Cyfoeth Naturiol Cymru Natural Resources Wales	**EPR Compliance Assessment Report**	Report ID: 100525/0236808

This form will report compliance with your permit as determined by an NRW officer

Site	Cowbridge Compost Ltd			Permit Ref	100525		
Operator/ Permit holder	Cowbridge Compost Ltd						
Date	18/03/2015			Time in	10:00	Out	14:00
What parts of the permit were assessed	Environment Management System, Odour Management Plan and Site Management						
Assessment	Audit	EPR Activity:	Installation	Waste Op	X	Water Discharge	
Recipient's name/position	John Homfray (Director) / Mike Hallet (TCM)						
Officer's name	Adam Ward, Caitriona Harvey			Date issued	02/04/2015		

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS scores can be consolidated or suspended, where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit Conditions and Compliance Summary				**Condition(s) breached**
a) Permitted activities	**1**. Specified by permit	A		
b) Infrastructure	**1.** Engineering for prevention & control of pollution	A		
	2. Closure & decommissioning	N		
	3. Site drainage engineering (clean & foul)	N		
	4. Containment of stored materials	A		
	5. Plant and equipment	A		
c) General management	**1**. Staff competency/ training	N		
	2. Management system & operating procedures	C3		1.1.1, 2.3.1
	3. Materials acceptance	A		
	4. Storage handling, labelling, segregation	A		
d) Incident management	**1**. Site security	A		
	2. Accident, emergency & incident planning	A		
e) Emissions	**1.** Air	NA		
	2. Land & Groundwater	A		
	3. Surface water	N		
	4. Sewer	N		
	5. Waste	A		
f) Amenity	**1**. Odour	O		
	2. Noise	A		
	3. Dust/fibres/particulates	A		
	4. Pests, birds & scavengers	A		
	5. Deposits on road	A		
g) Monitoring and records, maintenance and reporting	**1**. Monitoring of emissions & environment	N		
	2. Records of activity, site diary, journal & events	N		
	3. Maintenance records	N		
	4. Reporting & notification	N		
h) Resource efficiency	**1**. Efficient use of raw materials	NA		
	2. Energy	NA		

KEY: **C1, C2, C3, C4** = CCS breach category **(* suspended scores are marked with an asterisk),**
A = Assessed (no evidence of non-compliance), **N** = Not assessed, **NA** = Not Applicable, **O** = Ongoing non-compliance – not scored

Number of breaches recorded	1	**Total compliance score** (see section 5 for scoring scheme)	4

If the Total No Breaches is greater than zero, then please see Section 3 for details of our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- the part(s) of the permit that were assessed (e.g. maintenance, training, combustion plant, etc)
- where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- any non-compliances identified
- any non-compliances with directly applicable legislation
- details of any multiple non-compliances
- information on the compliance score accrued inc. details of suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

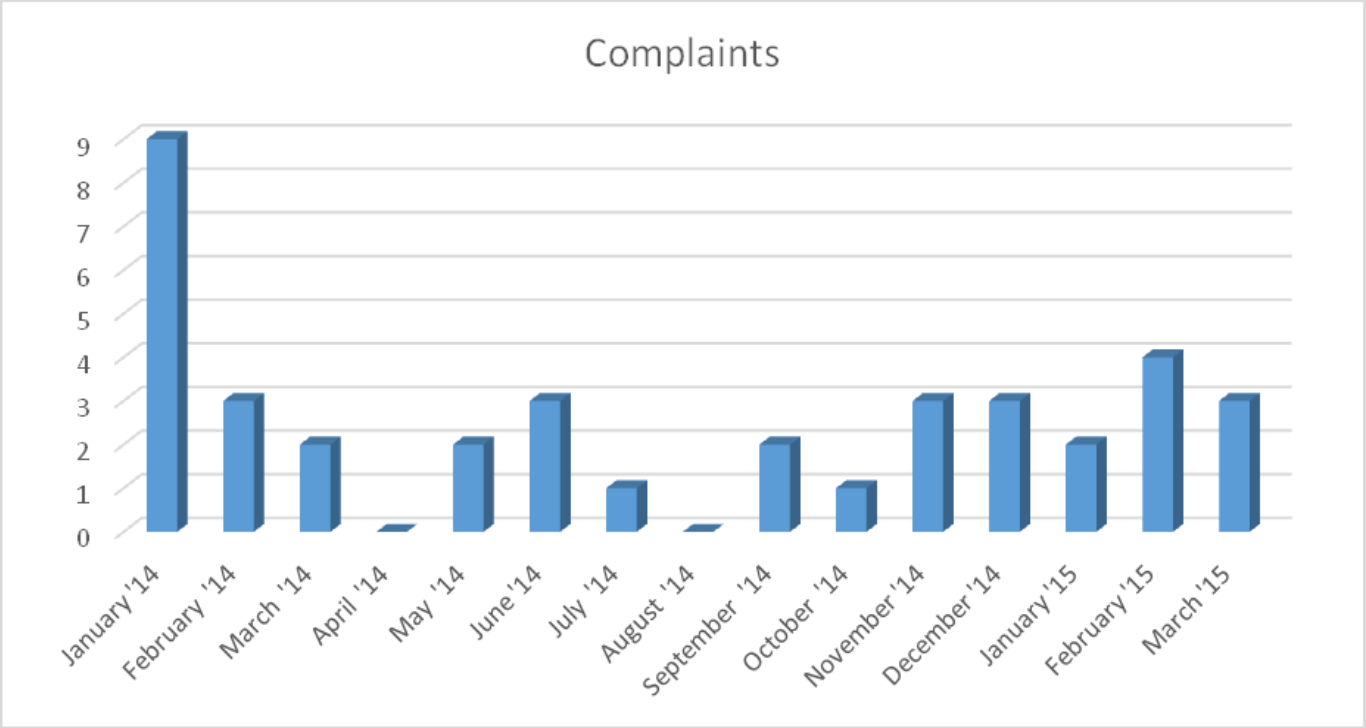
This report should be clear, comprehensive, unambiguous and normally completed within 14 days of an assessment.

Cowbridge Compost Audit

Introduction

Cowbridge Compost has recently made significant improvements to the site by investing in new infrastructure. This has included the installation of an above ground storage tank for leachate and dirty water, the lining of existing leachate lagoons with impermeable material and the installation of a new door at the IVC. The operator has therefore greatly reduced the risk of point source emissions to land and water.

However, while the number of odour complaints steadily reduced throughout 2014, they have been on a steady increase in recent months. The complaints graph below indicates that complaints have doubled in the last 6 months from the 6 months prior. From April 2014 to September 2014, 8 complaints were received, whereas From October 2014 to March 2015, we have received 16 complaints.



We have been informed of a new housing development that will be going ahead near the facility which is likely to increase the number of complaints in future. Further, a planning application for an AD plant at the site has been submitted and this may be met with further increased public attention. The site may therefore become increasingly contentious, both publically and politically, if odours continue to cause a problem locally.

Audit Plan
The aim of the audit was to draw upon findings from a previous EMS audit before auditing the Odour Management Plan. The objective was therefore to implement plans/procedures for determining compliance and to improve the composting process to reduce the risk of odours. To support this, a more effective and valuable odour assessment will be implemented by officers when responding to future odour complaints.

Some of the factors associated with odour issues are listed below and were investigated during this audit:

- The monitoring of critical factors such as temperature, moisture and oxygen levels
- The implementation of effective critical limits and corrective actions
- The monitoring of weather conditions
- Turning – frequency and timing
- IVC feedstock ratios and management
- Bio-filter monitoring and maintenance
- Windrow size
- Matured / PAS 100 – finished product issues

The EMS audit (conducted in January 2014) highlighted a number of critical limits in terms of temperature and moisture and oxygen levels in the compost. The EMS then provided corrective actions to take should these critical limits be breached. The focus of this audit was therefore to:

1. Ensure the EMS and OMP accurately reflect each other's requirements
2. Consider whether appropriate limits are set by referring to available guidance
3. Determine whether the operator has the appropriate equipment/infrastructure to be able to effectively monitor critical limits of the compost
4. Investigate whether effective monitoring is taking place and if so, whether corrective actions are being implemented.

