



**ENVIRONMENTAL  
SOLUTIONS LTD**

Panther Environmental Solutions Ltd  
Units 3 & 4, Innovation Centre  
Institute of Technology  
Green Road, Carlow  
Ireland  
R93 W248

Telephone: 059-9134222  
Email: [info@pantherwms.com](mailto:info@pantherwms.com)  
Website: [www.pantherwms.com](http://www.pantherwms.com)

## ATTACHMENT 5.1

# **ODOUR IMPACT ASSESSMENT REPORT**

**WOODVILLE PIG FARMS LIMITED  
BALLYMACKKEY  
NENAGH  
CO. TIPPERARY**

**2019**

<b>REPORT NUMBER:</b>	EIAR_OIA_19_9350	<b>PREPARED BY:</b>	Nial Ryan, MSc.
<b>DATE</b>	30 <sup>th</sup> October 2019	<b>CHECKED BY:</b>	Mike Fraher, BSc. Martin O'Looney, BSc.

**ODOUR ASSESSMENT REPORT**  
**WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY**

# TABLE OF CONTENTS

---

SECTION	PAGE
1.0 INTRODUCTION & SCOPE OF WORK	3
2.0 LEGISLATION PERTAINING TO ODOURS IN IRELAND	4
3.0 MONITORING SURVEY	5
3.1 METHODOLOGY	5
3.2 MEASUREMENT PARAMETERS	6
3.3 MONITORING LOCATIONS	7
3.4 MONITORING RESULTS	7
4.0 DISCUSSION	8
4.1 DISCUSSION OF SOURCE ODOUR ASSESSMENT	8
4.2 DISCUSSION OF ODOUR IMPACT ASSESSMENT	9
5.0 CONCLUSIONS	11
6.0 RECOMMENDATIONS	12
 <b>APPENDICES</b>	
APPENDIX A – MONITORING POINTS AND ODOUR SOURCE MAP	13
APPENDIX B – ODOUR ASSESSMENT FIELD SHEETS	17
APPENDIX C – WIND DISTRIBUTION DATA	22

Consent of copyright owner required for any other use.

# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

### 1.0 INTRODUCTION & SCOPE OF WORK

Panther Environmental Solutions Ltd (PES Ltd) were commissioned by Woodville Pig Farms to carry out an Odour Impact Assessment in support of an Environmental Impact Assessment Report being submitted as part of a planning application to Tipperary County Council.

Permission is being sought for: the demolition of three old pig housing units; the construction of one pre-finisher house; an extension to two existing farrowing units; the construction of an uncovered slurry reception point; the construction of one main large building to house weaner stage pigs and all ancillary works and services at Ballymackey, Nenagh, Co. Tipperary.

The site is accessed by a laneway, which runs due north, off a local road before entering the facility yard area. The existing facility is located approximately 9.5km east-north-east of Nenagh Town and approximately 18.0km south-south-west of Roscrea Town.

Panther Environmental Solutions Ltd carried out an odour assessment within the site and at odour monitoring locations around the site on Wednesday 25<sup>th</sup> September 2019.

The EPA guidance document '*Odour Impact Assessment Guidance for EPA Licensed Sites (AG5 - 2019)*' was consulted as part of the preparation of this report.

This Odour Impact Assessment included:

1. Description of odour and the odour monitoring methodology used.
2. Detailing the locations for odour monitoring stations.
3. Detailing the odour measurements obtained.
4. Discussion, Conclusions & Summary.

# ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

## 2.0 LEGISLATION PERTAINING TO ODOURS IN IRELAND

### Appendix II Information on odours pertaining to the facility odour impact assessment.

The Public Health Act of 1878 introduced legislation to control nuisance in Ireland, but its execution only became viable after the implementation of the Planning and Development Act (1963) (Scannell, 1995). Any industry producing a nuisance was controlled under these regulations and subsequent pressure from environmental lobby groups together with the development of scientific measurement techniques made it practical to quantify and control the release of gaseous environmental pollutants from these enterprises.

Odour impact from any facility on the surrounding vicinity may be considered a nuisance. Section 107 of the Public Health Act 1878 states that “*Sanitary authorities are bound to inspect their district for nuisances.*” Upon the receipt of any information respecting the existence of a statutory nuisance, the sanitary authority is obliged, if satisfied of the existence of the nuisance, to serve an abatement notice on the person by whose act or default the nuisance arises or continues or, if such a person cannot be found, on the owner or occupier of the premises on which the nuisance arises” (Scannell, 1995).

In order to control the possible pollution effects of large developments, relevant legislation was enacted under the Environmental Protection Agency (EPA) Act of 1992. Waste licensing and Integrated Pollution Control Licensing (IPC) (now IED and IPPC) for specified facility types was implemented in 1996 by the EPA and the related guidance note was termed BATNEEC (Best Available Technology Not Entailing Excessive Cost) (i.e. now BAT which complement the BATNEEC Notes) (EPA, 1996). It set out specific conditions for these industries (i.e. Intensive Agricultural Production, Landfills, Waste transfer stations, etc.) to be implemented in order to comply with the environmental requirements of the EPA.

