

**AMG RESOURCES,
NEVILL'S DOCK,
LLANELLI**

**PEST MANAGEMENT
PLAN (PMP)**

Report Number 2056r1v3d0322

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Date	Contributors	AMG approved	Revision
June 2020	Geotechnology Ltd		1
September 2021	Geotechnology & AMG		2
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1 INTRODUCTION

AMG Resources Ltd (AMG) operates a waste transfer facility at its site on the outskirts of Llanelli, South Wales (see Figures 1 and 2). The site carries out the storage, separation and baling of metallic wastes under an Environmental Permit. Exemptions T9 (NRW-WME067233) and S2 (NRW-WME067553) have been registered to provide additional area, primarily for use in abnormal conditions.

The main focus of the operation is post-consumer can re-baling. From experience, AMG recognises that the management of such waste needs to be controlled carefully to avoid nuisance to the environment and local population, particularly due to flies.

This Pest Management Plan is a working document that will contribute to the overall management system of the waste transfer operation.

1.1 Objective

The main objective of this document is to ensure that all appropriate measures and proactive controls are taken to prevent or, where that is not reasonably practicable, reduce the presence of pests and their potential spread off-site. It also considers those actions to be taken reactively in the event that the control implemented at the site have been insufficient to avoid an incident.

The main pests considered in this document are flies with consideration also given to rodents and seagulls although these latter pests are not routinely encountered. If additional pests are identified, the plan will be reviewed.

1.2 Relevant Guidance

This document takes into consideration the guidance provided by the EA and uses extracts from the guidance where relevant.

2 OVERVIEW OF OPERATION

2.1 Waste Transfer and Processing

The Permit Boundary within which the waste activities take place is shown on Figure 2 as a green line. The exemption areas are also shown. The wider land holding of AMG is shown by the surrounding red line.

Post-consumer steel cans are typically delivered by road in curtain sided vehicles containing bales or tippers or moving floor trailers containing loose cans. Due to the distances that some of these loads travel, the waste may take several days to reach AMG after being stored at customer facilities, including local authority waste management facilities. Once visually inspected upon delivery and accepted, all wastes are handled by telehandlers and mechanical grabs.

Waste processing at the site consists of physically opening the relatively loosely packed bales and re-baling the cans into smaller volume higher density bales. This process is carried out by two balers fed by the mechanical grabs. The newly prepared bales are then stored loose in a stockpile and then loaded onto tippers for delivery to local steelworks.

AMG is continually looking at different ways of storing the bales to ensure their high quality and reduce pest issues. Currently, bales are stored in external stockpiles

2.2 Site Layout & Stack Management

One of the missions of AMG is to rapidly process all high quality incoming post-consumer cans and to quickly supply this to local steelworks. To ensure that the site is able to achieve this aim, AMG has invested in several balers and also has a shipping container tipper. These plant are served by 4 mechanical grabs. The two main balers at the site are able to process approximately 10,000 tonnes / month which greatly exceeds the typical maximum inputs of 3-4000 tonnes/month of post-consumer cans.

Although the on-site machinery has sufficient capacity there are several off-site external factors outside the control of AMG that sometimes affect the AMG mission. This is currently the case with off-take by local steel mills significant reduced. As a consequence, AMG has throttled back incoming deliveries, registered exemptions to provide additional short-term storage capacity and is ensuring that all stock on site is processed ready for delivery. The immediate consequence of the current situation is that there is more material in stock would normally occur, as outlined below.

Under normal operating conditions, AMG aim to implement the site layout and stack management systems indicated in Figure 3. This is based on a one-way traffic system to improve site safety and careful control of stock utilisation to ensure the first-in-first-out principle is implemented. This latter aspect is to be achieved by sequentially stacking and then processing delivered materials to ensure that the balers are being fed the oldest material on site.

Site staff will operate the site with one stack being consumed, one being refilled and one with the next half weeks production awaiting processing. This will form the basis of the day-to-day operation aimed at ensuring the first-in-first-out principle is implemented. Accordingly, the site should normally operate with 10 days maximum retention time. At all times of the year, only the minimum quantity of bales will be split prior to processing to minimise the number of open bales.

3 OVERVIEW OF POTENTIAL PROBLEM

3.1 Flies

The life cycle of most flies has four main stages:

1. egg
2. larva
3. pupa
4. adult

This is simplified in Plate 3-1 for the common housefly under ideal conditions.

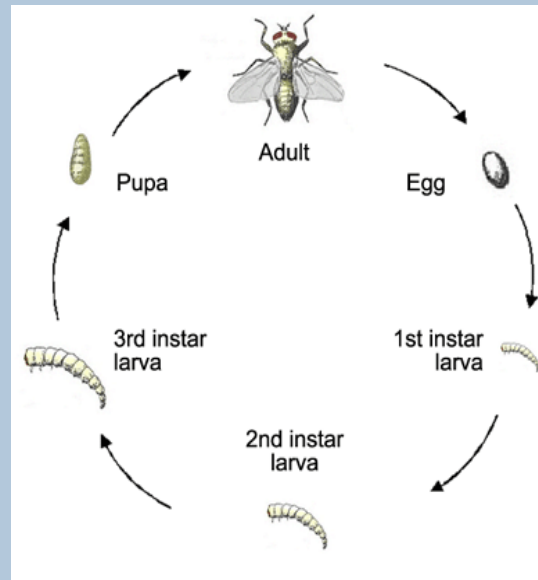
Plate 3-1 Common housefly life-cycle

Eggs typically hatch within 1 - 2 days.

Larvae take from 3 days in summer up to a month in winter to develop as process is temperature dependent

Adult flies emerge from pupae from 3 days up to a month later depending on conditions.

(adapted from EA Fly Management Guidance)



In general, the adult female will lay eggs on a suitable surface for larval development. This will typically be damp decomposing organic materials. The larvae will hatch out and feed on the organic materials. When they are fully grown, they will search out a drier area to pupate. The adult fly will emerge from the pupa and then mate so the cycle may be repeated. The duration of the cycle is very dependent on the temperature of the environment in which the larvae develop. The higher the temperature, the more quickly flies develop and increase in numbers, and so the greater likelihood of problems such as infestation and dispersal.

Adult flies that emerge from the baled cans will typically find a large surface area dominated by metallic packaging (baled cans) and small amounts (<1%) of residual organic waste and small amounts of biodegradable matter (paper, card).

What happens next is not fully understood and complex as such flies may stay on site, feeding on the readily available residual biodegradable component left in the post-consumer tins by customers. Some flies may also leave the site where they could pose a nuisance to off-site receptors and processes. If house flies from the site were to move off site in sufficient number there are a range of issues that could develop.

3.2 Rodents

Rodents require a place to live, food and water. Although the waste could potentially provide suitable living conditions, there is only a limited supply of residual food.

Rats and mice can damage buildings, food, clothing and documents by gnawing, urinating, defecating and nesting. Because they gnaw on hard objects, such as plastic electrical boxes, they can cause fires. The urine, droppings, saliva and dead skin cells of rats and mice may also pose a risk if inhaled.

To date, there have been no significant issues with rodents.

3.3 Seagulls

Seagulls prefer to stay above ground level for their own safety and so they can see any possible danger. As a consequence, they often nest in hard to reach places where they are not likely to be disturbed. Seagulls can be aggressive to humans, particularly during the nesting season.

To date, there have been no significant issues with seagulls.

4 SENSITIVE RECEPTORS

4.1 Surrounding Area

The aerial photograph in Figure 4 indicates that the site is several hundred metres from a residential area and that there is a school directly to the north.

Within the surrounding residential area there are other establishments including food and grocery preparation and retail establishments, a swimming pool, a social club, a railway station and Welsh Water pumping station. There are also other business establishments and wide open spaces used for recreation.

In general, the severity of the nuisance related to flies will likely be directly proportional to the proximity of the receptor to the fly source. In this context, the closest residential receptors and users of the school (internally and externally) are considered to be most susceptible to nuisance related to flies. As the impact of flies on different receptor groups may differ, consideration has been given to their sensitivity. This is summarised in Table 4-1.

Table 4-1 Potential problems associated with flies

Issue	Problem	Sensitivity of local receptors
Nuisance	Continued presence of even a small number of flies (say 5) can cause irritation and distress to humans, either in residential or commercial properties.	Occupants of nearest residential properties to north and east, school users to north and social club to northeast particularly sensitive to nuisance
Disease	Adult flies are often active on rotting materials that can be contaminated. If contaminated flies come into contact with people, animals or feedstocks there is potential for disease to be transmitted.	Users of food preparation, retail and service establishments to west, north and east particularly susceptible to disease borne by flies
Contamination	Flies may become incorporated into food products during preparation and manufacture. Flies can also physically affect processes such as vehicle painting.	

