxygen for a while and also endure wild temperature fluctuations. Once the Winter kicks in, they are going to die instantly if there is no warm

indoor place where they can stay. At 70 degrees Fahrenheit and lower, they are not able to reproduce. All they can do is hide and hibernate until the temperature increases a fair bit. This is why people usually have a problem with moth flies during the Summer.

Fruit fly

Approximately 48 hours after emerging from the puparia, female fruit flies are sexually mature and can begin breeding and laying eggs. Adult fruit flies are fertile for the entirety of their life spans. Female fruit flies can store sperm from multiple inseminations for use in future egg productions.

The average natural life span of fruit fly adults in optimal temperatures is 40 to 50 days. Female fruit flies are capable of mating and laying several batches of eggs in that time, allowing the fruit fly population in a home to multiply quickly. The life span of the fruit fly is heavily influenced by temperature.

The fruit fly's life cycle begins when the female lays her eggs on a piece of fermenting fruit or other decaying, sweet organic material. She can lay up to 500 eggs, making it difficult to control the population. After eggs hatch into small, white larvae, they eat from their nesting site for four days, absorbing the nutrients and energy needed to transform into adults. (Orkin)

9.8 Fly Counts

PWS have had full access to the fly counts for the WTS and can confirm these as correctly recorded. The fly counts are carried out on site by a designated member of staff. The method of recording the data is on a daily basis. Fly traps are removed from the holders positioned at various locations around the site and a physical count of flies is conducted by the on-site competent person. The number of flies in each trap is recorded on a 'Fly Count Record Sheet' and these records are retained at the WTS site office. The hard copy notes date, time, weather, wind direction and the specific location of each sampling point. Traps are renewed daily. The review of fly counts covered the period August 2023 to January 2024. Sample fly counts have been included in Appendix VI.

9.9 Leachate Management

The first means of mitigation against leachate production is the 14 wraps of plastic on the bales. This prevents the ingress of precipitation and therefore the production of leachate. The bales are then covered in a fine mesh cover. This cover has the effect of mitigating the volume of precipitation and therefore diverts clean water off the pile.

There are a number of users of the port area around the Re-Gen facility. Some of these operations can produce contaminated water that lies in low points around the outside of the Re-Gen stockpile. Re-Gen have a mobile road sweeper that is used to clean these areas and remove any standing water from the areas beyond the stockpile and not just the area Re-Gen lease.

Once bales are removed from an area for export the area is cleaned with power hose, swept with the road sweeper and any water arising vacuumed up using the road sweeper.

Based on information received from the waste operator, the scheduled times of loading have been changed to night sailings, as opposed to day time loading. The rationale behind this, is because of lower ambient temperatures, to mitigate disturbance of potential flies and odours.

The drainage network within the curtilage of the port comprises storm and foul drains. The storm drainage system which runs through the Port, forms part of the main Warrenpoint Town storm drain network and as such, WHA's storm drains feed into this. Foul sewer discharge from WHA is connected to Warrenpoint Town's main sewage system. WHA routinely monitor that drainage flow is operating as expected. Water samples are taken in the channel. Drain maintenance is documented – job cards are normally issued. If an area is to be washed down, following the export of bales, storm drains in the vicinity of this area are sealed with drain mats.

9.10 Fire Risk Assessment

Fire Risk Assessment Appendix VII

10.0 Site Specific Findings

As a preface to presenting PWS' Site Specific Findings, it should be noted that engagement of PWS' services commenced in November 2023. Therefore, any specific observations will be confined to the period November 2023, to date. However, where information is available prior to that date, which is deemed to be appropriate, it may be included. This may have been as a result of discussions held with stakeholders/ interested parties since our engagement, but referring back to the period commencing July 2023.

10.1 Bale Management

July 2023 saw a significant increase in the volume of material passing through the WTS. PWS understands this was a result of Re-Gen securing new contracts with Local Councils. An updated Working Plan was produced in support of an increase to the tonnages attached to the waste licence previously in place. The delivery of the Working Plan is the responsibility of the waste operator.

A revised Bale Management Plan was produced by Re-Gen to direct onsite managers and operatives on the placement, management and retrieval of bales for export. The most recent iteration of this has been discussed previously in this report. The adoption of the Digital Bale Management System (DBMS) since January 2024, has proved to be a more robust system than that used previously. PWS have had sight of and reviewed the ongoing implementation of the DBMS.

What is most pertinent, is the permissible storage period at the WTS and how this has and is currently being managed. As previously stated, RDF can be held in storage at the WTS for up to 3 months. As a consequence of the DBMS, in conjunction with a significantly increased shipping schedule (60%) for 2024, the 'dwell' time of bales has been reduced. At the time of writing, it was observed that bales awaiting export are from Week 8 production, all previous weeks' bales having been exported.