Local authorities and the EPA have responsibility for ensuring enterprises meet their planning and environmental requirements. Where these facilities are found to be causing odour nuisance, local government enforces Section 29 of the 1987 Air Pollution Act and serves the offenders with an abatement notice. If the facility is licensed as an IPPC or Waste enterprise, the EPA can enforce the conditions of the license and either serve the facility with non-compliance for odour detected beyond the site boundary or prosecute the facility and seek a high court injunction to close the facility. Verification for the presence of odour nuisance usually encompasses the enforcement officer visiting the facility and detecting the odour beyond the boundary.

# ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

## 3.0 MONITORING SURVEY

### 3.1 METHODOLOGY

The 2019 agency guidance document ‘*Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)*’ has been used as the basis for the methodology for this assessment.

Unlike certain airborne pollutants, odour in ambient air cannot be measured by conventional chemical analyses. Odours are in most cases a complex cocktail of various substances that have intricate synergistic effects upon each other. The measurement of individual compounds in ambient air will therefore not provide useful information on the character of an odour within that air.

Such techniques involving the use of instrumentation and/or analytical methods to identify and quantify specific odorous compounds may not provide any real insight into the intensity or offensiveness of odours in human terms. The threshold concentration, for example, of many odorants is often well below their analytical detection limit and hence many odours may be deemed to be causing nuisance, although the compounds responsible for the odours are not being detected by chemical techniques.

Furthermore, interactions between mixtures of odorants may lead to synergistic or antagonistic effects, leading to difficulties in linking analytical and sensory measurements for impact assessment purposes.

Olfactometry using the human sense of odour is the most valid means of measuring odour (Dravniek et al, 1986) and at present is the most commonly used method to measure the concentration of odour.

Representative sampling for olfactometry analysis of air may be suitable for point source emissions or at times ambient assessments on a site (i.e. within a site’s boundary), however sampling air beyond a site boundary for olfactometry purposes is highly unlikely to be representative of odour impact.

Due to the unsuitability of the above measurement approaches, the EPA guidance AG5 procedure describes a “sniff testing” approach to odour assessment. This requires a human assessor to use their own sense of odour to assess odours by means of a sensory technique referred to as ‘*sniff testing*’.

# ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

## 3.2 MEASUREMENT PARAMETERS

The following key describes the numerical values used to describe observation point sensitivity, wind strength, odour persistence, and odour intensity as per the EPA 2019 Guidance Document (AG5).

<b>Note 1: Observation point Sensitivity</b>	
<b>1</b>	Remote (no housing, commercial/industrial premises or public area within 500m of observation point)
<b>2</b>	Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point)
<b>3</b>	Moderate sensitivity (housing, commercial/industrial premises or public area within 100m of observation point)
<b>4</b>	High sensitivity (housing, commercial/industrial premises or public area within area of observation point)
<b>5</b>	Extra sensitive (complaints arising from residents, businesses and users of public areas within area of observation point)
<b>Note 2: Wind Strength</b>	
<b>0</b>	Calm Smoke rises vertically
<b>1</b>	Light air Direction of wind is shown by smoke drift, but not wind-vanes.
<b>2</b>	Light Breeze Wind felt on face; leaves rustle, ordinary vane moved by wind.
<b>3</b>	Gentle Breeze Leaves and small twigs in constant motion.
<b>4</b>	Moderate Breeze Raises dust and loose paper; small branches are moved.
<b>5</b>	Fresh Breeze Small trees in leaf begin to sway.
<b>6</b>	Strong Breeze Large branches in motion; umbrellas used with difficulty against the wind.
<b>7</b>	Near Gale Whole trees in motion; inconvenience felt when walking against wind.
<b>8</b>	Gale Twigs break off trees; progress generally impeded.
<b>9</b>	Strong Gale Slight structural damage occurs (chimney pots and slates removed).
<b>Note 4: Odour Persistence</b>	
<b>0</b>	No Odour
<b>1</b>	Intermittent (detected intermittently during the period of assessment)
<b>2</b>	Persistent (detected throughout the period of assessment)
<b>Note 5: Odour Intensity</b>	
<b>0</b>	No detectable odour
<b>1</b>	Faint Odour (barely detectable, need to stand still and inhale facing the wind)
<b>2</b>	Moderate Odour (easily detectable while walking and breathing normally, possibly offensive)
<b>3</b>	Strong Odour (bearable but offensive – might make clothes / hair smell?)
<b>4</b>	Very Strong Odour (unbearable, difficult to remain in area affected by odour)

Wind direction is given as ‘*the direction from which wind blows*’ as per Agency Odour Investigation Field Record Sheets.

# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

### 3.3 MONITORING LOCATIONS

The five odour sensitive locations (OSL's) utilised as part of this assessment are mapped in Appendix A.2 and described below. Distances referenced below are from the site central point.

- **OSL1** – Residence 778m West
- **OSL2** – Residence 392m West
- **OSL3** – Residence 420m East-South-East
- **OSL4** – Residence 830m East of the site
- **OSL5** – Residence 790m South

The odour sensitive locations were based on recognised measurement criteria to give an accurate view and indication of the level of odour to which odour sensitive areas are exposed, such as third-party owned dwelling houses and public areas.

Additional odour monitoring (OM) locations were selected during the survey period in order to provide for the drawing of an indicative odour plume for the survey, as per EPA (AG5) guidance.

