



**APPLICATION FOR AN ENVIRONMENTAL PERMIT
UNDER THE ENVIRONMENTAL PERMITTING
(ENGLAND AND WALES) REGULATIONS 2016
(AS AMENDED)**

**APPLICATION REF: PAN-016818
END OF WASTE JUSTIFICATION (ADDENDUM)**



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ACRONYMS / TERMS USED IN THIS REPORT

BSI	British Standards Institution
DM	Dry Matter
EA	Environment Agency
ECL	Environmental Compliance Limited
EMS	Environmental Management System
EoW	End of Waste
EP	Environmental Permit
EWC	European Waste Catalogue
LoW	List of Wastes
NRW	Natural Resources Wales
PAS	Publicly Available Specification
Platts	Platts Agriculture Limited
PTE	Potentially Toxic Elements
rWFD	Retained Waste Framework Directive
SoC	Statement of Case
SR	Standard Rules
The Facility	Platts Agriculture Wood Waste Processing Facility
WRAP	Waste & Resources Action Programme
WWR	Wood Waste Review Document

1. INTRODUCTION

1.1. Background

- 1.1.1. Environmental Compliance Limited (“ECL”) has been commissioned by Platts Agriculture Limited (“Platts”) to demonstrate End of Waste (“EoW”) classification for the processed manufacturing wood waste as part of the Environmental Permit (“EP”) application (Application Reference PAN-016818) to undertake a bespoke waste operation at their wood waste processing site, hereafter referred to as “the Facility”, located on Miners Park, Llay Industrial Estate, Llay, Wrexham LL12 0PJ.
- 1.1.2. Platts is proposing to accept and process 60,000 tonnes per annum of non-hazardous manufacturing wood waste (under waste code 03 01 05) at the Facility. The maximum daily receipt proposed is 300 tonnes to account for the varying cycles of trailer changeovers at the wide range of collection sites.
- 1.1.3. As part of permit application determination, Natural Resources Wales (“NRW”) served a Schedule 5 Notice requiring further information from Platts.

1.2. Schedule 5 Notice

- 1.2.1. The Schedule 5 Notice dated 19th July 2022 stated:

“Action: Provide further information to demonstrate that the processed wood waste meets ‘end of waste’. This must be done via an individual assessment on a case-by-case basis produced in accordance with Article 6 of the revised Waste Framework Directive, including procedures you will have in place to ensure that this is carried out for all waste treated on site.”

- 1.2.2. An EoW justification document was provided as part of the Schedule 5 Notice response. Prior to any formal review response by NRW, an Appeal was lodged by Platts for non-determination of the permit application.

1.3. Non-Determination Appeal Documentation

- 1.3.1. As part of the Appeal process, NRW have provided documents that deal with their review of the submitted EoW justification. NRW have not accepted the processed material to be considered as EoW, despite the extensive analysis results illustrating the very low level of contamination of the materials received and passed on.
- 1.3.2. There are various points made in NRW’s Statement of Case¹ (“SoC”) for the Appeal which are used to underpin their argument that the EoW justification has not been made. The principal points are summarised below:
- Distinction between untreated and treated wood, with only untreated being suitable for animal bedding (see for instance paragraph 3).
 - Risk of harm to the environment, human health, and animal health (see for instance paragraph 6).

¹ NRW Statement of Case - PEDW Ref: CAS-02313-Z1D6V4

- Case by case assessment and consequences (see for instance paragraph 7).
- Waste classification & mirror coded wastes (see for instance paragraphs 40 & 41).
- Acceptable recovery (see for instance paragraph 42).
- Self-assessment and use of a comparator (see for instance paragraph 45).
- Article 6(2) of the retained Waste Framework Directive ("rWFD") (see for instance paragraph 46).

- 1.3.3. This Addendum has been produced to provide further clarification and justification for the claim of EoW for the waste wood materials received by Platts and passed on after processing for use in the agricultural livestock sector.
- 1.3.4. In section 2, ECL clarifies its position in relation to the above points. In doing so, any legal submissions at the Appeal must take precedence.
- 1.3.5. In section 3, ECL sets out its detailed supplementary position on end of waste, culminating in a revised statement of conformity at Appendix I. Knowing that NRW were critical of ECL's original approach, this end of waste justification has been informed by the independent advice of a group of experts.