10.2 Bale Conditions

The increase to 14 wraps per bale will have had a positive impact upon maintaining the integrity of the bales. The

onsite protocol for assessing damage to bales, is that any hole larger than 'fist sized' is to be rejected. However, during site visits, a number of bales in the stockpile were observed as having suffered greater damage than this, with some bales having been repaired in multiple places. Appendix VIII.

10.3 Leachate

Brown staining to a limited number of bales was observed, suggesting leaching of the contents. Appendix VIII.

10.4 Bale Stacking and Pressure

The stockpile is permitted up to 9 metres, effectively 9 bales. On occasions, bales at the base of the stockpile were found to have been crushed under the weight of the bales above, potentially compromising the integrity of the bales. Appendix VIII.

10.5 Scaffolding Perimeter Height

The WTS is surrounded on 3 sides by a framework of scaffolding to a height of c9 metres. The scaffolding has been installed for the following reasons:

- **Netting:** a series of fine mesh nets have been put in place to restrict the movement of potential fly activity to off-site receptors
- **Odour control:** a network of flexible pipes is suspended from the scaffolding.
- **Fly monitoring:** a series of fly control points are placed on the scaffolding.

A decision was made by the waste operator in September 2023, to increase the height of the scaffolding to c9 meters. This was to reflect the height of the bale stack. Whilst this could have a positive impact upon odour suppression, it will have a marginal impact upon both fly control and monitoring. These points will be developed under fly control.

10.6 Potential Sources of Odour

Potential off-site sources were identified as follows:

Anaerobic Digestion Plant

An Anaerobic Digester plant is situated within the grounds of Narrow Water Castle, Warrenpoint Road BT34 3LE, adjacent to the Mound Road Roundabout. From information acquired from the Waste Management Licence, the facility accepts organic waste to produce biogas.

Mud flats at Narrow Water Keep

There is a significant area of naturally occurring mudflats adjacent to Narrow Water Keep. The mudflats become exposed at low tide. Mudflats typically contain a lot of plant matter and because of lack of oxygen due to tidal activity, can result in hypoxia – the growth of bacteria. This in turn can produce a 'rotten egg' odour.

Grain

Grain is imported and off-loaded at the harbour. No evidence of malodours from the grain was reported during olfactory checks.

NI Water Waste Water treatment infrastructure

NI Water operate two treatment facilities in close proximity to WHA. One adjacent to the Mound Road and a second in the carpark adjacent to the port office. An EIR submission was made to NI Water to obtain information regarding discharge of foul water. The full response can be found in Appendix IX. An extract of same is below.

NI Water does not keep an actual measured, or recorded record of the number of occasions, duration, or actual volumes of releases into public waterways from its sewerage system. The data you have requested is not held by NI Water and Part 2, Regulation 5(4) of the EIR and Regulation 12(4)(a) of the EIR applies (Annex A refers).

Releases occur when the sewers are at or exceeding their capacity due to heavy rainfall and large volumes of stormwater run-off entering the combined sewer system. Overflows then operate in wet weather and there are spills into waterways, which prevent the flooding of homes, businesses, hospitals and schools. The highly diluted flows spill into the environment where they are even further diluted.

From the information received it is impossible to make a determination on the potential impact of releases, but it would be reasonable to assume that this activity could be a contributory factor to odours in the area.

In recent days, correspondence received by WHA from NMDDC, EHO, advises that NI Water have carried out investigations in the area. As a result of these investigations, NI Water have planned works for the desilting of one of their sewage lines the weekend of 24/02/24. The correspondence suggests that there may be a connection between the alleged sewage odour and these planned remedial works.

Fish Unloading

There is occasional off-loading of fish at the port. This has occurred once during PWS attendance.

Agricultural Slurry Spreading

Under suitable conditions, slurry can be spread in the period from February through to mid-October.

10.0 Site Specific Findings Continued.

10.7 Odour & Olfactory Surveys

A series of Olfactory surveys was carried out by PWS, on a bi-weekly basis. These were independent of the ongoing surveys carried out by Taggarts. PWS explored the option of deploying a mechanical olfactory recording system to the project. This was rejected because of the high probability that results could be affected by influences other than potential odour from the WTS.

Systems such as the Jerome Olfactory Meter can be compromised by, for instance, road traffic fumes. Considering the proximity of the A road immediately next to the harbour, it was decided that olfactory surveys by individuals was most appropriate. Initially, the same monitoring points were used. However, based upon PWS' further investigations and identification of additional potential odour sources, the monitoring points were extended to cover a greater area. These included the Mound Road Roundabout and Great Georges Street areas.

The results of PWS olfactory surveys can be reviewed in Appendix V, including the location of bales and all monitoring points shown in an aerial map.

. These surveys are conducted in line with The Environment Agency Guidance H4 Odour Management and the German Standard VDI 3882 (1) (1992): Olfactometry Determination of Odour Intensity (VDI 3882 – Part 1, pub. Verein Deutscher Ingenieure, Dusseldorf).