EMS Audit Discussion

IVC Critical Limits & Corrective Actions

Temperature: The critical limit for temperature in the IVC states >60°C. This insinuates that corrective actions are implemented when temperatures rise higher than 60°C. However, you have confirmed that this means the batches within the IVC are kept ABOVE 60°C to ensure compliance with the Animal Bi-Product Regulations. The corrective action provided for temperatures becoming elevated above critical limits states that the 'tunnels' are 'flushed' with fresh air.

The first issue here is that there is no upper limit set for temperatures. Secondly, this is not an accurate reflection of the batch formation within the IVC, or the capacity of infrastructure to be able to flush compost with fresh air. Please ensure the EMS is updated to accurately reflect current infrastructure and procedures. Ideal temperature limits will be discussed in the OMP audit section below.

Moisture: Moisture limits are set as 3-4 droplets using the 'grip test' to BS EN 12579. However, your new permit which has recently been varied specifies the use of a moisture metre in the IVC which would give more accurate readings. In this scenario, ideal moisture content would be between 50% - 65% according to WRAP guidance.

Corrective actions provided in the EMS include the addition of air (as above) should moisture levels get too high, or the addition of water should levels get too low. While the latter is recommended, you do not currently have the capacity to flush compost batches with air. Turning the compost can reduce moisture content. Please the EMS amend accordingly.

Oxygen: The critical limit for oxygen is <10%. This is in line with guidance which recommends oxygen content of between 10%-15%. However you currently have no means of monitoring oxygen level as suggest by your EMS. Oxygen monitoring is not a requirement of your permit, however accurate monitoring of both temperature and moisture content provide adequate information to be able to indicate desired oxygen levels. Alternatively, you may consider the use of an oxygen probe to provide an accurate reading.

Corrective action again specifies flushing tunnels with air, which is not an accurate reflection of the current practises on site. Please amend accordingly.

OWC Critical Limits & Corrective Actions

Temperature: Critical limits are 45°C - 65°C which is in line with recommendations. However, it is worth noting the temperatures should start dropping to between 10°C – 20°C during the stabilisation and maturation phases.

Corrective actions include the turning of windrows should temperatures become elevated above critical limits. No action is specified should temperatures drop below critical limit, however you should consider corrective actions such as adding water to increase moisture content (if below limits) or altering windrow formation.

Moisture: Critical limits are again specified as 3-4 droplets of liquid, as determined by the grip test. This is not in line with guidance from WRAP, which recommends 1 or no drops while producing a visible wet sheen. There may be some confusion over the use of the *moisture index* and the *number of droplets,* as 3-4 on the index equates to 1 or no droplet. Please clarify this point in your EMS.

Corrective actions for elevated moisture content is to turn windrows as soon as possible to fully aerate, which is in line with WRAP guidance. The EMS also specifies the addition of water on a little and often basis to ensure moisture content does not fall below critical limits. However it is suggested this is only done when necessary.

Summary

Please ensure that the EMS is updated so that it reflects current practices and is also in line guidance from WRAP. The EMS should;

- Accurately reflect current practices and infrastructure
- Provide upper and lower limits for IVC batch temperatures and specify corrective actions
- Describe the use of a calibrated moisture probe for IVC as specified by the permit
- Clarify grip test results by using the Moisture Index to BS EN 12579

Other Comments

The EMS specifies a monitoring and maintenance regime for the bio-filter. It also provided information regarding the use of a Davis Vantage Weather Station. It was unclear whether these section were being followed and the OMP audit was an opportunity to discuss this with the operator.