2. END OF WASTE CLARIFICATIONS

2.1. NRW SoC – The distinction between untreated and treated waste wood

- 2.1.1. NRW draw a distinction between clean, untreated waste wood, and treated waste wood and state their position mirrors that of the Environment Agency (“EA”) (see for instance paragraph 3). The SoC also makes reference to various other industry and sector guidance notes.
- 2.1.2. The Wood Waste Review² (“WWR”) document supplied in Section 10 of the original Permit Application highlighted the disparity and contradiction within the various regulatory and guidance documents illustrating the ambiguity and inappropriate interpretations given to wood wastes and their suggested uses.
- 2.1.3. The inconsistent, and sometimes contradictory, interpretation for wood wastes and their uses have perhaps been highlighted by NRW’s selective referencing of documents in the WWR.
- 2.1.4. **Clarification** - The regulators’ interpretation that clean or untreated wood is free of contamination and therefore suitable for use as animal bedding is not correct and is not in accordance with the rWFD, or the Precautionary Principle. Platts analysis of clean, untreated waste wood has found substance concentrations in excess of those found in some treated wood wastes. Therefore, Platts sample and analyse both clean and treated wood wastes, in accordance with the requirements of the regulations. Visual inspection alone is not sufficient to determine whether wood waste has been treated. NRW have indicated that they do not require WM3 assessment of 03 01 05 waste woods, despite acknowledging it is a legal requirement. It is worth noting that Platts EP application states that the source wood is always 03 01 05 category.

2.2. NRW SoC – Risk of harm to the environment, human health, and animal health

- 2.2.1. NRW have raised concern that no evidence has been provided to prove that the materials passed on by Platts do not pose a risk of harm to the environment, human health, or animal health (see for instance paragraph 6). Through analysis, it has been demonstrated that the materials are more than 99.9% wood, therefore, the potential for harm to be caused may be deemed negligible. Nevertheless, a veterinary expert (Dr Owen Atkinson), a risk assessment expert (Dr Ivan Vince), and a soil expert (Dr George Fisher) have all been asked for their expert opinion on the risks posed by the materials as informed by their respective expertise. All have confirmed there is negligible risk of harm.
- 2.2.2. **Clarification** – The substance concentrations within the waste woods received by Platts are not at a level that would cause harm to animals or humans if they came into contact with the processed materials.
- 2.2.3. **Clarification** – The substance concentrations within the processed materials are sufficiently low that if cows ate the material at any conceivable amount (cows do not eat wood) it would not cause them harm due to the substance concentrations within the wood.

² Platts Permit Application (28/01/2022), PLAT.01.02WWR Issue 1

2.2.4. **Clarification** – The substance concentrations are not at a level that will cause harm to the environment if spread onto land within the slurry generated by the cows.

2.2.5. **Clarification** – The substance concentrations are at a level whereby transfer of the cubicle conditioner dust particles from the udders of cows during milking can make at most a negligible contribution to substances of concern in the milk of the subject cows.

2.3. NRW SoC – Case by case assessment and consequences

2.3.1. Every supply site is subject to pre-acceptance checks to ensure that the material that will be received from the supply site is suitable for processing and passing on. Samples are analysed and the results reviewed prior to any material being accepted from a supplier. If deemed acceptable, through chemical analysis, then supplies are received with on-going sampling and analysis undertaken. Results are stored and checked against individual supply sites and therefore on a case-by-case basis.

2.3.2. Outlier results are followed up with investigation and discussion with the relevant supply site to ascertain a cause. If a cause is identified, remedial measures are implemented. If no cause found, then more frequent sampling is implemented to ensure the outlier result was a 'one-off'.

2.3.3. The results of all suppliers are also collated into a library of results to track any upward trend in any particular substance concentration.

2.3.4. **Clarification** – The EoW was undertaken on a case by case basis referring specifically to individual supplier sample results and comparison against PAS111 protocol, material applied to land (maximum and minimum), straw (where same substances had been analysed), and against the clean comparator (virgin shavings and sawdust) generated as being a suitable alternative as legally allowed to be utilised for animal bedding (albeit still considered as a waste material by the regulators). In paragraph 7 of the SoC, for instance, NRW point out that a case-by-case assessment is necessary.

2.3.5. **Clarification** – It is acknowledged that median figures were used in Platts' original submission. This is recognised now to have been an incorrect approach, the key data being mean concentrations, ignoring short-term fluctuations.

2.3.6. **Clarification** – The use of the straw comparator document was not considered appropriate for the following reasons:

- the comparator document was written and issued based on only 10 samples of three different 'straw' species.
- straw is grown in one 'season', effectively less than one year, whereas trees grow over decades. Additionally, the cell structures of 'straws' will be significantly different to trees, and the various species of trees, which impacts on the uptake of substances from the soils in which they grow.
- the document cited various aspects of the work that caused limitations to the value of the material presented.
- there were no laboratory analysis records provided with the document to understand what analysis exactly had been carried out and how. This limits the ability to compare and draw conclusions.
- analysis results identified microbiological contamination therefore, questioning

whether the straw materials were appropriate for use as bedding.

2.3.7. **Clarification** – The NRW SoC makes further reference to the straw comparator, in particular comparing how ‘significantly’ higher some of the treated waste wood results were to the straw results. Further review of the straw comparator identified results for the straw that are magnitudes higher than anything obtained in the wood waste results. For example, the highest potassium (K) result is shown as 18,300mg/kg, which equates to 1.83%. At this concentration, the result would require further investigation in a WM3 assessment. Although it would not end up as a hazardous classification, the straw may display hazardous properties for skin irritancy and potentially water reactivity with the possibility of harmful gases being released. The straw samples were also tested for pesticides and herbicides, and it is known that cows will eat straw and lie on it, and yet the comparator document states the straw samples tested could be used as animal bedding despite that they may contain these potentially hazardous substances.