Distances listed below are between the monitoring locations (OM) and the site boundary. These distances were progressively decreased and any change in odour intensity or odour persistence was noted.

- **OM1** – 120m south-west
- **OM2** – Boundary location
- **OM3** – Boundary location
- **OM4** – Boundary location
- **OM5** – 120m north-east
- **OM6** – 75m north-east
- **OM7** – 148m north-east
- **OM8** – Within boundary
- **OM9** – Within boundary
- **OM10** – Within boundary
- **OM11** – 75m north-west
- **OM12** – 10m north-west

The odour monitoring locations give an accurate view and indication of the level of odour to which the environment surrounding the facility and within the site boundary are exposed.

### 3.4 MONITORING RESULTS

The detailed results of monitoring are provided within the Odour Investigation Field Record Sheet in Appendix B, which are based upon the 2019 EPA guidance document “*Odour Impact Assessment Guidance for EPA Licenced Facilities (AG5)*”.

An odour assessment was carried out on Wednesday 25<sup>th</sup> September 2019.

# **ODOUR ASSESSMENT REPORT**

## **WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY**

### **4.0 DISCUSSION**

Air quality in this region is generally good and reflective of the rural climate in Ireland with odour sources of a minor nature.

Weather conditions during the odour survey were mild (10-15°C), dry with scattered cloud and gentle to moderate breezes (5-10 knots). Wind direction was somewhat variable during the survey periods; however, the dominant wind direction was from the south-east. Due to the mild temperatures and light winds, conditions for the transmission of odours from the site were good.

Potential sources of odours within the site were identified and included the pig houses, pig feed and sludge storage.

### **4.1 DISCUSSION OF SOURCE ODOUR ASSESSMENT**

No signature odour sources were detected in or around the front yard area, site office/staff facilities building or access roadway, which were primarily crosswind of all primary odour sources.

All on-site odour sources would be found to be common for farmyards and typical of rural Ireland.

Generally, site management in relation to potential odours was found to be good and typical of farmyard management practices in Ireland.

Manure/slurry is stored within underground tanks and is not frequently agitated and concrete surfaces are cleaned of fresh manure.

Odour sources relating to the proposed development would be of similar intensity and persistence to the existing infrastructure, if not lower due to replacement of existing housing with buildings of modern design and incorporating odour mitigation measures.



# ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

## 4.2 DISCUSSION OF ODOUR IMPACT ASSESSMENT

Odour monitoring was conducted, as per the “sniff testing” methodology outlined within the EPA Guidance Note (AG5), at monitoring locations outside the site boundary. A map detailing the locations of these monitoring locations may be found within Appendix A of this report.

Wind conditions during the monitoring survey were principally gentle to moderate breezes from the south-east. Temperatures were cool to mild, ranging from 10 to 15 °C.

As can be seen in the Gurteen College wind distribution data, as per Appendix C, the prevailing wind direction in this area range between west and south, which have a total percentage occurrence frequency of 57.8% (hourly data). Wind from the south have a total percentage occurrence frequency of 13.3%, while wind from the west have a total percentage occurrence frequency of 10.5% of yearly hours.

The table below summarises the findings of the odour assessment at monitoring locations beyond the boundary, and the extent and character of odour plumes on the day of the assessment.

The threshold at which an odour may be considered likely to cause a nuisance, as per the EPA AG5 methodology, are odours occurring at a downwind receptor of Persistence 1 or 2 (intermittent to persistent) and Intensity  $\geq 2$  (moderate).

**Table 4.2:** Summary of Odour Impact Survey

MONITORING LOCATIONS		ODOUR PERSISTENCE	ODOUR INTENSITY
<b>ODOUR IMPACT ASSESSMENT</b>			
OSL1	Residence 778m West	0	0
OSL2	Residence 392m West	0	0
OSL3	Residence 420m East-South-East	0	0
OSL4	Residence 830m East of the site	0	0
OSL5	Residence 790m South	0	0
<b>PLUME INVESTIGATION ASSESSMENT</b>			
OM1	120m south-west of boundary	0	0
OM2	Boundary Location	0-1	0-1
OM3	Boundary Location	0-1	0-1
OM4	Boundary Location	0-1	0-1
OM5	120m north-east of boundary	0	0
OM6	75m north-east of boundary	0-1	0-1
OM7	148m north-east of boundary	1	1-2
OM8	Within boundary	1-2	2
OM9	Within boundary	0	0
OM10	Within boundary	0-1	0-1
OM11	75m north-west of boundary	0	0
OM12	10m north-west of boundary	0-1	0-1

# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

The closest third-party owned odour sensitive residential locations to the facility are c.390 metres to the west of the site and c.420m east-south-east of the existing site. Therefore, the transmission of odours, which may occur in the direction of the nearest residential odour sensitive locations would not be common (2.4% and 5.4% of yearly hours respectively).

No odours related to the site were detected at any of the five odour sensitive locations (OSL), two of which were cross/downwind and three were cross/upwind of the principal odour sources.

Therefore, facility related odours detected at odour sensitive locations off-site were below the “*threshold that could indicate nuisance*” as per the EPA AG5 Guidance methodology.

No site related odour were detected at OM1 – OM4 (upwind), OM5 (downwind), OM9 and OM11 (crosswind).