As a control, PWS also conducted a double-blind test. The purpose of the double-blind was to establish the efficacy of the odour control system. By way of explanation, Re-Gen operatives continued to operate the misting system, but without the scent. The individual carrying out the olfactory survey was unaware that the scent had been removed. Subsequently, the olfactory survey for those periods recorded an increase in the intensity of the detectable odour.

10.8 Odour Control

Re-Gen have deployed an odour control system, in order to mitigate potential odour emanating from the stockpile of RDF. The system has been designed by Re-Gen in conjunction with Taggarts. Pumped from a centrally positioned reservoir, through a network of flexible pipes placed around the scaffolding, the deodouriser is misted by a series of both pre-set and adjustable nozzles. The deodouriser is a mixture of water and odour neutralising scent. Currently, Hydrocor is now used (Appendix XIII). As with all chemicals, these present risks in their raw form. However, when diluted to the correct concentration, it would be considered safe to use. All chemicals are stored in a bunded container to prevent their accidental release. Spill kits are also provided on-site. All staff are trained using videos in multiple languages to ensure safe use of chemicals.

As previously outlined, there has been an increase in the volume of waste passing through the WTS since June 2023. From information received, there was a significant increase in odour complaints from that point in time. This period coincided with a local bin strike when collections were not made for a period of weeks. The ramification of this was a build-up of putrescible waste in domestic bins due to a lack of segregation by residents. Effectively, cross-contamination was taking place. However, the impact of the bin strike was passing in relative terms.

It should be noted that Re-Gen have a contingency plan in place if there is a reoccurrence of the bin strike. PWS have discussed this with the senior management team of Re-Gen and have been made aware of the details of this contingency plan. As this is a contractual matter between the parties involved, it would be inappropriate for PWS to comment further.

10.9 Odour Control Rotation

Re-Gen employs various masking agents/scents in the

odour mitigation system. All the additives are inert, as confirmed by the relevant SDS. It appears that some perfumes are used more than others and from reports received, some of these perfumes produce a sickly, sweet odour. Since January 2024, Re-Gen have rationalised the number of agents used to one.

10.10 Flies

PWS have been made aware that an increase in fly activity has been reported in the environs of Warrenpoint town since the summer of 2023. These reports have mainly come from residents and businesses.

One of the primary reasons flies are attracted to RDF waste is the presence of organic material. RDF waste often contains food waste, plant matter, and other decomposing organic substances that serve as a breeding ground for flies. Flies are naturally drawn to such environments as they provide an abundant source of nutrition and a favourable habitat for reproduction. The warm and moist conditions found in RDF waste piles further facilitate their growth and proliferation.

To effectively manage and control flies associated with RDF waste, a multi-pronged approach is necessary. Some measures that can be implemented:

- 1. Waste Segregation:** Proper segregation of waste at the source can help minimize the presence of organic material in RDF waste. By separating food waste and other organic substances, which are the primary attractants for flies, from other types of waste, the overall attractiveness of RDF waste to flies can be reduced. As previously, PWS is satisfied that the systems employed at the Carnbane facility are appropriate and robust.
- 2. Covering and Sealing:** Implementing effective covering and sealing mechanisms for RDF waste piles can help restrict the access of flies. This can involve the use of impermeable covers, netting, or screens to

prevent flies from entering the waste piles and laying eggs. As previously, Re-Gen employs each of these control methods.

- 3. Regular Monitoring and Cleaning:** Regular inspection and cleaning of RDF waste storage areas are essential to identify and eliminate fly breeding sites. Removing any accumulated organic matter and maintaining proper hygiene standards can significantly reduce the fly population. As previously, Re-Gen employs each of these control methods.
- 4. Chemical Control:** In situations where fly infestation is severe and poses a significant risk to public health, targeted and judicious use of insecticides may be necessary. However, it is crucial to follow strict guidelines and regulations to ensure the safe and responsible application of these chemicals. As previously, Re-Gen employs each of various control methods.

Flies associated with RDF waste pose a persistent challenge in waste management operations. Implementing waste segregation, covering and sealing measures, regular monitoring and cleaning, biological control, and, if necessary, chemical control can help manage and control the presence of flies in RDF waste facilities. By adopting a comprehensive approach, it is possible to minimise the impact of flies and ensure a safer and healthier environment for both workers and the surrounding community.

Species of flies has been discussed earlier in this report and as stated, no independent evidence of speciation has been provided. Of the 4 main species of flies potentially identified, it is important to understand habitat and food source associated with each.

- House flies are associated with putrescible material, not exclusively waste.
- Blow flies - Blue/greenbottles are associated with decaying flesh.

10.0 Site Specific Findings Continued.

- Drain flies are associated with foul drains and sewers.
- Fruit flies are associated with decaying vegetable material.

Taking this into consideration, there are other sources outside the port area that could be a more likely source of certain insects, for instance blow flies emanating from the mudflats or slurry spreading, fruit flies from, for example, compost and drain flies from the Waste Water Treatment Works. This is not to say that it is impossible for these insects to emerge from the RDF material, but other factors should be considered. Based on information acquired from sources, such as residents, the most common reports of flies would appear to be house flies.