2.3.8. **Clarification** – In reference to NRW SoC Paragraph 6 above, based on the regulator’s own evidence, it can be confirmed that the materials passed on by Platts potentially pose a lesser risk of harm to the environment, human health, and animal health than the straw comparator.

2.4. NRW SoC – Waste classification & mirror coded wastes

2.4.1. NRW confirms the legal requirement to correctly classify wastes using WM3 guidance, and further confirms the legal requirement for assessments on mirror hazardous wastes (see for instance paragraphs 40 & 41). However, NRW also provide evidence that they do not require these legal duties to be undertaken for 03 01 05 waste wood materials. It is not clear why this is so. It is noted again that Platts EP application is for waste wood of classification 03 01 05 and that it is proposed that routine chemical analysis will be undertaken to assure safety and suitability for intended use.

2.4.2. **Clarification** – Platts undertake sampling and analysis for all individual supplier waste wood, both at pre-acceptance stage and as an ongoing basis to ensure materials received remain fit for purpose. This is in full compliance with the legal requirements to do so and goes beyond what others in the industry sector are doing, either within Wales or in England. These aspects are fundamental principles for EoW and also for compliance with the rWFD.

2.5. NRW SoC – Acceptable recovery

2.5.1. Paragraph 42 identifies that a waste material can be subject to only a singular recovery operation, or more where appropriate, and that it may cease to constitute waste when it has undergone a recovery or recycling operation, and when it complies with the “harmonised end of waste test”.

2.5.2. **Clarification** – The materials sourced by Platts come from a range of wood manufacturing activities such as basic sawmills and joineries to large manufacturing sites processing hundreds or thousands of square meters of board products. The nature of the machining processes will range from sawing, cutting, drilling, routing, planning, shaping, profiling, and sanding. These processes will generate dusts and particles of varying sizes, and also shavings (with associated dusts). Some of these waste streams will only require magnetic separation and screening before being baled, which is acceptable under the rWFD, and acknowledged in paragraph 42.

2.5.3. It is also acknowledged in Section C6 of the EoW guidance³ that the waste material can be so similar to the final waste-derived material in composition that minimal treatment or processing is required. With sample analysis results confirming that the mean concentrations of both the clean and ‘treated’ woods being below 0.1% (1000mg/kg) total concentrations for all substances analysed (based on a wide analysis suite of substances likely to potentially be present), it is argued that the materials are of very similar composition.

2.6. NRW SoC – Self assessment and the use of a comparator

2.6.1. The material has been compared to the straw comparator as a non-waste material (see paragraph 45). It is known that straw can be chopped to provide a similar use purpose as the processed material supplied by Platts. As identified in Section 2.3.7. above, the processed materials have significantly less contaminative substances in them than the straw samples in the comparator. Based on the comparison, it is evident that the materials passed on by Platts display less risk of causing environmental harm, harm to human health and harm to animals. From this perspective, they can be deemed to meet Article 6(1)(d).

2.7. NRW SoC – Article 6(2) of the retained Waste Framework Directive (“rWFD”)

2.7.1. NRW reference Article 6(2) of the WFD stating it “sets out additional criteria which may be applicable” (see paragraph 46). What Article 6(2) actually states is “The Commission shall monitor the development of national end-of-waste criteria in Member States and assess the need to develop Union-wide criteria on this basis. To that end, and where appropriate, the Commission shall adopt implementing acts in order to establish detailed criteria on the uniform application of the conditions laid down in paragraph 1 to certain types of waste”. It then lists, (a) to (e), what would be included in the detailed criteria to ensure a high level of protection of the environment and human health and to facilitate the prudent and rational utilization of natural resources.

2.7.2. There are no detailed criteria that exist for waste wood, and neither are there any product or quality standards for animal bedding materials. Therefore, reference has been made to the End-of-Waste Criteria, Final Report (EUR 23990 EN – 2009)⁴ produced by the European Commission, Joint Research Council and Institute for Prospective Technological Studies, to ascertain the key relevant aspects in the absence of existing detailed criteria and specific product or quality standards, and in relation to points (a) to (e) of Article 6(2).