Experience to date suggests that the post-consumer tins are a suitable habitat for fly populations on-site and that in many instances, the population is already active within the waste upon delivery. AMG has brought this to the attention of suppliers and is working with them to improve this aspect and minimise the transfer of problems. Flies are not typically associated with the other metallic wastes at the site due to a lack of biodegradable fraction.

AMG has also discussed with the Local Authority and NRW the possibility of other unrelated off-site activities also being sources of significant fly-populations (and other pests) from time-to-time. This includes uncollected domestic refuse and fly-tipping, which is known to be a local issue. Directly north is a brownfield site. This is known to have been used for fly-tipping and fly-tipping is also routinely observed to the east, west and south of the site. Directly east is a sewage treatment and pumping facility and directly south is an industrial yard, thought to have once been used for scrap metal transfer and which could be susceptible to fly-tipping.

Over 500m to the south, there are designated ecological sites which form part of the Burry Inlet.

4.2 Pest Dispersal

According to EA guidance, houseflies are capable of dispersing over distances of several kilometres, although problems seldom occur at distances greater than 2-3 km from the source. Significant problems likely to cause unacceptable nuisance levels tend to occur within 500m of the source. Dispersal factors are complicated and can vary, but high levels of fly breeding at the source are what normally appears to result in high dispersal levels. Dispersal appears to be greater in calm, warm weather.

Rats can travel up to 90m each night from their nesting site in search of food.

Given the experience to date and the nature of the waste stream, AMG implement very high standards of pest control aimed at preventing a negative impact on site personnel and off-site receptors.

5 PREVENTATIVE MEASURES

5.1 Training

AMG will ensure that all relevant staff are trained in key areas of pest management which includes an understanding of the likely range of pests with particular focus on the fly life cycle. This will also include basic identification of flies based on information such as that in Appendix 1, significance of flies, the use of control techniques and waste acceptance and rejection procedures.

AMG is planning to further train on-site staff in the identification of fly problems and the use of insecticides. However, this training is incomplete and so until the personnel are competent, external pest control contractors will be used. When the in-house staff are trained, this plan will be updated and provided to NRW prior to them undertaking any interventions.

The pest control company currently appointed by AMG is South Wales Pest Control, based in Swansea. The company is a member of the British Pest Control Association with experience of the waste sector and the site. Individual pest control technicians have RSPH Level 2 Pest Control qualification as a minimum.

5.2 Pre-waste acceptance

AMG recognises that pest management throughout the whole waste management supply chain is critical to the timing and occurrence of potential risks posed by flies. Given the different life stages of flies, eggs/larvae brought onto site could quickly develop further life-stages depending upon the age of the waste.

For this reason, AMG selects suppliers of baled post-consumer cans by including in its process a review of the suppliers pest management procedures.

Pre-waste acceptance checks will provide AMG opportunity to understand the source of waste and the production process. This will provide an opportunity for AMG to understand the potential risk of pests, particularly flies, and will enable AMG to check what procedures producers have in place for fly/larvae management. All new customers will be subject to a pre- acceptance check.

A pre-acceptance checklist will be completed for all new customers and used during audits of existing customers, as required. A copy of the checklist is provided in Appendix 2. As part of this checklist the age of the waste will be recorded alongside the method of production. Such factors will inform the risk from pests, depending upon the time of year and other contributory factors. On this basis, the information gathered will inform dynamic risk assessment of the supply contract with particular reference to the potential life-cycle of the common house-fly i.e. if waste is 1 day old in the summer it poses less of a potential risk than waste that has been in storage for a week prior to transport to the site and baling. AMG will request producers to ensure that all waste leaving their sites is carefully controlled and that interventions are taken to minimise pest issues being brought onto the AMG site.

These factors will be evaluated on a contract-by-contract basis and management measures at each end of the supply chain will be discussed and agreed with each customer accordingly.

Contracts with suppliers are to include clauses restricting the delivery of fly infested and older wastes. Customers will be warned that if their waste is repeatably found to be problematic then the waste will be rejected and the contract re-negotiated to ensure improved pest control at source. This is currently the case.

5.3 Waste acceptance

Potential pest issues are very difficult to detect within the post-consumer cans. This is due to the nature and shape of the material, the variability in the behaviour of households at source (i.e. some swill the cans to remove residual food waste and others do not), the way in which it is handled and transported, the volume produced and the lack of control AMG has on the source.

Incoming waste vehicles entering the site will report to the weighbridge. At this point, the details of each load will be checked to ensure the waste type and quantity being brought to site is permissible and in compliance with the pre-waste acceptance checks. If the waste is acceptable, the vehicle will be then directed to the relevant waste storage area.

Baled cans will be unloaded from the sheeted articulated transport vehicles and placed into dedicated storage areas using telehandlers. All personnel involved with waste acceptance and handling will be trained in identifying non-conforming waste and potential pest issues. The presence of flies and other pests will be evaluated as the bales are unloaded. Bales showing signs of fly infestation or foul odour will be placed into the off-spec holding area whilst management evaluate the best means to address the problem. Similar procedures will also be followed for loose cans delivered on moving floor trailers.

If a bale/load is infested the load may be rejected or quarantined in the off-spec area. Where the presence of flies are noted but the load is not infested the load may be quarantined prior to insecticide treatment or may be separated and re-baled directly, without putting to stock.

Although the use of insecticide is considered an intervention of last resort, AMG sometimes have little choice in treating the waste upon arrival as the pest issue may have already developed in the waste prior to arrival and returning or moving the waste will potentially move the problem elsewhere or exacerbate. When this is the case, customers will be informed and contracts reviewed.

5.3.1 Out of Specification Material

A small area for out of specification material is designated on site. In the past, consideration has been given to rejecting loads and placing waste into quarantine. Such measures will still be used but recent experience has shown that rapid waste processing and, where necessary, fly treatment can limit significant problems developing.

The immediate removal of fly infested waste from the site is an appropriate measure. However, isolating waste 'undercover', such as in a skip, will require active management. This is because elevated temperatures and humidity can develop inside the container which can accelerate fly development, and fly egress can potentially occur if the doors/lids are opened to allow movement or the addition of further bales. In this context, the out-of-spec area will be carefully managed and potentially used as a means of focussing the use of insecticide.

5.4 Waste Storage

AMG aims to have a quick turn-over of waste. The target is for waste to be in temporary storage for less than 10 days. Stock control and implementation of the first-in-first-out principle will be implemented through the sequential use of storage areas. This will provide a way of ensuring the oldest waste is removed from storage first. This approach will be adopted throughout the year and will take into account the results of pests monitoring.

In order to meet its target turnaround times, AMG will aim to closely match the incoming feedstock with the outgoing steelworks raw material. This requires contracts to be “fluid” so that at times of breakdown or maintenance infeed rates can be reduced, and conversely, when all plant is operating at capacity infeed rates can be increased. The close matching of this balance can, where feasible, avoid the build-up of bales at the site and significantly influence the likelihood of fly nuisance developing, particularly in the summer months.

5.5 Housekeeping

AMG recognises that sometimes it is the simple tasks that have the biggest influence on environmental protection. In the case of pests, it is ensuring that they are not provided with the habitat they seek.

For this reason, a comprehensive cleaning schedule will be implemented. This will involve a daily walk-over aimed at identifying waste and areas that could provide suitable habitat for fly development e.g. loose tipped tins outside of the stocking areas, pooled surfaced water. As this is a continual and on-going inspection throughout the shift, the findings will not be documented but will prompt action.

All waste storage areas will be visually inspected and cleaned daily and as required. Cleaning will involve a combination of dry sweeping and litter collection, as appropriate. The aim will be to ensure that there is no residual biodegradable material exposed. Grabs will use steel wire wipers to gather overspill back into stockpiles. Any overspill that has migrated to the upstand kerbs around the site will be collected when observed. Causes of ponding water will be investigated and all drainage infrastructure subject to a planned preventative maintenance programme. Residual waste in corners of the site and where the edge upstand meets the floor will be areas carefully cleaned to ensure that there is no aging putrescible material.

If droppings / urine from rodents is suspected, paper towels would be used to pick up droppings and the floor then disinfected.

When a storage area is emptied, the floor and corners will be cleared of any debris before filling.