10.11 Insect Control Measures Fly Control / Larvicide Application

As previously stated, a larvicide is applied to the RDF material prior to final production at the Carnbane facility. The waste operator currently deploys a number of fly control systems at the WTS.

Fly spraying frequencies and time periods will be dependent on a number of factors which are significant in fly production. These factors are visual inspection, fly counts, temperature and humidity, which in turn determines the intensity and type of the treatment required. Based on Best Practice advice and guidance, trigger points have been set at:

Visual Inspection:

Where a problem is perceived, and an unacceptable level of flies are present within the vicinity of the waste, spraying will be undertaken immediately.

Under 14 degrees centigrade:

spraying will be carried out once per day for one 30 minute session in and around the stockpile.

Over 14 degrees centigrade:

spraying will take place twice per day for 30 minutes in each session.

If flies become an issue beyond the 'red-line' boundary, but within the confines of WHA boundary then these measures detailed above will be implemented to address the issue.

The determination of the trigger points is carried out on site by the nominated competent person, who makes a decision based on the three parameters above.

An independent specialist was brought in last year to review the insecticides employed. Currently, Cypermethrin is now used. Application of insecticides is by way of a portable fogging machine (Appendix XIII), with a single formulation of insecticide employed (Appendix XIII). As with all insecticides these present risks from chemicals in their raw form. However, when diluted to a concentration of 0.1%, as an application rate, it would be considered safe to use. It should be noted that Cypermethrin is widely used in agriculture. All chemicals are stored in a bunded container to prevent their accidental release. Spill kits are also provided on-site. All staff are trained using videos in multiple languages to ensure safe use of chemicals.

In addition, under advice from the entomologist, a series of red and white boards are placed around the facility and on the bale stack. These boards are coated with a combination of a pheromone and a sticking agent. The rationale behind this process, is that flies, especially house flies are attracted by both the colour combination and the pheromone and will stick to the boards once they light.

Fly papers, contained within weatherproof tubes are placed at various control points around the site, in order to conduct fly counts.

10.12 Scaffolding Height

The scaffolding placed on 3 sides of the WTS is to height of c9 metres. The stockpile of RDF is at, or close to the top of this scaffolding. When considering the impact this may have on emerging flies, it must also be considered the behaviour of flies emanating from the top of the stockpile.

In practice, the top of the stockpile becomes 'ground zero' and the effectiveness of the scaffolding and netting is compromised. Therefore, scaffolding and stockpile height should be considered in tandem.

10.13 Speciation

Currently, no speciation of flies is carried out.

10.14 General Pest Control

General pest control covers rodent and bird activity. Having had sight of the pest control records for the facility, PWS is satisfied that there is no rodent activity associated with the facility.

As is usual for a working port, there is bird activity in and around the port. The main species identified were Common Pigeon (*Columba livia*), Common Gull (*Larus canus*) and Hooded Crow (*Corvus cornix*). None of these have been recorded as a pest in reports, although bird activity has been observed on the stockpile. Birds, such as those identified, have the potential to compromise the integrity of the bales and/or netting, by pecking through both.

10.15 Washdown

After bales have been moved to the holding area at the quayside and following ship loading, the ground area is washed down by power hose, with a mixture of inert surfactant. Run-off is collected by one of two road-sweepers allocated to the site. The road-sweeper, once full, is discharged into a sealed skip which is brought to the Carnbane facility for discharge. Rotation of the two road-sweepers ensures that one is always available at the WTS.

10.16 Heat Source

As part of the considerations for this report, the potential for heat build-up within the RDF stockpile was evaluated. It is possible, given the correct conditions, for RDF to self-heat. This does not imply or suggest risks such as

spontaneous combustion, but rather the possibility of the stockpile maintaining a temperature above ambient. In order to quantify this phenomenon, a drone fitted with a thermal imaging camera was deployed to overfly the stockpile in both storage areas.

Weather conditions were dry, with a prevailing wind from the SE of 5mph, gusting to 12mph. Ambient temperature was 4°C. The drone obtained thermal images from above both stockpiles. The footage is included below. The results from the main stockpile showed a temperature of 16.2°C. The results from the secondary stockpile showed a temperature of 15.1°C. This would indicate that the core temperature of both stockpiles would be a quantum greater than surface temperature.

10.17 Drone footage and Thermal Camera

Appendix X (10)

10.18 Newry, Mourne & Down District Council

An EIR was made to Newry, Mourne & Down District Council. A response was received from the Information Officer on 1st February 2024. The request was made to establish the number of direct complaints made, how these had been investigated and what the current position was, with respect to open, closed and ongoing investigations. The response stated that there have been 42 complaints alleging odour, flies and noise. Of these 14 have been closed off for various reasons, as per below.

Closure Reason
On further communication with the complainant, they no longer wish to proceed with the complaint.
The complainant log sheets were not returned, as per the EH Department complaints procedure.