³ Available online at: <https://www.gov.uk/government/publications/get-an-opinion-from-the-definition-of-waste-service/guidance-for-the-end-of-waste-request-form> Accessed 25th May 2023

⁴ Available online at: https://susproc.jrc.ec.europa.eu/susproc_home Accessed 9th June 2023

- 2.7.3. **Clarification** – (a) the waste woods received by Platts are a permissible waste input material for a recovery operation. The regulators have issued bespoke permits, Standard Rules (“SR”) permits, and granted exemptions for other such activities.
- 2.7.4. **Clarification** – (b) the treatment processes and techniques are allowed, those undertaken by Platts are listed on SR permits and bespoke permits issued by the regulators.
- 2.7.5. **Clarification** – (c) there are no quality criteria or product standards applicable. However, Platts have set their own standard based around the PAS111 ‘protocol’ and minimal substance concentration content from source selected supply sites and confirmed through extensive sampling and analysis.
- 2.7.6. **Clarification** – (d) Platts have an environmental management system (“EMS”) in place which requires continual assessment of supply materials against their own standard to ensure that the materials passed on are fit for purpose. End of waste guidance and the End-of-Waste Criteria Final Report recognize that the quality of the source waste can be an important aspect for setting end of waste criteria and achieving the necessary quality status such that end of waste can be achieved. Points (a) and (c) above refer to the source selection. The selection process involves a technical assessment of the source materials to ensure that they are suitable for processing and the ultimate use.
- 2.7.7. **Clarification** – Platts have developed a statement of conformity that will be supplied with each load of materials passed on. The statement was originally based around the product quality standard derived from the PAS111 ‘protocol’ but has now been further informed by wider research, as detailed in Section 3 below.
- 2.7.8. **Clarification** – The sampling and analysis of the waste wood received has provided evidence that the materials passed on do not pose a risk of harm to the environment, human health, or animal health. In addition, the waste wood is put through two further utilization steps, (as cubicle conditioner (animal bedding), and as a component of the slurry that is then spread to land) improving its life cycle, without harm.

3. END OF WASTE – ANALYSIS RESULTS CROSS REFERENCES

3.1. Rationale

- 3.1.1. To achieve EoW, it is a requirement to prove that the materials processed do not risk harm to the environment, human health, and animal health. The analysis results have shown that the substance concentrations are so low that they do not pose a risk to human health or animal health through contact with the materials. Indeed, the materials are of no greater risk than straw, which can and is used by farmers for the same purpose.
- 3.1.2. Whilst some of the materials passed on are fine dust composition, there are recommended applications rates and methods provided by Platts. The suggested quantities and method of use are such that there should not be excessive amounts of dust in the atmosphere that may present risk of harm to the animals or to farm employees. In any case, these aspects would be covered by Health and Safety regulations, similar to alternative materials such as chopped straw or lime dust. The same situation applies to any business passing on materials composed of fine dusts, and then which are handled and utilised by others.
- 3.1.3. The regulator has raised concern about the food chain and how the materials may impact on the food chain with the potential harm that may cause. Cows do not eat wood, therefore a potential effect on the food chain through cows ingesting the conditioner materials is highly unlikely. The conditioner material is placed at the rear of the cubicle to soak up urine and faeces produced by the cow and keep the cubicle as dry and comfortable as possible. There is a potential for the wood dust to be transferred to cows' udders but it is considered virtually all of the contaminants would remain bound to the dust particles and be filtered out. Any small fraction passed on in the milk would make a negligible contribution to substances of concern.
- 3.1.4. The alternative route for the conditioner material to end up in the food chain is through the slurry spreading activities. The materials will be scraped from the cubicles and transferred through the slurry channels in the cow sheds into the slurry storage tanks. The slurry is then spread to land as allowed by the regulations. A similar route to land application will also be relevant to the use of straw as a bedding material, although this is less likely to be stored in a liquid slurry system, and more likely to be stored as solid farmyard manure, before being applied to land.
- 3.1.5. The concern for spreading of the materials would relate to potential impact on the food chain through crop growing and potential impact on the environment through the substances present in the materials.
- 3.1.6. As there are no relevant comparators, specifications for animal bedding, or specified criteria for such materials, cross-reference assessment against other materials that can be spread to land has been undertaken. These are detailed below.
- 3.1.7. This is to ascertain whether the substance concentrations in the materials passed on by Platts are greater than those contained in other materials that can legally be spread to land, and to assist with generating an acceptable and appropriate Statement of Conformity. The cross referencing has been informed by expert opinion from Dr Fisher.

3.2. Typical Sewage Sludge

- 3.2.1. Sewage sludge is allowed to be applied to land by the regulations, and supported by detailed guidance on rates of application and restrictions on when and where spreading can take place. Research⁵ has identified some ‘typical’ substance concentrations, relating to the dry matter (“DM”) content of sewage sludges. These are detailed in Table 1 below.

Table 1 – Typical Sewage Sludge (DM)

Substance	mg/kg
Arsenic	6
Cadmium	3.4
Chromium	163
Copper	565
Lead	221
Mercury	2.3
Nickel	59
Zinc	802

- 3.2.2. Comparison with the mean concentration levels for both the ‘clean’ and ‘treated’ sample results identified that the only exceedance of any of the substances detailed in Table 1 above was for arsenic (8 out of 1,500+ results). Unsurprisingly, the materials passed on by Platts and that may end up applied to land within the slurry spreading present less risk of harm to the environment, and food chain, than typical sewage sludge, even before considering the dilution which will inevitably occur with the other slurry components (urine and cow faeces).
- 3.2.3. It should be noted that the materials are not produced as a type of fertiliser.