Site related odours were detected at monitoring locations OM6–OM8, OM10 and OM12, which are considered odour plume boundary points. All these monitoring locations were within the site boundary, with the exception of OM6 and OM7.

However, odour at these off-site locations (OM6 & OM7) were determined to be of an intermittent persistence, and of an intensity ranging between faint and moderate.

Monitoring locations OM6–OM8 were directly downwind of the principal odour sources. These threshold locations were determined by walking from a downwind location, towards the source and noting changes in odour characteristics.

A faint intermittent slurry/manure type odour was detected at OM10 and OM12, which are located crosswind of all principal odour sources.

A faint intermittent slurry/manure type odour was also detected at OM6, which is located downwind of all principal odour sources.

A faint to moderate intermittent slurry/manure type odour was detected at OM7, which is located downwind of all principal odour sources.

A moderate intermittent to persistent slurry/manure type odour was detected at OM8, which is located downwind of all principal odour sources.

Using these odour monitoring points, an indicative odour plume has been drawn, as per Appendix A.3.

# ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

## 5.0 CONCLUSIONS

- A detailed on-site odour investigation was carried out, including potential odour sources, relating to the operation of the existing infrastructure as per the “*sniff testing*” methodology outlined within the 2019 EPA Guidance Note (AG5).
- Weather conditions for the transmission of odours from the site during the monitoring period were good. Temperatures were mild with gentle to light breezes from the south-west, veering easterly.
- No odours related to the site were detected at any of the five odour sensitive locations (OSL), two of which were cross/downwind and three were cross/upwind of the principal odour sources. Therefore, odours were below the “*threshold that could indicate nuisance*” as per the EPA AG5 Guidance methodology.
- No odours related to the facility were detected upon the local roadway to the south of the site boundary during the assessment.
- The current on-site principle odour sources include the pig sheds, feed and sludge storage.
- The dominant odour source on-site was determined to be of a strong persistent intensity.
- The types of odours detected, as a result of these sources, would be considered typical of a farmyard containing cattle and common-place within rural Ireland.
- Odour sources relating to the proposed development would be of similar intensity and persistence to the existing infrastructure, if not lower due to replacement of existing housing with buildings of modern design and incorporating odour mitigation measures.
- No odour of *persistent* persistence or of *strong* intensity were detected outside of the site boundary. Therefore, odours were below the “*threshold that could indicate nuisance*” as per the EPA AG5 Guidance methodology.
- It is concluded that there is the potential for the existing infrastructure related odours to be detected outside of the site boundary in unfavourable weather condition. However, site related odours are unlikely to “*cause a nuisance*” at the nearest odour sensitive location, given the prevailing wind direction in the area.

**ODOUR ASSESSMENT REPORT**  
**WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY**

**6.0 RECOMENDATIONS**

Following on from the results of this odour assessment report, the following is recommended;

- Ensure external areas and vehicles are cleaned as required, including passageways and yards.
- Livestock area
  - Wash down fresh manure from sheds and concrete pads regularly.
  - Optimise crude protein levels in feed, thus minimizing nitrogen excretion.
- Ensure waste bins are covered and removed regularly. Ensure same for any other potentially odorous waste.
- Carry out potentially odorous activities (i.e. slurry agitation / removal of bedding) outside of optimal weather conditions for odour dispersion wherever practicable – i.e. warm weather and light breeze. Be cognisant of wind direction and sensitive receptor locations during such activities.
- Roads
  - Ensure site roads are kept clear of odorous materials.
  - Inspect surrounding public roads for manure following removal of stock or slurry.
- Prepare and implement a site-specific odour management programme, as per the draft OMP contained in Attachment 6.2 of the EIAR, to be reviewed on a regular basis.