10.0 Site Specific Findings Continued.

On further communication with the complainant, it has been confirmed that they are not affected by the alleged nuisance at their property.

The complainant has supplied insufficient information for the Council to fully investigate the complaint.

This suggests that there are 28 complaints remaining open and under investigation. Under Regulation 12(5)(b) of the Environmental Information Regulations 2004, the council were unable to provide any further information on the outstanding complaints. A further EIR was made to understand the break down of the complaints, as below.

Source	Number of Complaints
Residents/ Members of the Public	33
Businesses	3
Elected Representative	6

Complainants (42no) have complained about several issues.

The complaints from local residents (33no) and businesses (3no) are broken down as follows:

Nature of Complaint	Number of Complaints
Flies	16
Odour at own property	24
Odour in town	8
Noise	3

*Please note that several residents have complained about more than one issue.

10.19 SAICA

PWS was invited to conduct a site visit by the senior management team of the SAICA factory. As near

neighbours of the Re-Gen facility, the purpose of this visit was to obtain information and feedback on any potential impact upon the factory from the WTS. It was established that, according to the senior management team, odour was an ongoing problem at their facility, with odour reports by SAICA staff dating back to July 2023. There has been a reduction in odour from late October 2023, with negligible odour reported since December 2023.

10.20 Residents

As part of the stakeholder engagement with interested or concerned parties, a series of interviews was conducted with residents by PWS. These interviews took place in person and by telephone. The list of interviewees was provided by WHA, following consultation with the resident to ensure there was no breach of GDPR and that the resident was happy to accept an initial email or call from PWS. In addition to this, during the course of the round of interviews and in order to obtain as much feedback as possible, PWS asked each interviewee if there may be neighbours who would care to take part in the interviews, who may not have contacted WHA directly. To that end, both email address and contact telephone number were provided as a point of contact. The total number of residents interviewed was 49.

A standard series of questions was compiled to ensure objectivity of results.

- Location in relation to WHA.
- When odour was first noticed.
- Description of odour.
- Intensity and persistence of odour.
- Increase or decrease in odour over time.
- Current status of odour.
- When fly activity was first noticed.
- Intensity and persistence of fly activity.
- Description of flies.

- Increase or decrease of flies over time.
- Current fly activity.
- Any contemporaneous notes or records kept by resident.
- Had a complaint been made to any other agency and what if any response had been received (Re-Gen, NIEA, NMDDC).
- Any other concerns or comments which may be felt relevant.

The tabulated results of this survey are presented in Appendix XI.

Findings

The majority of respondents reside in close proximity to the port, in the general area of Lower Dromore Road, through to Charlotte Street and the frontage of the A2, although complaints were received from Sraid Sheoirse Mhor (Great George's Street) and the Forth Road area. Additionally, complaints from businesses were confined to the Square area of the town.

The overriding complaint from respondents was in relation to odour. The first incident was reported in mid-July 2023. The intensity and frequency of the odour increased during the summer/early autumn period, when, in all but a few instances, odour gradually decreased in the late autumn/early winter, both in intensity and frequency. A spike was reported during the Christmas Eve to Boxing Day period in three of the respondents. It has been established that the site was operating with a skeleton staff during this period and the deodouriser system was not operational. Since that time, there appears to have been a general reduction, with the majority of respondents reporting little or no odour.

Information on the type of odour experienced was predominantly a 'bin smell', or an 'unemptied brown bin smell'. Two respondents reported a 'slurry type' smell.

Fly activity was described as extreme, with all respondents

stating that flies were a constant problem both inside and outside their property. The first incident was reported in mid-July 2023, with activity reported as 'constant' throughout the summer/autumn period. Additionally, residents reported swarms of flies at certain times, usually associated with increased ambient temperatures. Several residents reported 'fly specks/spotting' on the walls and ceilings inside their property. It became necessary for windows and doors to be kept closed to prevent flies gathering indoors.

Two main species of flies were described by residents, being Bluebottle and Housefly. There were some reports of very small flies, probably drain and/or fruit flies. The identification of flies can be difficult for the untrained observer, but it would be reasonable to assume that the descriptions offered are accurate, as these are common species of flies.

Fly activity has decreased since the peak in late summer/autumn, which would be expected due to reducing ambient temperatures. Currently, fly activity could be described as negligible.

Residents were asked if any contemporaneous notes had been kept. Of the respondents, two had done so. PWS did not have sight of these.

42 complaints have been made to the Environmental Health Department of NMDDC, as per section 10.18. From the information received, 28 complaints remain open. 2 complaints have been made to Re-Gen. 16 complaints have been made to WHA. 2 of the complainants to WHA, have complained on two separate occasions. Complaints received by WHA are responded to by WHA in a timely fashion, either by telephone or email.

Generally, because of the odour and flies, residents complained of embarrassment in inviting friends and relatives to their home and having to keep windows closed during the warmer weather, to prevent the smell and flies

10.0 Site Specific Findings Continued.

coming indoors. Outdoor activities, such as barbeques were impacted, because of 'swarms of flies' and the strong odour. Further, residents expressed concerns about the following:

House prices: on account of the odour/flies, several residents expressed concerns about the effect on house prices in the area.

Lack of engagement: a common theme from all the respondents, is the lack of engagement by WHA specifically, with the local community. Non-attendance at various public meetings and protests was referred to, as was a lack of transparency around Freedom of Information requests made by residents to WHA. Whilst the licence holder is Re-Gen, the feeling from residents is that, as landlords, WHA have an obligation to ensure that the community is not affected by any operations carried out by their tenants.

Deodouriser: concerns were expressed that the deodouriser employed at the Waste Transfer Station may have a detrimental effect on health.

Increase in odour/flies Spring/Summer 2024: whilst recent reports indicate a decrease in odour/flies, all residents expressed concerns around the likelihood of the situation returning to the levels experienced during summer/autumn 2023.

11.0 Discussion of Findings

11.1 Compliance Assessment Reports

11no Compliance Assessment Reports were carried out by the NIEA covering the period 25/7/23 – 17/1/24.

There are 25 separate assessment categories within a CAR and any non-compliances are assessed on a score from 0 to 4. During the period in question, out of a total assessment of 200 categories, 10 non compliances were recorded. 8 of these were scored as a 1 and on two occasions 2 were scored as a two. The breakdown of these is as follows:

Odour - 4 non-compliances: 3 scored as 1 on the following dates: 16 & 25/08/23, 13/09/23 and 1 scored as 2 on 31/08/23.

Flies - 1 non-compliance scored as 1 on 16/08/23.

Waste quantities - 1 non-compliance scored as 2 on 20/09/23.

Specified operations - 2 non-compliances scored as 1 on the following dates: 5/09/23 & 9/10/23.

Exceeding storage time limit - 2 non-compliances scored as 1 on the following dates: 5/09/23 & 9/10/23.

The most recent non-compliance is recorded in the 9/10/23 report. Since that time, three further inspections have been carried out by the regulator on 27/10/23, 15/11/23 and 17/01/24, with no non-compliances recorded. The CARs referenced above and in Appendix XV have been provided by Taggarts who have confirmed in writing that PWS are in receipt of all CARs carried out by the NIEA in the period 25/07/2023 – 17/01/2024 and that the CARs are full and complete.

Date of NIEA visit	number of non-compliance	non-compliance (NC) score (1-3)	reason for non-compliance
25/07/23	0	0	0
18/08/23	2	2 NC score 1	odour & flies
25/08/23	1	1 NC score 1	odour
31/08/23	1	1 NC score 2	odour
05/09/23	2	2 NC score 1	specified operations & time limit
13/09/23	1	1 NC score 1	odour
20/09/23	1	1 NC score 2	waste quantities
09/10/23	2	2 NC score 1	specified operations & time limit
27/10/23	0	0	0
15/11/23	0	0	0
17/01/24	0	0	0

11.0 Discussion of Findings Continued.

11.2 Odour

The various sources of potential odour have been discussed previously in this report. The juxtaposition of the harbour to these potential odour sources is important to consider, when evaluating what impact the storage of RDF material may have within this broader context and upon off site receptors.

Because of the 'raw material' from which RDF is manufactured, RDF has the potential to produce odour. There are industry standards within the Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control) which detail BAT (Best Available Techniques (Appendix XIV). This Directive applies to all aspects of Waste Treatment by a waste operator. After having carried out reviews of all the methods adopted by Re-Gen, in the production and export of RDF, these were found to be compliant with this Directive.

Re-Gen has, in an attempt further to mitigate odour issues, taken additional steps as detailed earlier in this report.

The change from the industry standard of 8 wraps per bale to 12 and subsequently, 14 wraps will have had a positive impact upon odours, flies and leachate.

The increase in the application of deodouriser and larvicide will have had a positive impact on odours and flies.

As part of the Environmental Audit, PWS developed a model to ascertain if there is a relationship between the dates of complaint (Appendix XII) and vessel movements with potentially odorous cargo (Appendix XII), prevailing weather. There were 75 vessel movements that PWS deemed could contribute to odour due to the cargo. Out of the 728 total movements between the dates of July 1st, 2023, and November 29th, 2023, 24 of which were Waste movements, or 3.29% of the total vessel movements.

During this time there were 23 complaints of odour

received by the Harbour Authority on 17 differing dates. 5 of which were days that had waste moved, 0.686% of the total movements and a 3.31% of the days. From this data, it is logical to suggest that the movement of RDF cargo, will have an insignificant impact upon perceived odours.

As a caveat to this model, it should be noted that the date of complaint may not refer to the actual day of nuisance. Accurate recording of complaints would solve this variable.

11.3 Bales Generally

The increase in throughput, resulted in the bale tracking and rotation plan being amended during the course of 2023. The plan would be considered to be a dynamic document, which would lend itself to being adapted, as operational pressures dictate. Correct implementation of bale tracking should prevent bales remaining at the port for any longer than is necessary and within the three month limit.

It would be PWS' opinion that extended dwell times, whilst within the three month window, have been the single greatest contributory factor to increased odour and fly issues. It is acknowledged that the bin strike in mid- 2023 will have had an impact upon odour. It would be reasonable to say that, as an influence, the RDF produced during that time is no longer a factor and has not been for some months. However, the spike in odour has raised local perception and concerns of odour.

Reducing dwell time at the WTS will significantly reduce the potential for any putrescible contained in the material to deteriorate. In order to reduce dwell time, an export schedule should be developed, commensurate with that target. PWS have had sight of the shipping schedule for the RDF and the number of vessels pre-booked for the current year has increased by c60% compared to the previous year.

It was noted during earlier site inspections that the 'first in, first out' programme was not being strictly adhered to, with some bales with an earlier week number remaining in the stockpile, whilst later week numbers had been exported.

The current iteration of the digital bale management plan is a welcome innovation. If this had been implemented before January 2024, the effect of tracking bales more accurately would have been felt earlier and prevented bales potentially remaining at the WTS close to, or beyond the three month limit.

Reducing dwell time at the WTS will have the following benefits:

- reduce the stack height and consequently, reduce the pressure on the bales at the base of the stockpile, therefore helping to mitigate deformation of these bales.
- reduce the potential for heat build-up.
- reduce the potential for leachate.
- reduce the potential for odour.
- contribute to breaking the life cycle of insects of concern.

11.4 Condition of in situ bales

The working plan details acceptance criteria for the acceptance and storage of bales at the WTS. Observation by PWS during site inspections have raised concerns around the condition of bales suffering damage, and either accepted for storage, or retained in the stockpile. Multiple bales were found to have been patched in several places, which is not in line with the Working Plan.

11.5 Flies

As discussed previously, Re-Gen keeps records of fly counts at the WTS. Whilst this information is helpful, in understanding levels of fly activity, it takes no account of genus of flies. Flies have evolved to be specific in their habitat, food source and breeding conditions. Having knowledge of the species of fly, gives an early indication of potential issues and allows these to be addressed in a timely manner. Currently, the system deployed at the WTS to monitor fly activity is a series/combination of red and white boards, painted with a pheromone and a sticking agent and fly strips contained in a tube. PWS understands that this system was devised under advice received by Re-Gen. It would be our opinion that this system is limited in its effectiveness.

The red and white boards are exposed to the elements and the agents applied can easily be washed off. During the course of several site visits, the sticking agent on the boards was not present. It was not possible to establish if the pheromone remained. A more recognised system would be the deployment of Electronic Fly Machines. This will be discussed further under recommendations.

The application/fogging of insecticides by the waste operator is as per the protocol stated earlier in this report. Historically, there has been some duplication of insecticides, using the same active ingredient, but under a different trade name. This duplication has the potential to reduce the efficacy of the treatment and increase the possibility of localised immunity. Considering the number of breeding cycles a typical house fly, for example, will have during a year, there is a danger of such resistance occurring. A more robust treatment schedule should be put in place, to mitigate this possibility. It would also be of value to investigate other insecticides, such as Methomyl.

11.0 Discussion of Findings Continued.

11.6 Seasonal factors

The increase in odour and fly activity was reported mid 2023 and whilst PWS' engagement commenced in November 2023, it would be appropriate to make comment on seasonal factors which may have an influence during the warmer months of the year. As temperatures increase, so does the internal temperature of the stockpile. The combination of increased heat and humidity allows bacteria to grow faster and odours to travel further. Therefore, this will promote odour transference and provide a preferential environment for fly propagation. The additional measures which have been put in place should have a favourable impact upon mitigating this during the incoming Spring/Summer season.

11.7 Oversight by Warrenpoint Harbour Authority

Since the recent increase in complaints, the senior management team of WHA has been proactive in their efforts to have greater engagement with Re-Gen. Daily site inspections of the area operated by Re-Gen are carried out by a member/members of the WHA management team. These inspections include, but are not confined to, the condition of the stockpile, the rotation of the stockpile etc.

From discussions held with the WHA management team, it had previously experienced difficulty in obtaining information from the waste operator, specifically around bale rotation, retention times etc. In addition to this, the WHA management team had not been provided with reports carried out by various external agencies.

The WHA management team have been strenuous in its efforts to date and whilst there is an appreciation that some of the information requested may be commercially sensitive, the waste operator should have given sight of this information to the management team, such that they could be satisfied of the regulator oversight and any remedial measures taken to rectify issues raised as a result of on-site inspections.

12.0 Recommendations

Prior to making recommendations, it should be noted that the facility at WHA is operated under oversight of the NIEA as the regulator and issuer of the Waste Management Licence. Since mid 2023, 11 inspections have been carried out by the NIEA and a total of 10 non-compliances were recorded, the majority of these deemed to be minor. In association with the DEARA enforcement policy the NIEA firstly work with waste operators to promote and ensure compliance with licensing requirements.