3.3. Organic Fertilisers

- 3.3.1. Organic fertilisers used for the purpose of conferring benefit to the land on which they are spread are controlled by regulatory limits⁶ for certain substances, and in relation to DM content. These are detailed in Table 2 below.

Table 2 – Regulatory Limits for Organic Fertilisers (DM)

Substance	mg/kg
Arsenic	40
Cadmium	3.0
Chromium	2.0
Copper	300
Lead	120
Mercury	1.0

⁵ (Nicholson, F.A., *et al.*, 2003) An inventory of heavy metals inputs to agricultural soils in England and Wales, [Elsevier, Science of The Total Environment, Vol 311, Issues 1-3, July 2003, (P. 205-219)], available online at: <https://www.sciencedirect.com/science/article/pii/S0048969703001396> Accessed on 9th June 2023

⁶ Regulation (EU) 2019/1009 (5th June 2019) ‘market of EU fertilising products.’. Available online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1009&qid=1687525405701> Accessed on 12th June 2023

Table 2 – Regulatory Limits for Organic Fertilisers (DM) (Cont.)

Substance	mg/kg
Nickel	50
Zinc	40

- 3.3.2. It is noted there are some differences from the typical sewage sludge figures against the regulatory limits for fertilisers, perhaps most notably in respect of chromium which is order of magnitudes lower than typical sewage sludge, greater than 98% lower. Zinc is also significantly lower, whilst the arsenic regulatory limit is higher.
- 3.3.3. Mean concentration levels for both the ‘clean’ and ‘treated’ sample results were all below the regulatory limits with the exception of zinc and chromium. For zinc, there were only 16 exceedances from over 1,500 results, despite the limit being 20 times lower than that of typical sewage sludge zinc concentrations.
- 3.3.4. All samples exceeded the chromium limit. However, the rationale behind the regulatory limit has not been identified.
- 3.3.5. Further research⁷ has identified that the chromium concentration of typical cattle slurry which does not contain Platts products is 6mg/kg which is 3 times higher than the regulatory limit for organic fertilisers.
- 3.3.6. However, the materials passed on are not produced as a type of organic fertiliser but the substance concentrations within them are, in the main, lower than those allowed in organic fertilisers, even before dilution with the other components of slurry.

3.4. Manufactured Inorganic Fertiliser

- 3.4.1. Inorganic fertilisers manufactured for the purpose of conferring benefit to the land on which they are spread are controlled by regulatory limits (Footnote 6 above) for certain substances, and in relation to DM content. These are detailed in Table 3 below.

Table 3 – Regulatory Limits for Inorganic Fertilisers (DM)

Substance	mg/kg
Arsenic	40
Cadmium	3.0
Chromium	2.0
Copper	600
Lead	120
Mercury	1.0
Nickel	100
Zinc	1,500

⁷ (Nicholson, F.A., *et al*, October 1999) Heavy metal contents of livestock feeds and animal manures in England and Wales, [Elsevier, Bioresource Technology, Vol 70, Issue 1, October 1999 (P. 23-31)]. Available online at: <https://www.sciencedirect.com/science/article/abs/pii/S0960852499000176> Accessed on 12th June 2023.

- 3.4.2. The limits associated with inorganic fertilisers are different to those for organic fertilisers. Both the copper and nickel limits are double than for organic fertilisers, and the zinc is over 37 times higher.
- 3.4.3. Comparison against both the 'clean' and 'treated' sample results identifies that, with the exception of chromium, all substance mean concentrations are below limits. Albeit the materials passed on are not being produced as a fertiliser, and they will be diluted by the other components of slurry.