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

**ODOUR ASSESSMENT REPORT**  
**WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY**

---

**APPENDIX A**

**- MONITORING POINTS AND -**  
**- ODOUR SOURCE MAP -**

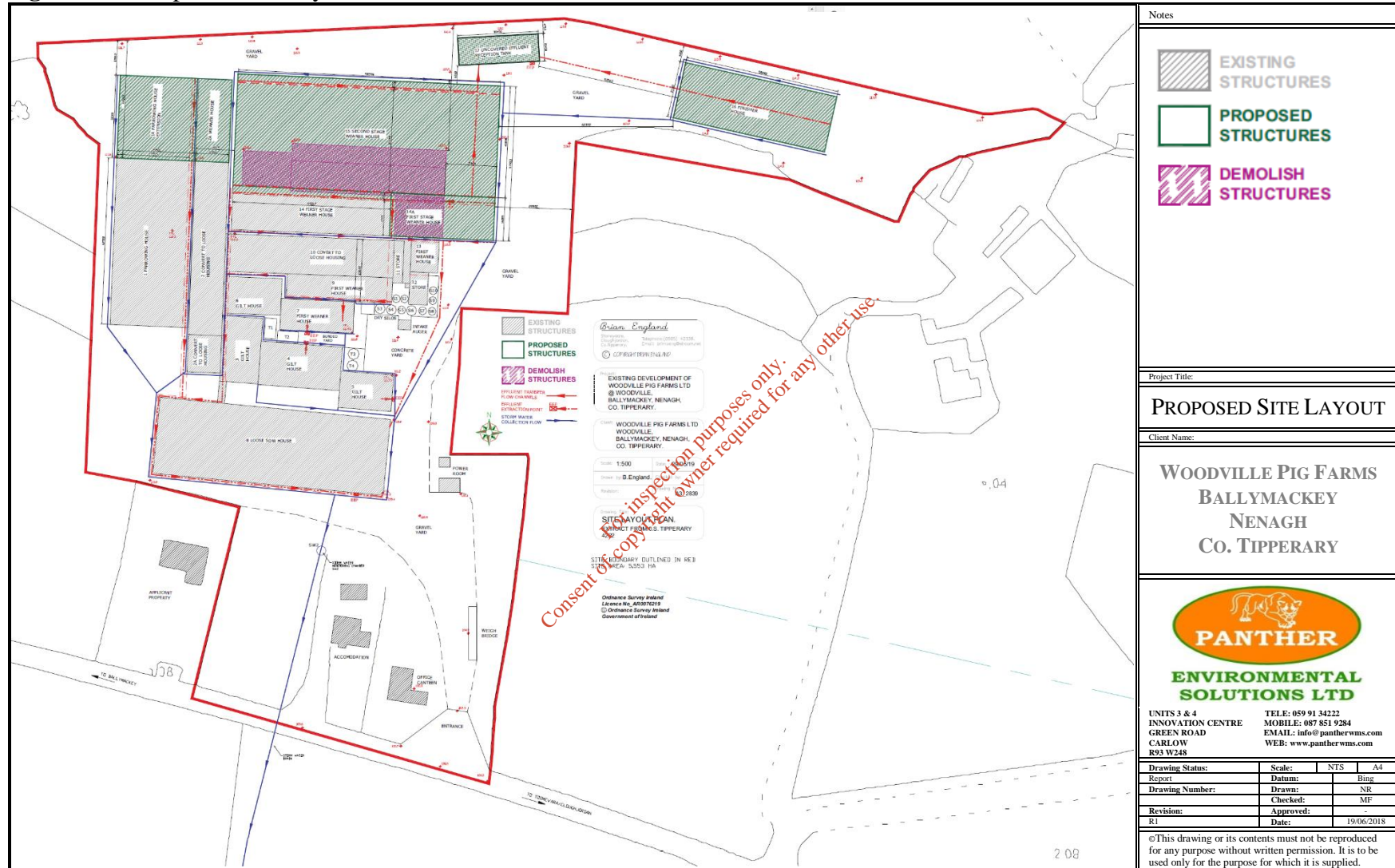
---

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

# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

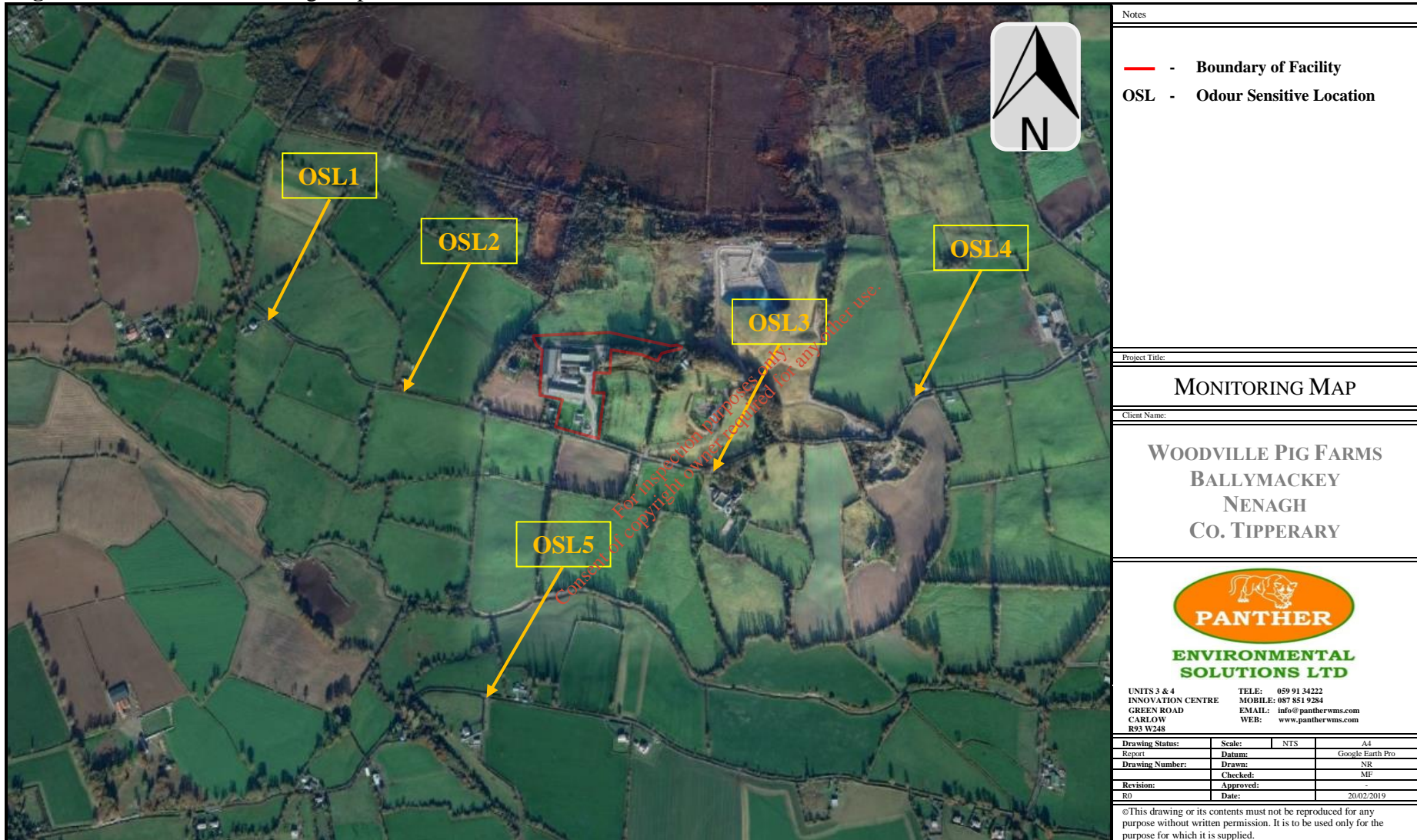
**Figure A.1: Proposed Site Layout**



# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

**Figure A.2: Odour Monitoring Map**



# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

**Figure A.3: Odour Plume Map**





**ODOUR ASSESSMENT REPORT**  
**WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY**

---

**APPENDIX B**

**- ODOUR ASSESSMENT FIELD SHEETS -**

---

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

# ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

**Table B.1: Odour Monitoring Field Sheets**

General	Licensee / Facility		EPA Reg. No.	Assessment by	Date of Inspection	Type of Visit		
	Woodville Pig Farms, Co. Tipperary		P0467-02	Nial Ryan	25/09/2019	Announced ✓	Unannounced	
Pre-Assessment Preparation	Observer is free from medical conditions (cold, sore throat, sinus trouble)?		Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?		Reason for odour assessment:		Map – Has a map showing assessment locations been attached?	Possible odour related Incident (spillage, breakdown of abatement system, power failure.)
	Yes ✓	No	Yes ✓	No	Complaint verification		Yes ✓	No
					Weather conditions / process events			
					Routine visit			
				Other:	✓			
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)	<b>Note 1: Observation point Sensitivity</b>				<b>Note 3: Weather Conditions</b>			
	1. Remote (no housing, commercial/industrial premises or public area within 500m of observation point) 2. Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point) 3. Moderate sensitivity (housing, commercial/industrial premises or public area within 100m of observation point) 4. High sensitivity (housing, commercial/industrial premises or public area within area of observation point) 5. Extra sensitive (complaints arising from residents, businesses and users of public areas within area of observation point)				Precipitation		Temperature	