OMP Audit and On-site Inspection

IVC Feedstock Management

Section 2 of your OMP refers the feedstock inventory for the IVC. It highlights the potential issue of green and food waste decomposing prior to treatment, therefore creating a potential source of odours. All food waste is stored within the IVC and starts the treatment process within days of entering the facility. The risk of odour emissions from this source are therefore low. However, green waste tends to be stored for longer periods and there is evidence that stockpiles are readily decomposing before treatment. This is not currently causing an odour issue, however you should consider the mix of decomposed and fresh green waste entering the IVC for treatment in terms of desired Carbon to Nitrogen (C:N) ratios.

Section 2.1 recommends a 1:4 mix of green to brown (fresh to non-green green waste), which would give the desired C:N ratio limits of >20:1 and <40:1. Further, **section 2.2** provides a table which provides recommendations for adjusting feedstock according to seasonal variations. The specified management controls should therefore be implemented if seasonal variations are deemed to be causing odours.

Sections 5.1 & 5.2 state that visual assessments are made to clarify the likely C:N ratio entering the IVC. You have confirmed you currently comply with the OMP by creating a 1:3/4 mix of green and brown waste. For this purpose, you should consider food waste and grass cuttings to be a ‘green’ waste source (higher in nitrogen), while woody/leafy waste such as tree and hedge cutting should be considered a brown waste source (higher in carbon, especially when decomposed).

While it appears you are currently correctly managing C:N ratio's, you have confirmed that you are shredding the green waste twice; once before it enters the IVC (to reduce volume) and again when being mixed with the food waste. It is therefore likely that the porosity of the compost is insufficient to allow oxygen to permeate throughout the batches. Further, the extra shredding of the green waste is likely to elevate the moisture content of each batch. This may also result in a lack of porosity and is also likely to cause increased temperatures. It is recommended that green waste is shredded once to avoid these potential complications.

Active Composting Phase

Section 5.4 describes the 'active composting phase' of the IVC. Critical limits are set as >60°C for temperature and <2 or >5 for the moisture index using the grip test
There are a number of issues with this section as it does not accurately reflect current practices. These are:

- The description of barrier 1 'tunnels' being 'actively aerated via pipes incorporated into the floor of the tunnels – this is incorrect as the compost is stored in *batches* and no aeration pipes are present.
- The section refers to 'bio-filtration units' and states that there are bio-filters in the roof, this is incorrect as there is only one bio-filter which is adjacent to the IVC building.
- The table provided states that should temperatures become elevated above critical limit (>60°C) tunnels are flushed with air to fully aerate. This temperature is not accurate as temperature levels are kept above 60°C to comply with ABP Regulations and batches are not flushed with air.

IVC Temperature Issue: Further, no upper limit for temperature is provided for the IVC, although guidance from WRAP states that above 70°C, the thermophilic bacteria required for effective and aerobic composting begin to die off. Having assessed the continuous monitoring data for batches in the IVC, it is evident that all batches remain at elevated levels throughout the IVC process. The data sheets you provided indicate that while the temperatures throughout each batch are not uniform, they remain elevated above the 60°C limit, but are frequently above 70°C. This is likely to have a negative effect on both the microbiology and the oxygen levels in the compost and is likely to increase the risk of mal-odours upon being exported to open windrows.

ABP regulation Issue: Having discussed this issue on-site, you explained that the ABP Regulators have requested that temperatures remain above 60°C degrees throughout the 32 day IVC process, rather than the 2 days required by the APB Regulations. This therefore makes it difficult to implement corrective actions to reduce elevated temperatures in case they drop below 60°C and fail the APHA assessment.
We recognise the importance of these requirement and will arrange a meeting with the APHA Veterinary Officer to discuss potential solutions to this problem. This issue will be addressed in due course.

Moisture/Grip Test Issue: As highlighted by the EMS audit, there currently appears to be some confusion surrounding the squeeze test used throughout this process. Having witnessed the result records during this audit, it was explained that the numbers recorded (3 in this case) indicate the number of droplets produced by the test, rather than the moisture index (1-5). The ideal number of droplets are 1 to none (moisture index 3 or 4), with the grip test producing a wet sheen on the surface of the compost.
It was also noted that the surface of the batches were far dryer than the core. A grip test of the first batch produced an ideal result, but it was clear the moisture content was much higher in the middle of the batch due to the liquid content running out. Please ensure you are able to conduct an effect grip test by sampling more than location of the batch at varying depths. Alternatively, you should consider the use of a *moisture metre.*

Section 5.5 describes the process of open windrow composting following the IVC sanitisation phase. Temperature limits are set as 45-80°C, which does not reflect the 45-65°C limit set by the EMS. It is recommended that the upper limit is reduced to reflect the EMS and to ensure that thermophilic bacteria are not being killed off by the high temperatures.

The temperatures of several windrows were recorded during the in-site inspection. The results indicates that the windrows were well within the temperature limits and did not increase above 50°C. This is a positive result as the temperatures were within the ideal range. However, the length of the probe was not sufficient to be able to reach the core of the windrows. The operator suggested halving the width of the windrows from 6m to 3m so that the core temperatures could be accurately recorded which is endorsed

by the regulator. Please update the EMS and OMP accordingly to reflect this change.

The grip test was not conducted on the open windrows (please see above for recommendations), however results reflected those within the IVC. You should consider turning the windrows to reduce the moisture content should the results indicate 2 or more droplets of liquid.

Section 5.6 refers to the screening of compost. It was suggested that screening of the compost takes place when the compost is still active and this was confirmed by the operator. Screening highly agitates the compost and produces a lot of steam which acts as a 'vehicle' for mal-odorous emissions from site. While the number of improvements suggested by the audit should result in the compost becoming less active at this stage, it is essential that active monitoring of the weather takes place (using the Davis Vantage weather station on site). The operator can then make informed decisions on as when screening should take place (e.g. during favourable wind speed and direction).

Section 5.7 highlights the requirement to actively monitor compost that has been deemed fully matured and has met PAS 100 specification. This is important as 'matured compost' may still be active and therefore poses a risk of causing odours when moved or spread to land. Please ensure you follow the specifications in this section by turning the stockpiles to ensure they are aerated should you witness steam or experience mal-odours.

Section 5.8 demonstrates how the IVC bio-filter should be monitored and maintained and this reflects the EMS. You confirmed that the bio-filter is not currently monitored and has not undergone any maintenance, other than fixing loose ducting, since it was installed. The critical limit provided for temperature is 40°C, however no upper or lower limits are provided. Guidance from The Composting Association states that ideal temperature are between 35°C and 40°C.

There is an issue with the way moisture is currently monitored as it is unlikely that the grip test specified can be used effectively on wood chip media. The Composting Association guidance recommends the use of a moisture metre at a depth of at least 30cm is recommended, with ideal moisture content between 55% and 60%.

We also discussed the requirement to renew media and ensure that it is not becoming compacted and therefore making it difficult for the air to effectively permeate the media. When replacing media, it is important that you only replace half of the existing material with fresh material to ensure the microbiology is maintained.

Compliance Issue: While you have agreed to start conducting effective monitoring and maintenance of the bio-filter in future, you have been previously been advised on this issue for not following procedures specified in section 4.4 of the EMS and 7.1 of the OMP (CAR Ref: 140708). You have therefore been scored a Category 3 breach against condition 2.3.1(a) for repeated failure to comply.

Section 6.1 outlines management of the lagoons. The section specifies the use of an aerator, however it was confirmed that the lagoons do not currently benefit from one, while the above ground storage tank does. Please update this section to reflect current practices. You should consider the use of an aerator for the lagoons should they be deemed as a potential source of odour. The OMP should include the option for the use of an aerator in this circumstance. Further, please ensure the lagoons are kept below 90% capacity as specified and the OMP should consider potential odour issues when pumping from the lagoons to the above ground storage tank. You should demonstrate how you intend to monitor lagoon levels and it is suggested that weather conditions are monitored prior to this activity.

OMP Audit Summary

An important first step is to ensure that both the EMS and the OMP are updated to accurately reflect current infrastructure and operating procedures on site. This is also an opportunity for you to implement some of the recommendations provided in this audit. The main points of concern are;

- Feedstock management (biodegradation and double shredding of green waste)
- Incorrect critical limits and inaccurate corrective actions
- High temperatures, high moisture content and low porosity of compost batches within IVC leading to anaerobic conditions
- Lack of monitoring or maintenance of bio-filter
- Ineffective monitoring of open windrows
- Weather monitoring station not being utilised to help reduce risk of odour emissions
- Lagoons and matured compost as potential odour sources

It is important to note that while a number potential non-compliances have been flagged up during this audit however, we have not breached on this occasion (other than for the repeated non-compliance of failing to maintain bio-filter. However, you are likely to incur breaches against permit conditions relations to your EMS and OMP should future investigations find that these issues are the cause of odour complaints. To support his, a new procedure for responding to odour complaints will be implemented.

Implementing a New Odour Complaint Procedure

An important objective of this audit was to highlight critical processes that have the potential to cause odours so that a more effective and valuable odour assessment could be conducted when responding to odour complaints.

As staff at Cowbridge Compost have become desensitised to the odour, there is little value in the operator conducting an odour assessment in the area. Instead, this will be done by an Environment Officer. It will be important for the operator to collect data from the weather station and to record all activities that have taken place in site diary, for the previous 2 hours. To support this, the operator will now be contacted by NRW's Incident Communications Centre simultaneously to the NRW Duty Officer. When an officer has completed an odour assessment at the source of the complaint, the officer will then attend site to discuss findings with the operator.

On-site Checklist;

1. Confirm results of odour assessment with operator
2. View and record data from Davis Vantage Weather Station for previous 2 hours.
3. View and record on-site activities for previous 2 hours
4. Conduct on-site inspection;
    a. Check IVC feedstock
    b. View IVC batch temperatures and moisture test results
    c. Assess odour at Bio-filter and check monitoring/maintenance regime
    d. Conduct odour assessment of OWC and check monitoring results
    e. Note windrow width
    f. Assess odour from leachate lagoons
    g. Assess odour of matured/PAS 100 compost.

The results of the odour assessment and on-site inspection should allow the operator to build a picture in terms of highlighting the key factors causing odour emissions. On-site activities can then be amended accordingly to reduce risk of odour emissions in future. Should the findings highlight that the operator is not following agreed procedures, this may result in a breach of the permit and this will be addressed via a Compliance Assessment Report (CAR) form.

As always, if you have any questions regarding any of the guidance provided in the audit CAR form, please do not hesitate to contact Adam Ward on 03000 653149 or via email: adam.ward@naturalresourceswales.gov.uk

Cyfoeth Naturiol Cymru Natural Resources Wales	**EPR Compliance Assessment Report**	Report ID: 100525/0236808

This form will report compliance with your permit as determined by an NRW officer

Site	Cowbridge Compost Ltd	Permit	100525
Operator/ Permit	Cowbridge Compost Ltd	Date	18/03/2015

Section 3- Enforcement Response **Only one of the boxes below should be ticked**

You must take immediate action to rectify any non-compliance and prevent repetition.
Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.	X
In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.	
We will now consider what enforcement action is appropriate and notify you, referencing this form.	

Section 4- Action(s)

Where non-compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	CCS Category	Action Required/Advised	Due Date
See Section 1 above			
C2	C3	No action specified	N/A

Section 5 - Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- advise on corrective actions verbally or in writing
- require you to take specific actions in writing
- issue a notice
- require you to review your procedures or management system
- change some of the conditions of your permit
- decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you.

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and or suspension or revocation of the permit.

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- ensure you comply with other legislative provisions which may apply.

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance which could have a **major** environmental effect	60
C2	A non-compliance which could have a **significant** environmental effect	31
C3	A non-compliance which could have a **minor** environmental effect	4
C4	A non-compliance which has **no** potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

Section 6 – General Information

Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with:

- offering/providing you with its literature/services relating to environmental matters
- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within twenty working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with the officer's line managers. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00–18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.