3.5. WRAP Quality Protocol Compost

- 3.5.1. NRW have made reference to the Waste and Resources Action Programme ("WRAP") Quality Protocol document for Compost. The document has been produced to support the production of quality compost from source-segregated biodegradable waste. The Protocol is supported by the British Standards Institute ("BSI") Publicly Available Specification ("PAS") 100:2018 document. This provides the specific criteria that must be achieved to claim EoW for composts produced from source selected biodegradable wastes.
- 3.5.2. Appendix B of the Protocol describes the acceptable input materials at section B2, describing them to be "biodegradable materials that have been separately collected from non-biodegradables and which have not been mixed, combined or contaminated with other potentially polluting wastes, products or materials: and be described by a 6-digit waste code in Table B1, meeting any additional requirements specified".
- 3.5.3. Referring to Table B1, it can be seen in Section 1 of the table a reference to plant tissue waste with the associated waste code of 02 01 03, and which lists 'straw' as an acceptable input material. It has been identified through review of the straw comparator document that straw can contain 'significant' concentrations of potassium and phosphorus (often associated with manufactured fertilisers), and that the straws were analysed for pesticide and herbicide substances, which could conceivably be within the straw materials. All of these are known to be polluting substances, and therefore, the Protocol has introduced a contradiction in the first section of the 'acceptable inputs' table with its B2 definition, detailed above.
- 3.5.4. Further, in section 7 of Table B1 there is reference to 'sawdust, shavings, cuttings, wood or particle board other than those wastes in EWC 03 01 04' (European Waste Catalogue), then providing the EWC 03 01 05. [The correct version should read – 03 01 05 sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04]. Some further description is provided in the table row below which states "Not allowed if contains veneers, other coatings or preserving substances". EWC code 03 01 04 is 'sawdust, shavings, cuttings, wood, particle board and veneer containing dangerous substances'. Untreated wood only. [The up to date and correct version should read – 03 01 04* sawdust, shavings, cuttings, wood, particle board and veneer containing hazardous substances]. The Protocol refers to outdated regulations using terms such as the word 'dangerous' which are no longer valid or being used by the waste industry. The words 'untreated wood only' have no meaning either, they do not appear anywhere in the EWC or in the List of Wastes ("LoW").

- 3.5.5. A fundamental aspect of this protocol relates to the need for proper assessment of the waste streams to determine whether they do contain hazardous substances before being received and processed into compost. However, as the regulators have indicated they will not require the proper assessment and classification of such waste streams, it will be impossible for those receiving the materials to know whether they are fit for processing and comply with the waste input criteria.
- 3.5.6. It is noted that section 13 of Table B1 reference is made to WM2 Technical Guidance for the classification of hazardous wastes. WM2 is outdated, Technical Guidance WM3 (1st Edition v1.2.GB) (October 2021) being the current version.
- 3.5.7. A further aspect, as detailed in section 2.1.4. above, is that all wood or wood waste will contain contaminative substances, the term ‘Potentially Toxic Elements’ (“PTE”) being used in the Protocol document. They appear within wood as heavy metals that have been absorbed from the soil in which the tree grew. This very fact provides another contradiction within the Protocol for acceptable input materials not containing polluting substances, questioning its validity as suitable for use in determining EoW.
- 3.6. PAS 100:2018**
- 3.6.1. The PAS 100 document supports the Compost Quality Protocol providing the specified criteria relevant to achieve EoW status for compost derived from waste input materials.
- 3.6.2. Section 5.1.5 of PAS 100 states that only untreated waste wood shall be allowed as an input material, however, at Section 5.1.8, which deals with input material deliveries, there is no mention of a requirement to check if wood wastes have undergone a WM3 assessment to determine whether they contain any treatments. Visual inspection would not necessarily identify this.
- 3.6.3. It is worth noting that the Protocol lists 4 different types of mirror coded wastes that can be accepted as inputs for composting and nowhere in either the Protocol or PAS 100 is there any reference to requirements for WM3 assessing mirror coded wastes. All 4 of the acceptable waste streams would require chemical analysis to identify their composition and ultimate suitability for acceptance.
- 3.6.4. As with the Protocol, PAS 100 references outdated regulations and the outdated LoW.
- 3.6.5. Section 5.1.10 acknowledges there are frequent and varied physical contaminants within ‘source segregated’ waste streams accepted for composting. The ‘NOTE’ accompanying this section states *“Periodically, container loads of physical contaminants removed from numerous accepted input material deliveries, are sent to a disposal facility. The sources of the physical contaminants and reason for rejection do not have to be recorded for those container loads because the sources are many and the material is rejected because it consists of physical contaminants.”* This questions the level of controls on supposedly source segregated input materials, and especially for those input materials where chemical or other substance contamination may pose a risk of harm.

- 3.6.6. Table 2 of PAS 100 deals with minimum frequencies for compost sampling and testing, requiring validation testing 1 sample from each of 3 different batches of the compost grade. No time frame is provided for this. Post validation, the minimum requirement is 1 sample representative of a batch within every 5000m³ or 2,500 tonnes of the compost grade. Where the production rates are less than that in any 12 months, then 1 sample representative of 1 compost batch.
- 3.6.7. For context, Platts are proposing to receive 60,000 tonnes a year of waste wood for processing, and a composter producing just under 2,500 tonnes a year of compost, would take 24 years to reach 60,000 tonnes. In that time the composter would need to take (after validation testing) a total of 24 samples representative of only 1 compost batch a year to meet the minimum testing requirements and comply with PAS 100 in this regard. Since the beginning of the permit application process, and up to the time of writing, Platts has taken over 1,900 samples.
- 3.6.8. It is noted that section 8.1 refers to the need for screening to remove physical contaminants and Table 3 footnote (d) states that physical contaminants that are sharp are unacceptable in any application where compost is bagged or supplied for any use where it is handled without protective gloves. Coupled with the lack of proper waste assessment requirements, it is arguable that in fact the Protocol and the PAS 100 does not meet the necessary EoW requirements for preventing the risk of harm to the environment, human health, and animal health.
- 3.6.9. Without the proper assessments for mirror coded 03 01 05 wastes woods, it is an almost certainty that contaminated wood wastes find their way into compost processing and that potential contaminants could possibly be spread across the country and find their way into gardens used for the purpose of home grown produce, with the associated risks to the environment, human health, animal health, and potentially the food chain.
- 3.6.10. The BSI PAS 100 standard provides a list of parameters with associated upper limits in Table 3, in relation to minimum compost quality for general use. Rows 1 and 2 relating to assessment of pathogens is undertaken by Platts for materials used as animal bedding, and they have not received any results indicating any pathogen content for any sample, to date. In addition, there are 7 PTE's referenced with upper limits, these are detailed in Table 4 below.