6 MONITORING

The applicability of the techniques described below will be subject to ongoing review, at least annually, to ensure the approach remains current, adaptable and effective. AMG will consult with NRW throughout the year to ensure they are aware of site activities.

6.1 Weather Conditions

Fly infestation is known to be more problematic in summertime and the relationship between heat, rainfall and wind can all influence the numbers of flies and their dispersal. It is therefore appropriate to monitor weather conditions at the site and also to be aware of weekly weather forecasts. For example, the forecast of a warm week may influence the decision to spray and may also prepare the site staff to be extra vigilant.

If complaints were to be received having a record of weather conditions may form part of the investigation and patterns in the data may emerge. Similarly, the pattern of fly counts around the site may also be influenced by weather patterns.

The most effective means to capture site weather data is to install an automatic logging weather station or failing that ensure access to a source of daily meteorological data.

6.2 Fly Counting

Following ADAS recommendations for fly population monitoring, yellow adhesive fly cards will be located around and within the outdoor storage areas as shown on the plan below. Four of the boards (F1, F2, F3 and F4) will form site boundary monitoring and will be in use throughout the summer period. The remainder of the cards will monitor the operational area close to and around the bale stacks. The cards will be inspected and replaced twice a week during the warmer months (typically April to end September). During each inspection the flies will be identified and the different types counted with the records documented using the forms included in Appendix 3. AMG will aim to undertake the monitoring at same time/day of the week and ensure monitoring sheets are changed on the monitoring day to ensure no over counting.

Adhesive fly card will be mounted on suitable numbered white board measuring 1m by 1m fixed to a post 1m above ground level, as shown below. The fly card will be positioned centrally to create a colour change border aimed at attracting flies.



Fly counting will continue throughout the year, even when there are no concerns, so that there is a documented record of baseline conditions.

6.3 Larval Flies

In addition to fly-counting, consideration has been given to the monitoring of pupae/larvae as this type of monitoring, in some instances, can be an early indicator of breeding and an ensuing potential fly problem.

During such monitoring, larva are typically monitored by scraping the top 2-5cm layer from the surface of the waste over an area of approximately 30 x 30cm. The number of exposed larvae is then quickly estimated and recorded. Repeating this process at several locations can provide an indication of population density and future problems. Such larval stages are usually found where undisturbed damp waste is present, rather than on surfaces that experience a lot of movement. Drainage channels or areas of surface water ponding that have a biodegradable waste residual within them can become nurseries for flies.

Prior to the application of insecticide, such inspections are actively performed ad-hoc and the observations used to direct the application of insecticide. However, this information is not routinely documented.

During 2022, AMG will trial this ad-hoc monitoring, particularly around the edge of the stockpiles and in areas where there is less potential for the waste to be disturbed. This will be undertaken on an ad-hoc basis during April-October 2022 and at times when the adult fly count is elevated. This is to assess if this type of monitoring could be helpful in targeting insecticide or enhanced housekeeping in the long-term.

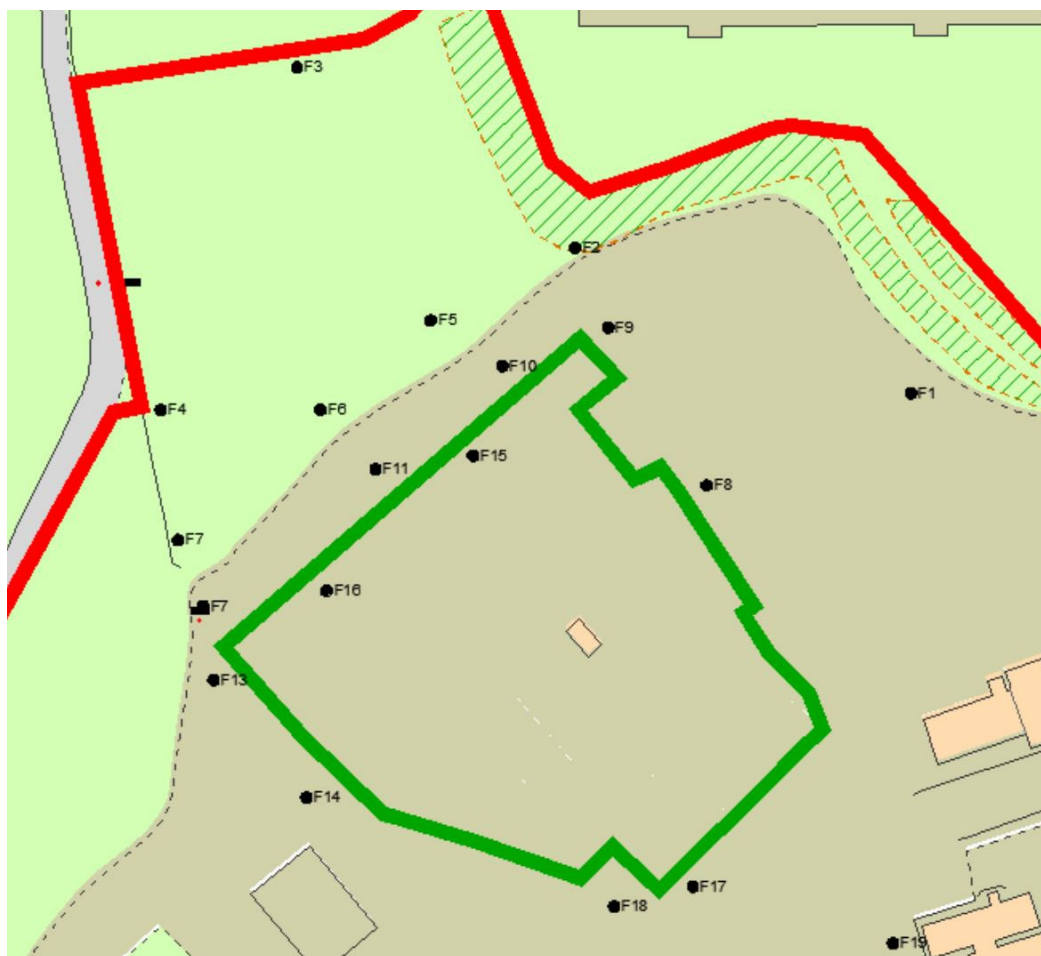


Plate 6-1 Fly Card Locations

6.3.1 Data Interpretation

Adult fly monitoring completed to date tends to indicate that fly numbers decline with increasing distance from the waste storage areas. Typically, up to 10-20 flies may be found on boards F1-F4 whilst up to 30-40 flies may be detected on boards closer to the waste process. This suggests that off-site fly numbers may be lower and that higher fly numbers are evident at source. When fly numbers are typically 30-40 on-site, AMG is aware that there have sometimes been reports of fly issues off-site, although the precise source of flies is not always known.

The number of flies that may pose a nuisance and pollution is site specific. As with other statutory issues such as noise or odour, there is no single definition of how many flies represent a nuisance. For residential properties, it is likely that the threshold will be very low but dependent upon the tolerance of the individual and propensity to register complaint.

According to Defra guidance, an occupier will normally experience some irritation if there are five or more 'flying' house flies present in any one room at any one time on three successive days. If house flies are monitored with baited traps, sticky ribbons, or spot cards, a collection of more than 25 in any 48-hour period may indicate grounds for distress.'

Within this context, a figure of 30 houseflies per paper per week in or close to a waste storage area will be used as an initial early warning signal that the site should be carefully inspected. This will be initially applied to close proximity monitoring conducted around the bales. The figure of 30 houseflies may need to be adapted to ensure ongoing monitoring results and observations are accommodated, lessons learnt from the operations and other activities that may give rise to flies (on-site and off-site) are considered.

As this monitoring is not capable of detecting all flies and the flies may not necessarily arise from the waste storage operation or migrate off-site, all personnel will be vigilant for the presence of flies and the monitoring results will be viewed alongside other lines of evidence and observations.

6.4 Routine Specialist Site Inspection

The contracted pest control company will attend site **weekly** throughout the period between the end of April and the beginning of October. They will also be available 24/7 to respond to any problem that may arise.

During routine attendance, the contractor will carry out a routine inspection and record the findings. These will be held at AMG as management records.

Any recommendations made by the pest control company will be followed by AMG. In the period between the beginning of October and the beginning of April the pest control company will routinely visit the site at monthly intervals.

With time, AMG intend to supplement this service with enhanced in-house capabilities that will enable insecticide to be applied more rapidly by trained personnel. This plan will be updated before these measures are implemented.