12.1 Bale Management

It is crucial that the Digital Bale Management Plan, active since January 2024, be fully adhered to. This will allow the waste operator to keep a daily track of all bales expected, stored and those to be exported. There must be full transparency of this system between the waste operator, WHA and their consultant, if applicable. By so doing, all parties will have a complete understanding of the movement of waste at the WTS. In addition, copies of weighbridge dockets should be provided to WHA by Re-Gen for the acceptance of bales arriving at facility.

As best as is reasonable, the waste operator should attempt to target that bales be retained for no more than 6 weeks. PWS believe this is achievable, especially in light of the much increased shipping schedule for 2024. The consequences of reduced dwell time have been detailed.

Currently, bales are labelled on one face, which is the industry standard. Prior to the implementation of the Digital Bale Management System, it would have been recommended that bales be labelled on four faces. However, the accurate tracking of bales can now be achieved by referring to the on-site system.

Control of bale condition should be improved to conform with the Working Plan. If oversized or multiple holes are observed, the bale should be removed from the stockpile and returned to Carnbane as per the Working Plan.

Daily monitoring of the temperature in the stockpile should be implemented, especially as temperatures will continue to rise in the coming months. This will give an early indication of elevated temperature, relative to ambient and

give the operator an early warning of the potential for fly reproduction.

The height of the stockpile should be kept to a minimum, to ensure that the scaffolding height in relation to the stockpile is maintained at a level 2 metres above the topmost bales. It would be proposed that bale height does not exceed 8 bales. This should be achievable, taking into consideration the significantly reduced 'dwell time' as previously stated. This will help to mitigate fly activity and increase the effectiveness of the odour control system.

12.2 Odour Control

It would be recommended that the frequency with which deodouriser is rotated, be increased to no more than one week per scent. This should help to prevent sensitisation. It is further recommended that the use of more natural scents be investigated, which are less synthetic in aroma.

12.3 Rotation of Insecticides

Improved rotation of insecticides would be advised to prevent resistance. Alternative insecticides should be investigated for the same reason.

12.4 Speciation of flies

The correct speciation of flies should be undertaken.

12.5 Mechanical fly control

Installation of Electronic fly control systems should be considered. PWS are unconvinced that the red/white board system is working. IP65 Electronic Fly Control systems are available, which are proven in their

effectiveness. These are available with sticky boards, rather than electronic kill grids. This will assist in improving the accuracy of fly counts and in the speciation of flies.

12.6 Bird Control

In order to reduce potential damage to bales and netting, appropriate bird control should be considered. Audio bird scarers would not be appropriate due to the site's proximity to residential properties, however, fixed visual bird scarers could be an effective deterrent.

12.7 Sharing of Information

A formal process of transferring information from the waste operator to the Senior Management Team should be implemented. This to include all reports and correspondence from the NIEA and Newry, Mourne & Down District Council with respect to audits/complaints made to them. It would be recommended that as part of WHA's governance, that an undertaking be provided by Re-Gen to WHA. This undertaking would give comfort to WHA, that any activities deemed to be commercially sensitive by the waste operator, do not breach any regulations which may apply to that activity.

12.8 Environmental Officer

The appointment of a suitably qualified Environmental Officer by WHA is already in train. The appointee is due to take up post on 5/03/2024. This is an unusual step for an organisation with a limited, overall environmental footprint and relatively low turnover. Employing an Environmental Officer will give an additional layer of oversight to WHA and ensure that all processes, both current and recommended, are adhered to by the waste operator. It is recommended that the Environmental Officer carries out daily checks on the WTS and that findings, recommendations and any improvements required are recorded as part of an internal auditing system. The Environmental Officer will report to the Health, Safety & Environmental Manager.

12.9 Continued bi-weekly monitoring/monthly review.

Ongoing independent bi-weekly olfactory monitoring should continue during the course of 2024. In addition, independent monitoring of the WTS should be implemented, to review all aspects of the activities by the waste operator.

12.10 Complaints procedure

A standardised complaints procedure should be put in place, for both Re-Gen and WHA. This to apply to both email and telephone complaints. A template to be agreed on accepting the complaint and the management of thereafter. If a complaint is made, this should be shared between both parties, to allow for a more informed response to the complainant.

12.11 Stakeholder meetings

One of the main criticisms from residents/local businesses, has been the perceived lack of direct engagement by both WHA and Re-Gen. It would be proposed that regular meetings are held, to include WHA, Re-Gen and nominated stakeholders.

Qualified recommendations

Management of the bale stack could be improved, with an increase of the existing footprint/red line. This would reduce the height of the bale stack and deal with many of the challenges currently faced and detailed. It would also permit easier management of damaged bales, allowing easier retrieval where necessary. It should be stated that such an increase would not be as an end to increase the volume of material passing through the WTS. It should be noted that an amendment to the current planning permission/written agreement from the Planning Department, followed then by an amendment to the waste management license will be required.



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