Table 4 – PAS 100 PTE Upper Limits for general purpose compost

Substance	mg/kg
Cadmium	1.5
Chromium	100
Copper	200
Lead	200
Mercury	1.0
Nickel	50
Zinc	400

- 3.6.11. Comparison against both the 'clean' and 'treated' sample results identifies that all substance mean concentrations are below these upper limits. Albeit the materials passed on are not being produced as compost.

- 3.6.12. It is noted from the Compost Comparator⁸ document that of the 35 samples taken there were 3 exceedances of the upper limits detailed for general compost materials, which gives a failure rate of just over 8.5%. By way of contrast, of the 1,930 samples analysed by Platts to the time of writing, and judged against the same criteria for PTE's, the failure rate has been 1.03%

3.7. Overall Review

- 3.7.1. The sample results obtained from the Platts supplies have been compared against a range of different data sets developed for controlling certain materials used in day-to-day activities that have the potential to impact on the environmental, human health and animal health. The data sets have been derived by various organisations, usually with the contribution from the regulators, and some have regulatory status, some are for guidance purposes, and others as an industry overview. These data sets are summarised below in Table 5.

Table 5 – Data Sets Summary

Substance	PAS 111	Typical Sewage Sludge (DM)	Organic Fertiliser (DM)	Inorganic Fertiliser (DM)	PAS 100
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	-	6	40	40	-
Cadmium	1.5	3.4	3.0	3.0	1.5
Chromium	100	163	2.0	2.0	100
Copper	200	565	300	600	200
Lead	200	221	120	120	200
Mercury	1.0	2.3	1.0	1.0	1.0
Nickel	50	59	50	100	50
Zinc	400	802	40	1,500	400

- 3.7.2. As can be seen from Table 5, both PAS documents have the same upper limits for the heavy metals (PTE's), most of which are lower or the same as the other three data sets.
- 3.7.3. NRW have referenced PAS 100 as a quality protocol and as such Platts are assessing against a recognised standard.
- 3.7.4. PAS 100 allows 03 01 05 materials as an input material, irrespective of the inaccurate description and inappropriate references, and these are what Platts input materials are sourced from.
- 3.7.5. Additionally, PAS 100 is for compost materials destined for use in horticulture and agriculture with the compost being applied to land. Therefore, being directly related to the food chain and the environment.

⁸ EA Evidence, Material comparators for end-of-waste decisions, Materials applied to land: PAS 100 compost, Report – SC130040/R1, Version 2 (August 2016)

- 3.7.6. The only difference between those ‘complying’ with the PAS 100 and Platts, is that Platts sample and analyse their input materials to WM3 standards, as required by the law.

3.8. Requirement for a Statement of Conformity

- 3.8.1. The EoW protocols require a ‘statement of conformity’ for all material being passed on as a ‘product’ having achieved end of waste status based on the assessment parameters.
- 3.8.2. Previously, there have been two specific criteria that must be complied with for the processed material to be considered to have met the end of waste classification. These are:
- the total concentration of all substances present identified through analysis within a sample must be less than 0.1% (1000mg/kg).
 - the concentration of any individual substance identified through analysis within a sample must be less than 0.1% (1000mg/kg).
- 3.8.3. In addition to the specific criteria, Platts have been applying an internal target of the total concentration of all substances present identified through analysis of any sample should be less than 0.07% (700mg/kg), being the total maximum concentration identified for clean wood waste.
- 3.8.4. It is worth noting the total allowable PTE substance concentration in both PAS100 and PAS111 is 0.09525% (952.5mg/kg) only just below the total allowable substance concentration of all substances present identified through analysis in the material used by Platts.
- 3.8.5. Following additional risk assessments, using highly conservative assumptions, and taking into account the remote possibility of ingestion, it has been proposed by Dr Vince that “alert levels” are used which are in some cases below those hitherto deemed acceptable. These are detailed in Table 6 below.