6.5 Reactive Monitoring

If the routine daily monitoring or site staff identify a fly issue, or if such a matter is reported to AMG by any third party the pest control company will be asked to attend site within 24 hrs to carry out an inspection and any treatment considered necessary. This will be recorded.

With time, AMG intend to supplement this service with enhanced in-house capabilities that will enable insecticide to be applied more rapidly by trained personnel. This plan will be updated before these measures are implemented.

6.6 Monitoring of Rodents

Weekly inspections for rodents will be undertaken, even if there is no evidence of a rodent problem. As rodents tend to be more active at night, the waste storage areas will be inspected using a torch at either dusk or within an hour or two of dawn. If rodents are present, the inspection should reveal the location, distribution and severity of the infestation. The results of the inspection will also provide information that can determine appropriate control procedures e.g. the busiest areas where traps might be more effective. Identification of a rodent will lead to the specialist pest control company being contacted.

6.7 Monitoring of Seagulls

If daily observations indicate an increase in seagull numbers, a potential change in behaviour or indications of nesting, the specialist pest control company will be contacted.

6.8 Complaints

AMG recognises that complaints are never a substitute for comprehensive monitoring and waste management practices but they do offer a valuable indicator of potential offsite problems related to the waste transfer activity. For this reason, all complaints will be logged and documented.

Any complaints received will be promptly investigated and appropriate remedial action taken. AMG will inform the complainant and record the details of the complaint and the actions taken.

7 CONTINGENCY ACTIONS

Where observations, monitoring results or complaints indicate a potential pest problem the contingency actions set out in Table 6-1 will be adopted. This is primarily focussed on the management of flies.

Table 7-1 Contingency Action Plan

OBJECTIVE To initiate timely mitigation measures to prevent off-site pest problems		
Frequency of test	Following receipt of latest monitoring results, observation of pest problem or complaint	
Monitoring Locations	Waste transfer area and immediate surroundings	
CONTINGENCY ACTION RESPONSES		Response Time from initial event
Step 1. Investigate Potential Sources Following detection of significant pest problem undertake detailed site inspection. If source of pests is obvious go to Step 2. If source cannot be identified go to Step 4.		Same day
Step 2. Call Pest Control Specialist Follow instructions provided by specialist pest contractor for managing material. This may involve them attending site and treating material. Go to Step 3.		24 hrs
Step 3. Continued Monitoring Repeat site monitoring and inspections once waste has been treated. If pests are still persistently detectable. Go to Step 4.		Next day
Step 4. Further Investigation and Monitoring Ensure obvious problematic waste has been removed / isolated / treated. Consider all available information including weather, complaints history, other activities occurring in surrounding area. Undertake detailed inspections for fly larvae and pupae - use specialists as appropriate. Adjust housekeeping regime if required. Outcome 1. Waste storage considered to be pest source. Review waste acceptance protocols, storage arrangement and monitoring results. Inform customer to try and identify potential cause. Determine next steps considering time waste has been in storage and time remaining on site. Investigations and interventions may require moving waste to identify problem. Go to Step 5. Outcome 2. Waste storage not considered to be odour source. Document investigations and return to monitoring. Advise NRW of identified flysource.		Within 48 hours
Step 5. Implement Mitigation Measures Review risks to off-site receptors. Implement relevant mitigation measures in consultation with NRW and specialist pest control contractor. This may involve temporarily reducing / ceasing operations, disposing of problematic bales and wider use of approved insecticide.		Within 72 hours

As noted in the contingency action plan, depending upon the outcome of investigations, there may be a need to dispose of problematic bales. This aspect will be subject to contractual agreement between AMG and the customer. This will ensure that resources are available for dealing with such bales and that responsibilities are clearly set out. The problematic bales may require insecticide treatment as part of the transport and disposal process.

7.1 Receptor Notification

Following the identification of a significant pest problem (most likely flies), AMG will liaise with the Local Authority and NRW. The closest potential off-site receptors may need to be informed and actions taken. This will be dependent upon the pest problem identified, an evaluation of off-site receptor sites, the risk of exposure and the outcome of ongoing remedial actions. If receptors do need to be contacted the approach will be agreed with the Local Authority.

Depending upon the specific problem and site specific conditions, contact will provide them with advice on immediate actions to take, such as staying inside, closing windows and doors and clearing away external rubbish source. An indication of the actions being taken by AMG and the anticipated duration of disruption would also be provided.

If additional resources (such as passive fly traps or fly spray) were considered to be required in the short-term these would also be provided, although it is recognised that these would only be temporary measures if there was an acute problem.

Once the problem has been rectified all parties contacted will be informed of the actions taken to tackle the problem and the steps to be taken to limit re-occurrence.

AMG would evaluate the incident and review all relevant procedures and contracts. This could ultimately lead to the reduction / cessation of waste acceptance from specific sources / clients, if this was identified as a solution. All potential measures would be considered.

8 MITIGATION

8.1 Flies

AMG recognises that long-term successful fly management may sometimes involve the use of chemical fly control techniques alongside the non-chemical control techniques discussed in earlier sections of this document.

Although the use of insecticides is still considered an intervention of last resort, experience has shown that potential fly problems can quickly develop in post-consumer cans from a variety of sources and that there has been little option but to apply insecticide.

The main line of defence will always be to ensure rapid turnaround of high quality waste feedstocks.

8.1.1 Capture

Fly bags (traps) have been used around the perimeter of the site to reduce any off-site migration for several years. The fly bags will be routinely inspected and changed.

8.1.2 Treatment

If treatment is undertaken, this would comprise the spraying of waste faces with insecticide using a Ciffarelli powered sprayer. The sides of the stacks would be sprayed from ground level and the tops of the stacks from a cherry picker, if considered necessary.

The Method Safety Data sheet for the product to be used is provided in Appendix 4.

This insecticide is also intended for use as a residual spray and is applied to surfaces using a hand-held compression or pneumatic sprayer. It leaves a deposit that remains active for some days or weeks. Flies that subsequently alight on the treated surface pick up a lethal dose of the insecticide and are killed. They typically contain residual pyrethroids or a carbamate. If operators turn or agitate the material, they need to reapply the insecticide. The routine weekly visit of the pest control specialist during the summer months will determine what and when treatment is required.

AMG recognise that insecticides should not be used routinely, not just because of the financial burden, but also because of their potential persistence in the environment and the risk they potentially pose to other receptors. Fortunately, the waste stacks at the AMG facility are surrounded by significant volumes of free air and there is limited opportunity for wider environmental dispersion from the focussed specialist insecticide applications.

8.2 Rodents

Rodents such as rats and mice can be eliminated or severely reduced in numbers by using poison baits and /or rodent traps.

For minor infestations, traps will be placed strategically where rodents have been identified. Should there be a need to utilise poison baits, a licensed pest control company would be used.

8.3 Waste Transfer Supply and Offtake

AMG provides an important service via which steel cans are recycled into high quality bales and this is an important component in the life-cycle of sustainable steel manufacture within a circular economy. Several private organisations and local authorities are directly reliant upon this sustainable outlet and it is this chain that also provides local and national employment. Many of the local authorities require the cans to be recycled within the UK in accordance with their sustainability goals.

Alongside the important commercial and recycling aspects, AMG recognises that pest management throughout the whole waste management supply chain is critical to the timing and occurrence of potential risks posed by flies. Given the different life stages of flies, eggs/larvae brought onto site can quickly develop further life-stages depending upon the age of the waste. The occurrence of flies at AMG is complex involving several aspects outside the direct control of AMG. Simply stopping the influx of materials or the rejection of loads can, in some cases, pass the problem back to others and potentially exacerbate problems.

AMG does however acknowledge that if significant pest problems are considered likely to develop or have developed, AMG can significantly reduce and, where feasible and necessary, cease operations until the problem is resolved. This back-stop position will be written into contracts with customers as their input will be required to resolve the issue. AMG will ensure that financial resources are available for such circumstances.

Although the site is reliant upon offtake agreements with several South Wales customers, the site does have the contingency of exporting the waste to other facilities in England or exporting the steelmaking feedstocks overseas. However, such movements are not preferred as they are not aligned with the Welsh Government aim of a sustainable circular economy in Wales, which AMG actively supports.

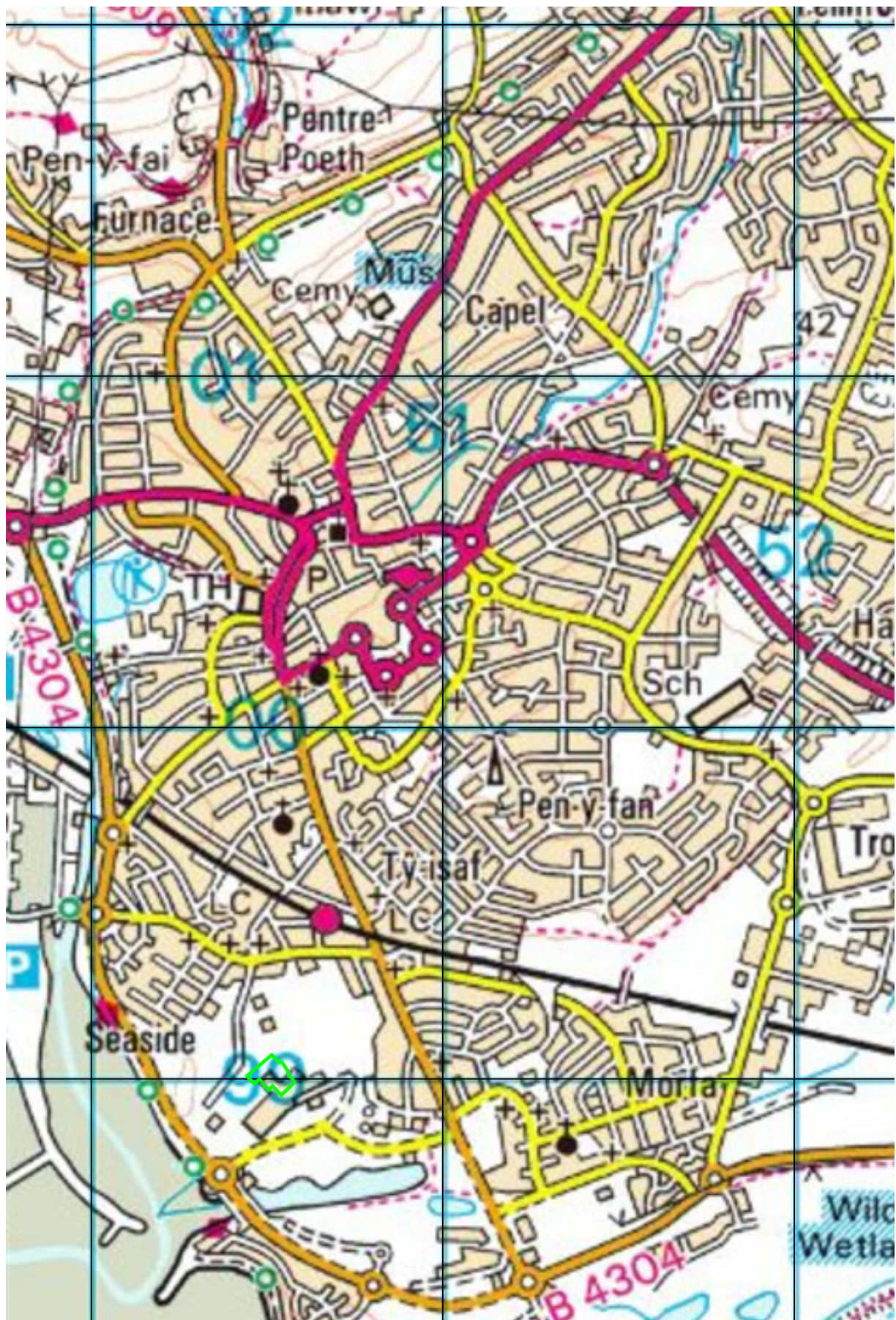
8.4 Management Plan Review

This PMP will be reviewed and updated at the end of each summer and following any incidents to determine the effectiveness of controls and to determine whether additional control measures are required.

A key element of the review will be to ensure that the following appropriate measures continue to be implemented:

- Rigorous rapid turn-around of waste
- Ensure key site staff are trained in fly management
- Ensure any external pest contractor used is appropriately qualified in accordance with guidance
- Locate yellow adhesive fly cards close to waste, in areas preferred by flies. Replace cards weekly, identify and count flies, and keep records. Use counts to guide the treatment regime.
- Ensure that designated waste turn-around time (<10 days) is achieved.
- Avoid backlogs and stockpiles of waste containing residual putrescible waste.
- Quickly removing / treating obviously fly-infested waste
- Carry out daily cleaning to remove waste outside stockpiles and from within corners
- Monitor adult fly numbers twice-a-week during April-October using the established monitoring network
- Carrying out waste acceptance checks

Figure 1 Site Location Plan





Traffic to follow one way system

Incoming waste to be first placed in Storage Area 1 and then Area 2, if required.

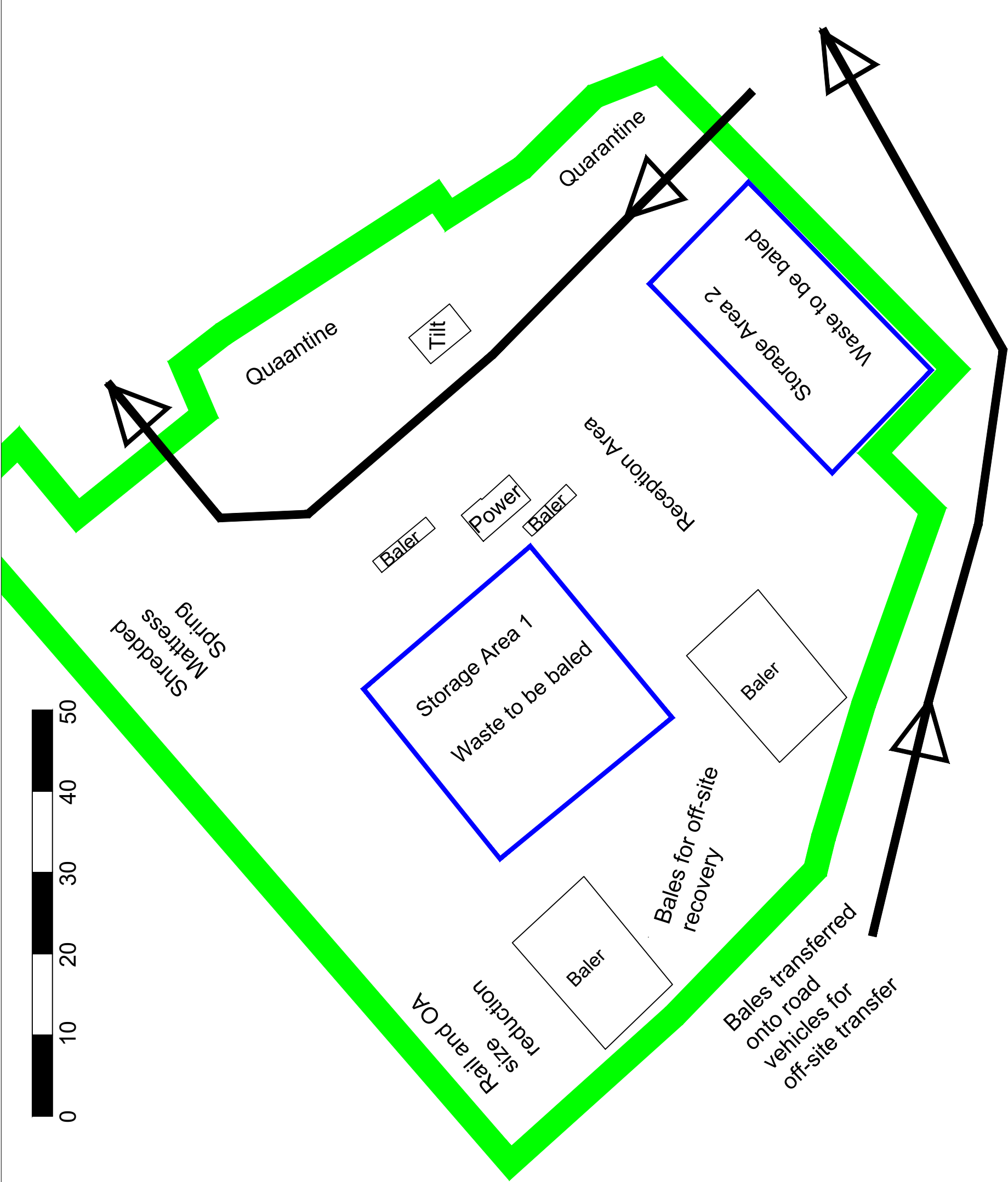
Bales ready for export to be stockpiled between balers and removed by road transport following route around Permit boundary

Storage Area 1 and Storage Area 2 to be filled from west to east to allow age of waste to be tracked and first-in-first-out principle implemented

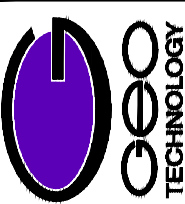
Waste to be stacked in stable configuration

Bales to be stacked <4m high

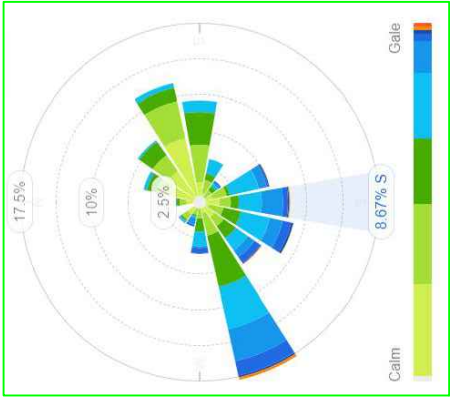
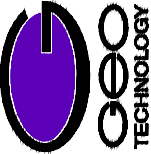
Bales transferred to exempt areas for temporary storage under abnormal conditions



LEGEND		PROJECT		DRAWING NUMBER		2056/3	
		Permit Boundary		SCALE AT A3		DATE	
				1:500		03.22	
						BR	
		TITLE		NOTE		Issued for Pest Control Management Plan	
		Stack Arrangements					





Drawing Number 2056/4			
Legend			
 AMG land holding			
 Permit Area			
 Protected Ecological Site (Burry Inlet)			
			
Note: Many buildings shown within permit boundary and AMG land holding have been recently demolished			
Rev	Date	Status/Amendments	
CLIENT			
AMG RESOURCES			
PROJECT			
PESTS MANAGEMENT PLAN			
TITLE			
SENSITIVE RECEPTORS IN SURROUNDING AREA			
DRAWING NUMBER		REVISION	
2056/4		0	
DATE	DRAWN	CHECKED	SCALE AT A3
0322	BR		As shown
Geotechnology Limited Ty Coed, Cefn-yr-Allt, Aberdulais, Neath SA10 8HE 01639 775293 www.geotechnology.net			

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PLAN (PMP)**

**Appendix 1
Identification of Flies**

Report Number 2056r1v3d0322

Flies commonly associated with waste sites (adapted from EA Guidance)

Stage	Feature	Common housefly (<i>Musca domestica</i>)	Lesser housefly (<i>Fannia canicularis</i>)
Adult			
	Size:	Typically 6-7mm long, but does vary.	Typically, 4-6 mm long, but does vary.
	Pattern on dorsal Surface of thorax:	Four distinct longitudinal dark lines.	Three indistinct longitudinal dark lines.
	Abdomen colour:	Yellow-ish at basal end.	Often yellow-ish along sides.
	Wing venation:	Fourth longitudinal vein bends forwards (see below).	Fourth longitudinal vein straight (see below).
	Position of wings when at rest:	Projecting out from the sides of the abdomen, giving a delta-shaped outline.	Folded one over the other, directly over the abdomen, giving a more parallel sided outline.
	Adult resting behaviour	Typically resting in numbers on a range of surfaces within the building, e.g. walls, posts, ceiling etc. Sometimes in large clusters in preferred places.	Even when abundant, tends not to rest in numbers on walls or ceilings.
	Flight Behaviour at source:	Flies very readily and in numbers. Often alighting on or colliding with people within the building.	The numbers of flies on the wing is low. Males' flight is typically jerky circling high up within the building. Very seldom alighting on people.
	Flight behaviour at reporter premises:	CHF will continually alight on work surfaces, food, walls, cupboards and people.	LHF normally flies in jerky circles within the room, often high up and around hanging objects occasionally alighting on elevated objects. It seldom alights on people or food.
House fly Larva	Appearance:	CHF lava - white-ish, smooth, maggot appearance. Active wriggling behaviour, often in clumps.	LHF - dull grey-brown, spiky exterior. Inactive, and seldom clumped.
House fly Pupa	Appearance:	CHF - smooth, barrel shaped, from tan, through chestnut-brown to almost black in colour, depending on maturity. Easy to find.	Pupae of lesser housefly (larvae appear similar)
			

Issue	Common housefly (CHF) (<i>Musca domestica</i>)	Lesser housefly (LHF) (<i>Fannia canicularis</i>)
Overwintering behaviour	This species cannot hibernate. It can only overwinter in warm locations. Flies at cooler sites will die out each winter, and so have to be re-colonised each spring, hence CHF problems in such sites, if they occur, are often later in the summer.	At the onset of winter, LHF will hibernate at the pupal stage. These pupae will hatch the following spring, with the onset of warmer weather.
Dispersal behaviour	Some adult flies will leave the source and may cause nuisance in buildings up to two or more km away. Dispersing flies are not obvious in intervening areas.	Some adult flies will leave the source and may cause nuisance in buildings up to two or more km away. Dispersing flies are not obvious in intervening areas.

Stage	Feature	Blue Bottle (Blow Flies) (<i>Calliphora vomitoria</i>)	Green Bottle (Blow Flies) (<i>Lucilia sericata</i>)
Adult			
	Size:	They are larger than houseflies, growing to 10 - 12mm long.	
	Colour of thorax and abdomen:	Metallic blue.	Bright metallic green.
	Wing venation:	The 4th long vein is bent sharply forwards; more so than the common housefly.	
	Flight behaviour at source:	Typically crawling over the surface of putrescent, malodorous waste.	
	Flight behaviour at reporter premises:	Blowflies do not disperse or enter buildings to the same extent as houseflies.	
Larva	Appearance:	The larva is similar to the housefly: white-ish, smooth, maggot appearance. Active wriggling behaviour, often in clumps, just beneath the surface. They take 7 - 12 days to mature.	
Pupa	Appearance:	Similar to common housefly: smooth, barrel shaped, and chestnut-brown in colour.	

Stage	Feature	Stable fly (<i>Stomoxys calcitrans</i>)	Black dump fly (<i>Hydrotaea aenescens</i>)
Adult			
	Size:	Typically, 5 - 8 mm long.	Typically 5 - 6 mm long.
	Pattern on dorsal surface of thorax:	They are grey in colour with four indistinct longitudinal dark lines on the thorax.	Uniform glossy black.
	Abdomen colour:	They have several dark spots on top of the abdomen.	Uniform glossy black.
	Location:	Largely confined to pig and cattle rearing facilities.	Commonly found on putrescent waste, e.g. in composting sites, and on animal manure.
	Features:	Long slender piercing proboscis as they feed on blood.	
	Adult resting behaviour	Resting on sun-lit external walls of animal houses.	Attracted to faeces, carrion and putrescent waste.
Larva	Appearance:	Eggs are laid in moist decaying organic material. Larvae are yellowish white maggots about 5 - 12 mm long.	The larvae are found in decomposing putrescent waste. Larvae of the black dump fly are beneficial in some situations, because they prey on house fly larvae.
Pupa	Appearance:	Pupa are reddish to dark brown and 4 - 7 mm long. Development is complete within 1-2 weeks when they then emerge as adults.	Pupa are reddish to dark brown and 4 - 7 mm long. Development is complete within 1-2 weeks when they then emerge as adults.

Stage	Feature	Common cluster fly (<i>Pollenia rudis</i>)
Adult		
	Size:	Typically 7-9 mm long.
	Thorax:	Golden wavy hairs.
	Abdomen colour:	Chequered dark/light grey.
	Wings:	The 4th longitudinal vein bends sharply forward, similar to the blowflies. At rest, the veins are held directly over the body, not projecting out sideways as with the common housefly.
	Behaviour at reporter premises:	In the summer, this fly lives outdoors and is not an issue. However, in the autumn, it comes into buildings, often domestic premises, in order to hibernate. There may be hundreds in preferred places in attics etc. They may easily be confused with common houseflies but are not associated with waste sites.
Larva		Common cluster fly larvae are parasitic on earthworms, and so are rarely seen. They are not associated with waste sites.

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**Appendix 2
Pre-Waste
Acceptance Form**

Report Number 2056r1v3d0322

APPENDIX 2 PRE-WASTE ACCEPTANCE EVALUATION

Supplier Details				
Customer Name				
Customer Site Address				
Will multiple sites be delivering waste?				
Permit Number				
Waste Details				
Description of waste to be delivered to AMG Llanelli				
Waste code:				
How is waste produced?				
How old will waste be when it arrives at AMG Llanelli?				
Does site operator have any environmental concerns at site regarding bales or source of waste?				
Does site have pest management plan? What steps are set out to manage flies and could these impact processes at AMG Llanelli?				
Additional Notes:				
Anticipated waste quantities				
	Week	Month	Annum	Seasonal variations?
Tonnes				
Metres cube (m ³)				
No. of Bales				
Site inspection by AMG?				
Notes from site inspection				
Signature of AMG representative				

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PLAN (PMP)**

**Appendix 3
Weekly Reporting
Forms**

Report Number 2056r1v3d0322

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<u>WEEKLY UPDATE TO NRW ON PEST MANAGEMENT DURING SUMMER MONTHS (MAY – SEPTEMBER 2021)</u>			
Date:		Author:	
WASTE MANAGEMENT			
Waste in stock (tonnes)			
Waste throughput during past week (tonnes)		Age of oldest waste on site	
Out of spec area used? If so, provide details			
SITE OBSERVATIONS			
Weather during past week?			
Overview of Fly Monitoring Results? e.g. stable / rising / max. number of flies detected on adhesive pads			
Observation from pest specialist?			
Weather forecast?			
LESSONS LEARNT AND ANY OTHER COMMENTS			

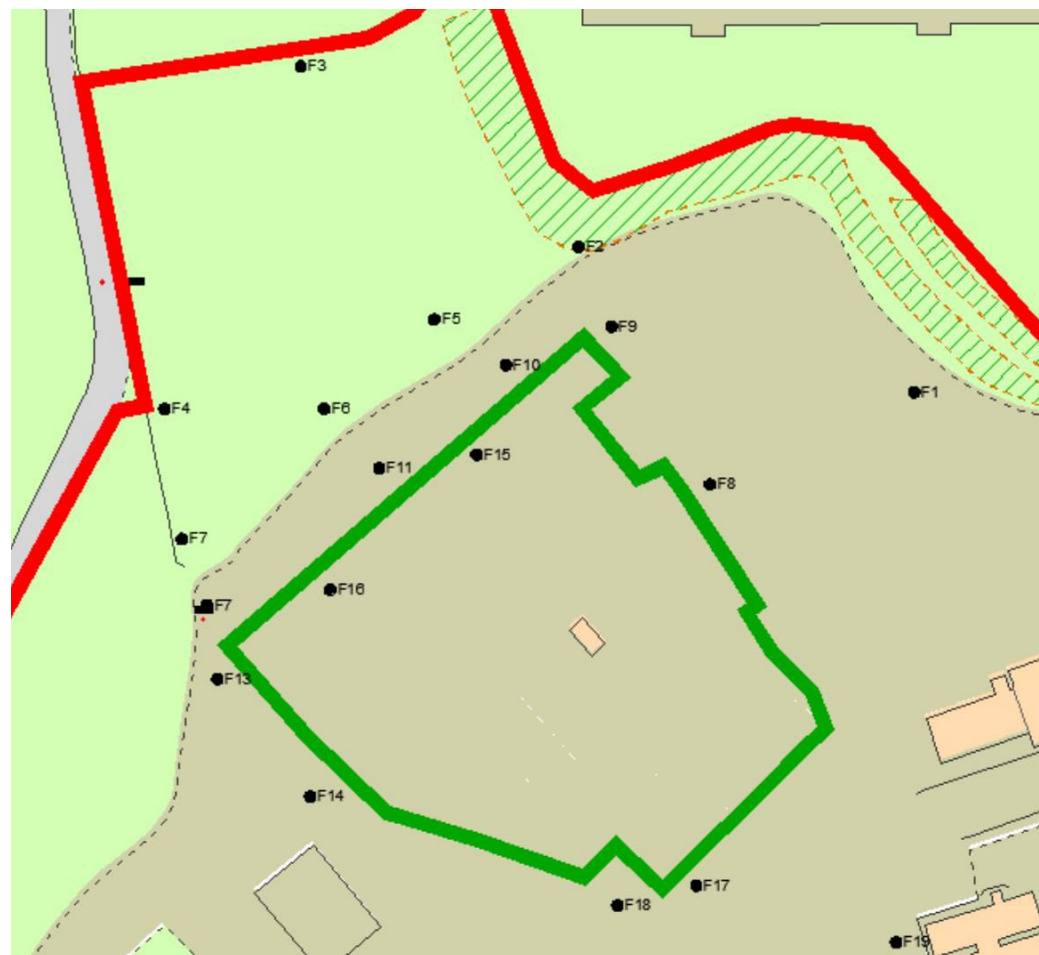
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AMG RESOURCES LLANELLI LTD

Figure 1. Weekly Annotated Site Plan.
Date:

AMG RESOURCES LLANELLI LTD

Figure 2. Fly Monitoring Positions



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**PEST MANAGEMENT
PLAN (PMP)**

**Appendix 4
Insecticide Method
Safety Data Sheet**

Report Number 2056r1v3d0322

SAFETY DATA SHEET



FICAM W INSECTICIDE

Version 1 / NZ
102000002338

1/10
Revision Date: 16.01.2018
Print Date: 19.01.2018

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name FICAM W INSECTICIDE
Product code (UVP) 05935598

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use Insecticide
EPA-Nr. HSR000451

1.3 Details of the supplier of the safety data sheet

Supplier Bayer CropScience Pty Ltd
Level 1, 8 Redfern Road,
Hawthorn East, Vic 3123
Australia
Telephone +61 3 9248 6612
Telefax +61 3 9248 6800
Local agent Bayer New Zealand Limited
3 Argus Place
Hillcrest
Auckland 0627
New Zealand
Telephone: 0800 428 246
Telefax: (09) 441 8645

1.4 Emergency telephone no.

Emergency Number 0800 734 607 (24hr)
Global Incident Response Hotline (24h) +1 (760) 476-3964 (Company 3E for Bayer AG, Crop Science Division)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classified as hazardous according to the criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001

6.1B
H300 Fatal if swallowed.

6.1D
H312 Harmful in contact with skin.

6.1C
H331 Toxic if inhaled.

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- 6.9A
H372 Causes damage to organs through prolonged or repeated exposure.
- 9.1A
H410 Very toxic to aquatic life with long lasting effects.
- 9.3A
H431 Very toxic to terrestrial vertebrates.
- 9.4A
H441 Very toxic to terrestrial invertebrates.

2.2 Label elements

Labelling in accordance with Hazardous Substances Identification Regulations 2001

Hazard label for supply/use required.



Signal word: Danger

Hazard statements

- H300 Fatal if swallowed.
H312 Harmful in contact with skin.
H331 Toxic if inhaled.
H372 Causes damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.
H431 Very toxic to terrestrial vertebrates.
H441 Very toxic to terrestrial invertebrates.

Precautionary statements

- P102 Keep out of reach of children.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor/ physician.
P321 Specific treatment (see supplemental first aid instructions on this label).
P391 Collect spillage.
P501 Dispose of contents/container in accordance with local regulation.

2.3 Other hazards

Dust may form explosive mixture in air.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature

Wettable powder (WP)
Bendiocarb 80 % w/w

Hazardous components

Name	CAS-No.	Conc. [%]
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Bendiocarb	22781-23-3	80.00
Naphthalenesulfonic acid, butyl-, Me derivs, sodium salts	68909-83-1	> 1.00 – < 5.00
Naphthalene and alkyl naphthalene sulphonic acids formaldehyde condensate, sodium salt	68425-94-5	> 1.00 – < 5.00

Further information

Bendiocarb	22781-23-3	M-Factor: 10 (acute), 100 (chronic)
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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice	Move out of dangerous area. Place and transport victim in stable position (lying sideways). Remove contaminated clothing immediately and dispose of safely.
Inhalation	Move to fresh air. Keep patient warm and at rest. Call a physician or poison control center immediately.
Skin contact	Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. If symptoms persist, call a physician.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Induce vomiting only, if: 1. patient is fully conscious, 2. medical aid is not readily available, 3. a significant amount (more than a mouthful) has been ingested and 4. time since ingestion is less than 1 hour. (Vomit should not get into the respiratory tract.)

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	Local:, The product causes irritation of eyes, skin and mucous membranes. Systemic:, Bradycardia, Sweating, Convulsions, Nausea, Lachrymation, Salivation, Vomiting, Diarrhoea, Miosis, Hypotension, Bronchial hypersecretion, Myoclonus, Respiratory paralysis, Somnolence, Coma, Respiratory failure, Hypothermia, Fibrillation, Spasm
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4.3 Indication of any immediate medical attention and special treatment needed

Risks	This product is a cholinesterase inhibitor carbamate.
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Treatment

Systemic treatment: Initial treatment: symptomatic. In case of ingestion a gastric lavage within the first hour after ingestion and after intubation only with consecutive application of activated charcoal and sodium sulphate should be performed. In case of convulsions, a benzodiazepine (e.g. diazepam) should be given according to standard regimens. Keep respiratory tract clear. Oxygen or artificial respiration if needed. The following antidotes are generally accepted: atropin and oximes. Recovery is spontaneous and without sequelae.

Contact the National Poisons and Hazardous Chemicals Information center in Dunedin, PO Box 913, Dunedin. Phone 0800 POISON (0800 764 766).

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable

High volume water jet

5.2 Special hazards arising from the substance or mixture

Dangerous gases are evolved in the event of a fire., In common with all other methyl carbamates, bendiocarb will liberate strongly lachrymatory and very toxic methyl isocyanate when heated above it's decomposition temperature which for bendiocarb is > 125 deg C. Methyl isocyanate has a very low flash point and will be readily consumed in a fire. Since methyl isocyanate readily decomposes in contact with water, all decompositions are best extinguished with water.

5.3 Advice for firefighters

Special protective equipment for firefighters

In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.

Further information

Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Precautions

Avoid dust formation. Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment. Remove all sources of ignition.

6.2 Environmental precautions

Do not allow to get into surface water, drains and ground water.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up

Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect and transfer the product into a properly labelled and tightly closed container. Clean floors and contaminated objects with plenty of water.

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Additional advice Check also for any local site procedures.

6.4 Reference to other sections Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling Avoid dust formation. Use only in area provided with appropriate exhaust ventilation.

Advice on protection against fire and explosion Dust may form explosive mixture in air.

Hygiene measures When using, do not eat, drink or smoke. Remove soiled clothing immediately and clean thoroughly before using again. Contaminated work clothing should not be allowed out of the workplace. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Wash hands immediately after work, if necessary take a shower.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers Store in a place accessible by authorized persons only. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Protect from freezing.
Store in a place accessible by authorized persons only. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Protect from freezing. Store in original container.

Advice on common storage Keep away from food, drink and animal feedingstuffs.

Suitable materials Polyethylene film within an outer package

7.3 Specific end use(s) Refer to the label and/or leaflet.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Bendiocarb	22781-23-3	0.2 mg/m ³ (TWA)		OES BCS*

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

8.2 Exposure controls

Personal protective equipment

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection Wear a compressed air respirator (continuous flow) conforming to European Norm EN14594 or EN14593-1 or equivalent or a particle

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filter mask (protection factor 40) conforming to EN136P3 or equivalent.

Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.

Hand protection

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet.

Material	Nitrile rubber
Rate of permeability	> 480 min
Glove thickness	> 0.4 mm
Protective index	Class 6
Directive	Protective gloves complying with EN 374.

Eye protection

Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

Skin and body protection

Wear standard coveralls and Category 3 Type 5 suit.
If there is a risk of significant exposure, consider a higher protective type suit.
Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form	powder
Colour	beige
Odour	weak, characteristic
pH	4.5 - 7.5 at 1 % (23 °C) (deionized water)
Minimum ignition energy	< 3 mJ (23 °C)
Lower explosion limit	30 g/m ³
Bulk density	ca. 0.25 g/ml (loose)
Water solubility	miscible
Partition coefficient: n-octanol/water	Bendiocarb: log Pow: 1.7 at 25 °C

9.2 Other information Further safety related physical-chemical data are not known.

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SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Thermal decomposition from 150 °C, Heating rate: 3 K/min, Decomposition energy: 450 KJ/kg
Exothermic decomposition.
from 120 °C, Heating rate: 0.05 K/min
Exothermic decomposition.

10.2 Chemical stability Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions No hazardous reactions when stored and handled according to prescribed instructions.

10.4 Conditions to avoid Extremes of temperature and direct sunlight.

10.5 Incompatible materials Store only in the original container.

10.6 Hazardous decomposition products No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity LD50 (Rat) 50 mg/kg

Acute inhalation toxicity LC50 (Rat) 0.313 mg/l
Exposure time: 6 h
Determined in the form of a respirable fine dust.

Acute dermal toxicity LD50 (Rat) > 2,000 mg/kg

Skin irritation No skin irritation (Rabbit)

Eye irritation No eye irritation (Rabbit)

Sensitisation Non-sensitizing. (Guinea pig)
OECD Test Guideline 406, Magnusson & Kligman test

Assessment STOT Specific target organ toxicity – single exposure

Bendiocarb: Based on available data, the classification criteria are not met.

Assessment STOT Specific target organ toxicity – repeated exposure

Bendiocarb caused reversible cholinesterase inhibition without long term effects in animal studies.

Assessment mutagenicity

Bendiocarb was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Bendiocarb was not carcinogenic in lifetime feeding studies in rats and mice.

Assessment toxicity to reproduction

Bendiocarb did not cause reproductive toxicity in a two-generation study in rats.

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Assessment developmental toxicity

Bendiocarb did not cause developmental toxicity in rats and rabbits.

Aspiration hazard

Based on available data, the classification criteria are not met.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish LC50 (Cyprinodon variegatus (sheepshead minnow)) 0.86 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient bendiocarb.

Toxicity to aquatic invertebrates EC50 (Daphnia magna (Water flea)) 0.0377 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient bendiocarb.

Toxicity to aquatic plants EC50 (Raphidocelis subcapitata (freshwater green alga)) 0.408 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient bendiocarb.

12.2 Persistence and degradability

Biodegradability Bendiocarb:
Not rapidly biodegradable

Koc Bendiocarb: Koc: 33

12.3 Bioaccumulative potential

Bioaccumulation Bendiocarb: Bioconcentration factor (BCF) 6.0
Does not bioaccumulate.

12.4 Mobility in soil

Mobility in soil Bendiocarb: Mobile in soils

12.5 Results of PBT and vPvB assessment

PBT and vPvB assessment Bendiocarb: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

12.6 Other adverse effects

Additional ecological information No other effects to be mentioned.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product Dispose of this product only by using according to the label, or at an approved landfill or other approved facility.

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Contaminated packaging Triple rinse containers. Recycle if possible. If allowed under local authority, burn if circumstances, especially wind direction permit, otherwise crush and bury in an approved local authority facility. Do not use container for any other purpose.

SECTION 14: TRANSPORT INFORMATION

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

ADR/RID/ADN

14.1 UN number	2757
14.2 Proper shipping name	CARBAMATE PESTICIDE, SOLID, TOXIC (BENDIOCARB MIXTURE)
14.3 Transport hazard class(es)	6.1
14.4 Packing group	II
14.5 Environm. Hazardous Mark	YES
Hazchem Code	2X

IMDG

14.1 UN number	2757
14.2 Proper shipping name	CARBAMATE PESTICIDE, SOLID, TOXIC (BENDIOCARB MIXTURE)
14.3 Transport hazard class(es)	6.1
14.4 Packing group	II
14.5 Marine pollutant	YES

IATA

14.1 UN number	2757
14.2 Proper shipping name	CARBAMATE PESTICIDE, SOLID, TOXIC (BENDIOCARB MIXTURE)
14.3 Transport hazard class(es)	6.1
14.4 Packing group	II
14.5 Environm. Hazardous Mark	NO

14.6 Special precautions for user

See sections 6 to 8 of this Safety Data Sheet.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

No transport in bulk according to the IBC Code.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Further information

HSNO approval-Nr.	HSR000451
HSNO Controls	See www.epa.govt.nz
ACVM Condition	See www.foodsafety.govt.nz

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Other product approvals

Approved Maintenance Compound Type B

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
Conc.	Concentration
ECx	Effective concentration to x %
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
EN	European Standard
EU	European Union
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
ICx	Inhibition concentration to x %
IMDG	International Maritime Dangerous Goods
LCx	Lethal concentration to x %
LDx	Lethal dose to x %
LOEC/LOEL	Lowest observed effect concentration/level
MARPOL	MARPOL: International Convention for the prevention of marine pollution from ships
N.O.S.	Not otherwise specified
NOEC/NOEL	No observed effect concentration/level
OECD	Organization for Economic Co-operation and Development
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe products in terms of their safety requirements. The above details do not imply any guarantee concerning composition, properties or performance of the product.

Reason for Revision: Section 2: Hazards Identification. Section 9: Physical and Chemical Properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.



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