					1. Dry		1. Cold	
					2. Rained recently		2. Cool	
					3. Drizzle		3. Warm	
				4. Raining		4. Hot		
				5. Foggy				
<b>Note 2: Wind Strength</b>				<b>Note 4: Odour Persistence</b>				
0. Calm		Smoke rises vertically		0. No Odour				
1. Light air		Direction of wind shown by smoke drift, but not wind varies		1. Intermittent (detected intermittently during the period of assessment)				
2. Light Breeze		Wind felt on face; leaves rustle, ordinary vane moved by wind		2. Persistent (detected throughout the period of assessment)				
3. Gentle Breeze		Leaves and small twigs in constant motion		<b>Note 5: Odour Intensity</b>				
4. Moderate Breeze		Raises dust and loose paper; small branches are moved		0. No detectable odour				
5. Fresh Breeze		Small trees in leaf begin to sway		1. Faint Odour (barely detectable, need to stand still and inhale facing the wind)				
6. Strong Breeze		Large branches in motion; umbrellas used with difficulty against the wind		2. Moderate Odour (easily detectable while walking and breathing normally, possibly offensive)				
7. Near Gale		Whole trees in motion; inconvenience felt when walking against wind		3. Strong Odour (bearable but offensive – might make clothes / hair smell?)				
8. Gale		Twigs break off trees; progress generally impeded		4. Very Strong Odour (unbearable, difficult to remain in area affected by odour)				
9. Strong Gale		Slight structural damage occurs (chimney pots and slates removed)						
Odour Source Investigation (Post Odour Survey)	Time: From / To	09:27 am – 12:03 pm			Do any of the odours experienced on-site match those recorded during the survey?		Yes ✓	
							No	
	List Areas inspected to match odour	What processes were occurring during the off-site odour assessment?			Potential on-site odour sources identified.			
	Entire site within boundary & multiple locations outside.			Normal operations, plus feed delivery and sludge removal.			Pig sheds and sludge storage tanks.	

## ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

Parameter	Observer Location		Wind			Weather		Time		Odour Rating		General comments and odour description comments	
	Map Location No.	Name of household / commercial site (easily identified)	Sensitivity (1-5) <b>Note 1</b>	Direction from which wind blows	Orientation (Observer Vs. facility)	Strength (0-9) <b>Note 2</b>	Precipitation (1-5) <b>Note 3</b>	Temperature (1-4) <b>Note 3</b>	Start Time (24hr clock)	End Time (24hr clock)n	Odour Persistence (0-2) <b>Note 4</b>		Odour Intensity (0-4) <b>Note 5</b>
Thresholds (may indicate nuisance)	..	...	≥3	..	Downwind Approx. DW or ND - not detectable etc.	...	...	...	...	...	1 or 2	≥2	<b>Guide-</b> A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly <u>if</u> the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	-	OSL1	3	S.W.	C/U.W.	2	1	2	09:27	09:42	0	0	Odour from local vegetation. No site related odour detected.
	-	OSL2	3	S.W.	C/U.W.	2	1	2	09:47	10:02	0	0	Odour from local vegetation. Lingering vehicle exhaust fumes. No facility odour detected.
	-	OSL3	3	S.W.	C/D.W.	2	1	2	10:22	10:37	0	0	Odour from local vegetation. No site related odour detected.
	-	OSL4	3	S.W.	C/D.W.	2	1	2	10:42	10:57	0	0	Odour from local vegetation. No site related odour detected.
	-	OSL5	3	S.W.	C/U.W.	2	1	2	11:48	12:03	0	0	Odour from local vegetation. Lingering vehicle exhaust fumes. No facility odour detected.
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc.):													

## ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

Parameter	Observer Location		Wind			Weather		Time		Odour Rating		General comments and odour description comments	
	Map Location No.	Name of household / commercial site (easily identified)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs. facility)	Strength (0-9) Note 2	Precipitation (1-5) Note 3	Temperature (1-4) Note 3	Start Time (24hr clock)	End Time (24hr clock)n	Odour Persistence (0-2) Note 4		Odour Intensity (0-4) Note 5
Thresholds (may indicate nuisance)	...	...	≥3	...	Downwind Approx. DW or ND - not detectable etc.	...	...	...	...	...	1 or 2	≥2	<b>Guide-</b> A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	-	OM1	3	S.W.	U.W.	2	1	2	11:00	11:01	0	0	No site related odour detected
	-	OM2	3	S.W.	U.W.	2	1	2	11:03	11:04	0	0	No site related odour detected
	-	OM3	3	S.W.	U.W.	2	1	2	11:05	11:06	0	0	No site related odour detected
	-	OM4	3	S.W.	U.W.	2	1	2	11:08	11:09	0	0	No site related odour detected
	-	OM5	2	S.W.	D.W.	2	1	2	11:12	11:13	0	0	No site related odour detected
	-	OM6			S.W.	D.W.	2	1	2	11:14	11:15	1	1
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc.):													

## ODOUR ASSESSMENT REPORT

WOODVILLE PIG FARMS LIMITED, BALLYMACKKEY, CO. TIPPERARY

Parameter	Observer Location			Wind			Weather		Time		Odour Rating		General comments and odour description comments
	Map Location No.	Name of household / commercial site (easily identified)	Sensitivity (1-5) <b>Note 1</b>	Direction from which wind blows	Orientation (Observer Vs. facility)	Strength (0-9) <b>Note 2</b>	Precipitation (1-5) <b>Note 3</b>	Temperature (1-4) <b>Note 3</b>	Start Time (24hr clock)	End Time (24hr clock) <sup>n</sup>	Odour Persistence (0-2) <b>Note 4</b>	Odour Intensity (0-4) <b>Note 5</b>	
Thresholds (may indicate nuisance)	..	...	≥3	..	Downwind Approx. DW or ND - not detectable etc.	..	..	..	..	...	1 or 2	≥2	<b>Guide-</b> A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly <u>if</u> the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	-	OM7	2	S.W.	D.W.	2	1	2	11:16	11:17	1	2	Moderate intermittent odour detected.
	-	OM8	2	S.W.	D.W.	2	1	2	11:19	11:20	2	2	Persistent moderate odour detected.
	-	OM9	2	S.W.	C.W.	2	1	2	11:25	11:26	0	0	No site related odour detected
	-	OM10	2	S.W.	C.W.	2	1	2	11:27	11:28	1	1	Faint intermittent odour detected.
	-	OM11	3	S.W.	C.W.	2	1	2	11:33	11:34	0	0	No site related odour detected
	-	OM12	3	S.W.	C.W.	2	1	2	11:35	11:36	1	1	Faint intermittent odour detected.
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc.):													

**ODOUR ASSESSMENT REPORT**  
**WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY**

---

**APPENDIX C**  
**- GURTEEN COLLEGE-**  
**- WIND DISTRIBUTION DATA -**

---

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

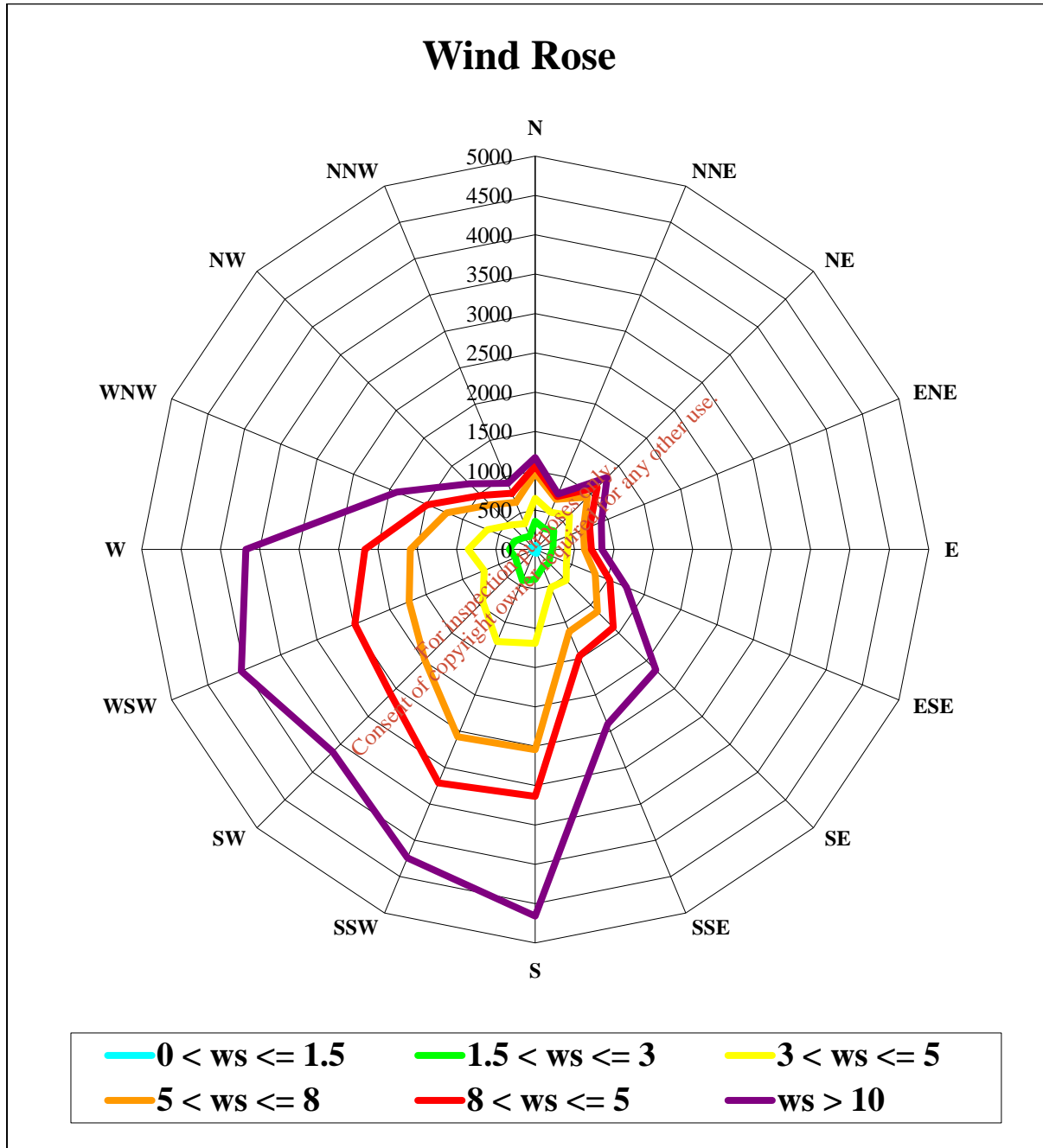
# ODOUR ASSESSMENT REPORT

## WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY

The wind-rose diagram is divided into 16 cardinal directions; north (N), NNE, etc.

The length of each sector indicates the wind direction frequency for each cardinal direction.

The colour coded lines subdivide the overall frequency of wind into the proportions at a given wind speed (in km/h) in each cardinal direction. Each wind-speed frequency is additive upon the previous wind-speed frequency percentage.



**ODOUR ASSESSMENT REPORT**  
**WOODVILLE PIG FARMS LIMITED, BALLYMACKEY, CO. TIPPERARY**

**Table C.1:** Gurteen College Wind Data 2015-2018

Direction	Wind Speed Range (Knots)						Average Speed (knots)	Number of events	Events (%)
	0 < ws ≤ 1.5	1.5 < ws ≤ 3	3 < ws ≤ 5	5 < ws ≤ 8	8 < ws ≤ 10	ws > 10			
N	53	307	290	322	90	107	8.4	1,169	3.3
NNE	48	242	222	178	39	35	8.5	764	2.2
NE	32	301	283	324	174	180	8.6	1,294	3.7
ENE	45	200	212	203	89	159	8.7	908	2.6
E	32	191	188	213	88	135	8.7	847	2.4
ESE	33	170	228	393	203	227	8.8	1,254	3.6
SE	30	215	309	563	285	765	8.7	2,167	6.2
SSE	52	190	278	609	336	937	8.6	2,402	6.9
S	45	332	816	1,351	593	1,522	8.6	4,659	13.3
SSW	41	386	840	1,309	634	1,034	8.7	4,244	12.1
SW	40	269	632	1,043	616	1,038	8.7	3,638	10.4
WSW	40	232	428	1,034	747	1,561	8.2	4,042	11.5
W	43	286	522	735	577	1,515	7.0	3,678	10.5
WNW	63	221	377	558	268	416	6.6	1,903	5.4
NW	38	171	233	362	167	212	6.4	1,183	3.4
NNW	42	140	174	294	125	137	6.0	912	2.6
<b>Total</b>	<b>677</b>	<b>3,853</b>	<b>6,032</b>	<b>9,491</b>	<b>5,031</b>	<b>9,980</b>	-	<b>35,064*</b>	<b>100%</b>

\*35,064 = (365-days x 24-hours) + (365-days x 24-hours) + (365-days x 24-hours) + (366 days x 24-hours)