Table 6 – Alert Levels

Substance	mg/kg
Arsenic	48
Cadmium	0.96
Chromium	120
Copper	180
Lead	190
Mercury	1.2
Nickel	50
Selenium	1.4
Zinc	430

- 3.8.6. The methodology and rationale behind the alert levels is likely to be different to those used for developing the PAS 100 / 111 limits, however, the individual substance concentrations are quite similar. The notable differences are that chromium, mercury and zinc are all slightly higher.
- 3.8.7. Platts understand the conservative nature of the methodology and rationale behind the alert level concentration data set but, as they have done throughout the permit application process, propose to go further and not increase any previous substance concentration

levels and instead adopt a 'hybrid' set of maximum concentration levels derived from both the alert levels proposed by Dr Vince and the limits contained in both PAS 100 and PAS 111.

3.8.8. The proposed hybrid maximum concentration levels are detailed in Table 7 below.

Table 7 – Hybrid Maximum Concentration Levels

Substance	mg/kg
Arsenic	48
Cadmium	0.96
Chromium	100
Copper	180
Lead	190
Mercury	1.0
Nickel	50
Selenium	1.4
Zinc	400

3.8.9. This hybrid set of maximum concentration levels is a more stringent conformity level of either PAS 100 or PAS 111. The Statement of Conformity Certificate that details the conformity levels is provided in Appendix I.

4. CONCLUSION

- 4.1. End of waste assessments have been undertaken on a 'case by case' basis for individual supply sites for the purpose of determining whether the material, after processing, is suitable to be supplied on to customers for use.
- 4.2. The regulator has not provided suitable comparator data or suggested suitable alternative substances for assessments to be undertaken. For information purposes only, comparison to PAS111, Straw and Materials Applied to Land have been included in the individual assessments. However, the comparator information relied on for the assessments relates to data gathered from sample analysis results of clean wood shavings and dust waste materials used for animal bedding.
- 4.3. The results have been assessed and used to generate a benchmark with which to compare the manufacturing wood waste received for processing. In addition, the WM3 waste guidance has been referenced to establish specific criteria for controlling the quality of material that will be passed on to ensure there will not be any impact on animal welfare, human health, or the environment from the use of the materials processed.
- 4.4. The maximum total substance concentration of 0.1% (1000mg/kg), along with an absolute maximum individual substance concentration of 0.1%, previously applied are considered conservative and provide more than sufficient protection against any potential impact on animal or human health, and the environment. Further consideration against PAS 100 & 111, both of which can accept 03 01 05 materials and end up for uses being applied to land, have total maximum PTE concentrations of 0.09525% (952.5mg/kg).
- 4.5. For additional safety assurance, a more stringent set of maximum substance concentration levels produced from a set of "alert levels" proposed from expert consultation following risk assessments, using highly conservative assumptions, are being implemented.
- 4.6. Source wood samples are taken and analysed as part of waste acceptance checks, sampling and analysis from individual supply sites is ongoing for the duration of the receipt of materials from sites, and end-product sampling and analysis has been introduced. Sample results that fail compliance are re-assessed with a second sample. Further compliance failure invokes a documented investigation with the outcome of either remedial measures by the supplier, with re-checks, or cessation of materials receipt from the supplier. These actions are all undertaken in line with the written environmental and quality procedures detailed within the EP application.
- 4.7. It is therefore considered, when taking into consideration the small quantities of material being used and the extremely low substance concentrations present, that the material can be deemed as 'end of waste' at the point at which it has been packaged after processing. The material has an established use, is considered to contribute to improving animal welfare, is a suitable alternative to traditional materials and has no greater risk or impact than those materials.
- 4.8. Furthermore, it is considered that the use of the material with the quality controls in place contributes to the circular economy, reduces the volume of materials that may have to be incinerated, and contribute to Welsh Government policy of making greater use of wood and therefore, contributes to the Well-being of Future Generations.

APPENDIX I

STATEMENT OF CONFORMITY

Document Ref: SOC.01

Version: Issue 2

Date: 29/06/2023



Statement of Conformity with End of Waste Criteria

1	Source Supply Reference: Process Material Identification:	
2	Processing Site	Address: Miners Rd, Llay Industrial Estate, Llay, Wrexham LL12 0PJ Telephone: 01978 854666 E-mail: sales@plattsagriculture.co.uk
3	Material Category	Bedding Conditioner
4	Material Specification	Wood dust
5	Quantity in Tonnes	
6	The producer applies a Quality Management System and the material meets the following substance concentration criteria: <ul style="list-style-type: none">• Arsenic less than 48mg/kg• Cadmium less than 0.96mg/kg• Chromium less than 100mg/kg• Copper less than 180mg/kg• Lead less than 190mg/kg• Mercury less than 1.0mg/kg• Nickel less than 50mg/kg• Selenium less than 1.4mg/kg• Zinc less than 400mg/kg	
7	Declaration – <i>"I certify that the above information is complete and correct to the my best knowledge."</i>	Name: Date: Signature: