Waste Classification Sampling Workbook

CIWM

Prepared by CIWM Built Environment Specialist Expert Group

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Waste Classification Sampling Workbook

A practical guide for planning, sampling and classifying excavated soil waste in England and Wales



Scope and exclusions

This workbook combines guidance, worked examples and templates to help users plan, sample, analyse and classify excavated soil waste before it is moved from site. It should be used as a step-by-step record of how the waste classification decision has been made and what evidence has been relied on.

The workbook follows the typical flow from the waste producer identifying that excavated material will leave site, through technical review and sampling, to laboratory analysis, WM3 waste classification, transport and confirmation that the receiving site can lawfully accept the waste.

How to use this workbook

This workbook covers	This workbook does not cover
Excavated soil or similar material that has become waste and is being removed from site.	Reuse of excavated material as non-waste under the CL:AIRE Definition of Waste Code of Practice.
Waste classification and assessment in England and Wales.	Waste classification procedures specific to Scotland or Northern Ireland.
Planning representative sampling for waste classification.	General contaminated land risk assessment, remediation design or materials management planning.
Identifying the parties involved in classification, sampling, analysis, transport and receipt of waste.	Final regulatory approval or confirmation that a specific facility can accept a waste.
Supporting WM3 assessment, hazardous or non-hazardous classification and EWC code allocation.	Replacement of competent technical judgement, legal advice or site-specific permit conditions.
Supporting duty of care checks before waste is transported or accepted by a receiving site.	WAC testing and acceptance at landfill as this is out of scope.

Workbook part	Purpose	Type	Who should complete or use it
Overview and Who is this for?	Explains the purpose, intended users and when the workbook should be applied.	Guidance	All users.
Role Summary	Defines the main roles and gives practical examples of who may perform each activity.	Guidance and reference	Waste producer, contractor, technical expert, carrier and waste receiver.
001 Preparation 002 Gather Information	Records the project, involved parties, site information, health and safety requirements and project objectives.	Template to complete	Waste producer, with support from the contractor or technical expert where needed.
003 Define Areas 004 Prepare to Assess Waste 005 Practical Instructions	Defines waste populations, sub-populations, variability, sampling scale and constituents to be tested.	Template to complete	Technical expert or waste classifier, in consultation with the waste producer.
006 Sampling Approaches and Techniques 007 Lab Engagement	Sets out the sampling approach, sampling points, equipment, sample details, packaging, preservation, transport and laboratory arrangements.	Template to complete	Sampler and laboratory, with review by the technical expert or waste classifier.
Waste Classification Report 008 Classify Waste	Summarises the evidence needed to support the WM3 assessment, hazardous property review and EWC code allocation.	Guidance and output requirement	Waste classifier or technical expert.
Waste carrier and waste receiver checks	Confirms duty of care checks, carrier registration, receiving site permit or exemption and acceptance documentation.	Checks to complete before movement	Waste producer, contractor, waste carrier and waste receiver.
Appendices	Provides supporting posters, reminders and visual guidance for communication and awareness.	Reference material	All users.

Document purpose

To provide a structured framework for gathering information, planning sampling, assessing waste and supporting accurate WM3 waste classification for excavated soils.

Scope

Excavated material that is being removed from site for disposal or recovery in England and Wales. This workbook does not cover reuse of material under the CL:AIRE Definition of Waste Code of Practice.

Intended users

Waste producers, contractors, sole traders, technical experts, waste classifiers, samplers, laboratories, waste carriers and waste receiving facilities.

Status

Draft for review

Owner

To be completed

Version/date

Version 0.1 / July 2026

Important note: WM3 waste classification determines whether a waste is hazardous or non-hazardous and supports allocation of the correct EWC code. Waste Acceptance Criteria testing is used for landfill acceptance and is not a substitute for WM3 classification.

Overview and Who is this for?

Overview

This workbook is a structured guide designed to assist with creating and managing a sampling plan for waste classification and assessment in England and Wales. Scotland and Northern Ireland have different procedures and guidance on waste classification. It includes sections on preparatory steps, involved parties such as technical experts and samplers, health and safety precautions, project objectives, and detailed technical goals like defining populations and variability.

WM3 (Guidance on Waste Classification and Assessment) (April 2014) is the UK's official technical guidance for classifying waste, produced by the Environment Agency and Natural Resources Wales, to help businesses and regulators accurately determine if waste is hazardous or non-hazardous, assigning the correct European Waste Catalogue (EWC) code for proper disposal or recycling. It involves assessing waste composition against hazardous properties (like toxicity, flammability, POPs) and selecting codes, ensuring compliance and duty of care for waste producers.

The workbook is relevant for when excavated waste is being removed from a site and taken for disposal or recovery. This workbook does not include excavated material suitable for reuse; reference should be made to the CL:AIRE Definition of Waste Code of Practice (DoWCoP) for reuse mechanisms.

The workbook outlines practical sampling methodologies, equipment requirements, sample handling procedures including packaging and transport, and documentation of sampling locations based on site plans, providing a comprehensive framework for systematic waste sampling and analysis.

Who is this for?

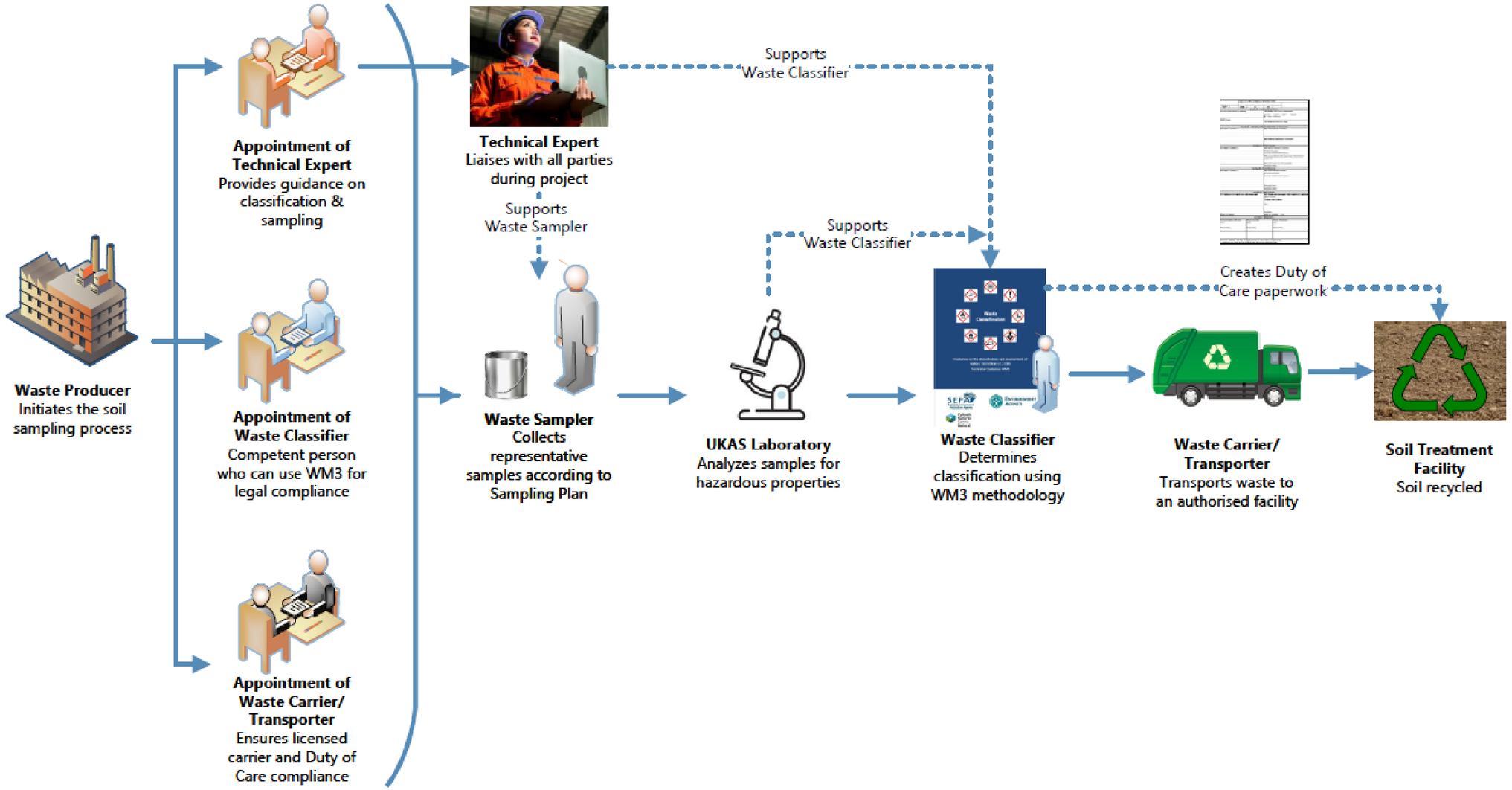
The objective of this workbook is to support those involved in arranging soil sampling on development sites for waste classification.

The workbook is intended to support:

- Any party who needs to classify excavated materials as waste prior to disposal or recovery.
- Developers working on site looking to understand the classification of waste for tendering purposes .
- Waste management organisations supporting small contractors to classify waste prior to accepting at one of their sites.
- Contractors or subcontractors working on site looking to understand the extent of contamination prior to starting work.
- Sole traders who are working locally on smaller projects.
- Receiving sites that require waste classification documentation.

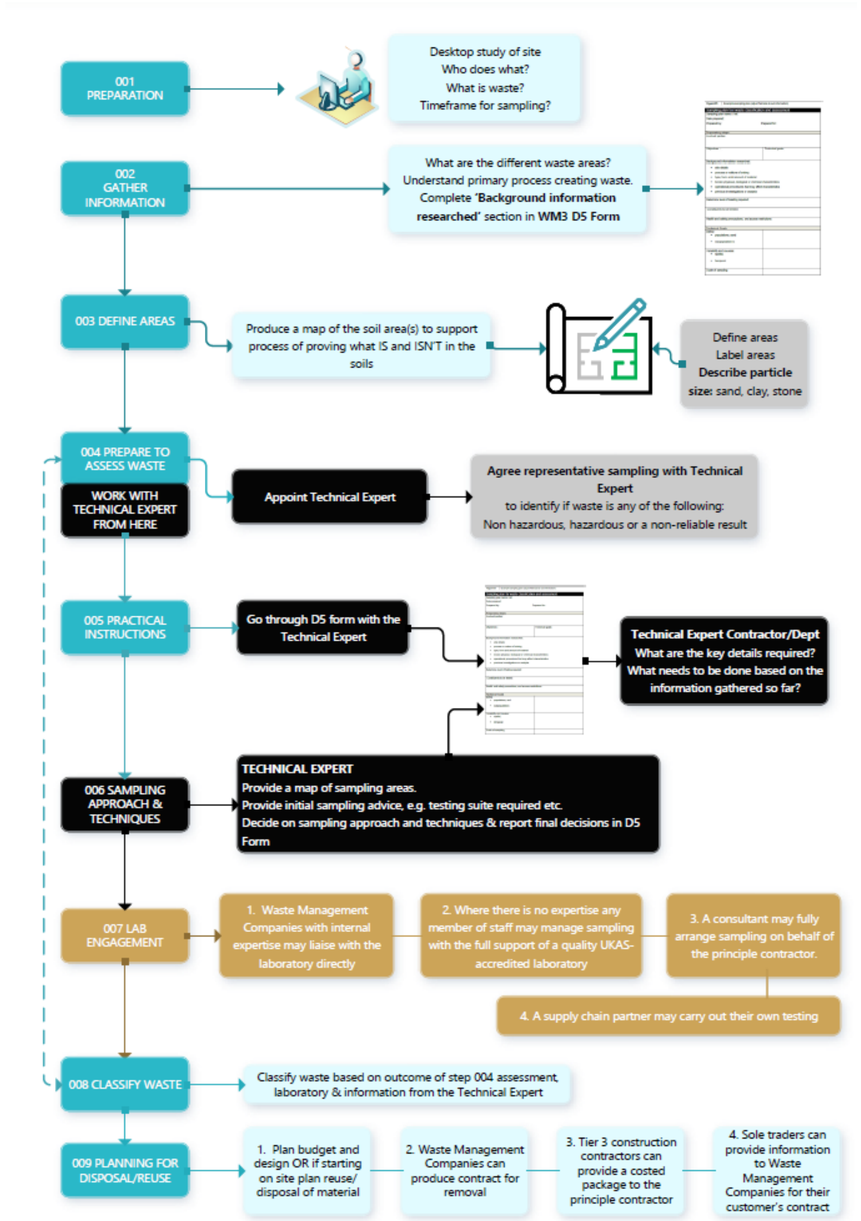
Note: references (00X in brackets) refer to the WM3 flowchart section

Waste Classification Process Flow and Role Summary


Waste Producer
Initiates the soil sampling process
Appointment of Technical Expert
Provides guidance on classification & sampling
Appointment of Waste Classifier
Competent person who can use WM3 for legal compliance
Appointment of Waste Carrier/ Transporter
Ensures licensed carrier and Duty of Care compliance
Technical Expert
Liaises with all parties during project
Supports Waste Classifier
Supports Waste Sampler
Waste Sampler
Collects representative samples according to Sampling Plan
Supports Waste Classifier
UKAS Laboratory
Analyzes samples for hazardous properties
Waste Classifier
Determines classification using WM3 methodology
Creates Duty of Care paperwork
Waste Carrier/ Transporter
Transports waste to an authorised facility
Soil Treatment Facility
Soil recycled

Role / activity	Definition	Example
Waste producer	A waste producer is any person or organisation whose activities generate waste, or anyone who modifies waste through pre-processing, mixing, or other operations that change its nature or composition. The waste producer is jointly liable with the waste carrier for duty of care.	SSS Groundworkers are digging channels in the ground for drainage, and the soil needs to be removed from the site.
Waste classifier	A waste classifier is a competent person, organisation or software-supported process under competent review that categorises waste based on its properties, origin and potential hazards. The classification determines whether the waste is hazardous or non-hazardous, supports allocation of the correct EWC code and informs the appropriate disposal, treatment, recovery or recycling route. Where WAC testing is required for landfill acceptance, the waste classifier may advise on the appropriate WAC test, but WAC testing is not a substitute for WM3 waste classification. To characterise the waste, WM3 requires representative waste samples to be analysed by UKAS-accredited laboratories or equivalent.	ABC Testing has been asked to review and assess the results of the soil testing to code and classify the waste as Hazardous or Non-Hazardous.
Appointment of waste classifier	This is a contractual appointment, which may be in-house or external. The appointed waste classifier must be competent to undertake the work and should be able to demonstrate suitable knowledge, experience and technical capability.	SSS Groundworks has appointed ABC Testing to code and classify the waste.
Waste sampler	The individual or organisation used to collect representative samples of waste for analysis, ensuring they are both physically and chemically accurate.	ABC Testing has asked its employee John to prepare a sampling plan, attend site and collect soil samples from the drainage run areas. He will then arrange transfer of the samples to the laboratory.
Laboratory	The organisation used to test the samples provided to determine waste classification and advise the sampler on the volume of soil material required. The laboratory used must be UKAS accredited for the analysis being undertaken.	ABC Testing has contracted XYZ Laboratory to test the soil samples.
Waste carrier / transporter	A waste carrier is any person or business that transports controlled waste as part of their business, for profit, or who regularly transports their own waste. The waste producer is jointly liable with the waste carrier for duty of care.	Smith's Haulage will move the soils from site to the agreed location. They have a waste carriers' licence and provide the appropriate waste transfer notes.
Appointment of waste transporter	This is the organisation that enters into a contract with the waste carrier. It could be the groundworker, waste broker or principal contractor. Duty of care checks should be completed on the carrier and the final destination of the waste.	SSS Groundworks has appointed Smith's Haulage.
Technical expert	An individual or organisation competent in navigating the WM3 process and supporting a site to remain compliant. This may also be the waste classifier or sampler, provided they are competent to perform those roles.	ABC Testing has reviewed the site information, previous investigation data and proposed excavation areas. They have advised SSS Groundworks on the sampling strategy, testing requirements and information needed to complete the WM3 waste classification process.
Waste disposal site / waste receiver	A waste receiver is a person or business that takes possession of waste from a waste carrier and is responsible for its disposal, treatment, recovery or recycling. They are the final link in the waste management chain and must ensure that waste is managed legally and responsibly. This will usually require an environmental permit, exemption or licence that authorises the specific type of waste to be accepted.	XYZ Waste Facility has confirmed that it is permitted to accept the proposed soil waste, subject to receipt and review of the waste classification report, EWC code, laboratory results and waste transfer documentation before the material is delivered to site.
Regulator	The regulator is the public body responsible for overseeing waste management compliance, including waste classification, duty of care, permitting, exemptions, carrier registration and enforcement. For this workbook, the relevant regulators are normally the Environment Agency in England and Natural Resources Wales in Wales; local authorities may also regulate certain duty of care matters.	If excavated soil is misclassified, moved without appropriate documentation, or taken to a facility that is not authorised to accept it, the Environment Agency or Natural Resources Wales may investigate and take enforcement action. A local authority may also investigate duty of care breaches such as failure to keep waste secure or transfer it to an authorised person.

WM3 Flowchart


001 PREPARATION
Desktop study of site
Who does what?
What is waste?
Timeframe for sampling?
002 GATHER INFORMATION
What are the different waste areas?
Understand primary process creating waste.
Complete 'Background information researched' section in WM3 D5 Form
003 DEFINE AREAS
Produce a map of the soil area(s) to support process of proving what IS and ISN'T in the soils
Define areas
Label areas
Describe particle size: sand, clay, stone
004 PREPARE TO ASSESS WASTE
WORK WITH TECHNICAL EXPERT FROM HERE
Appoint Technical Expert
Agree representative sampling with Technical Expert
to identify if waste is any of the following:
Non hazardous, hazardous or a non-reliable result
005 PRACTICAL INSTRUCTIONS
Go through D5 form with the Technical Expert
Technical Expert Contractor/Dept
What are the key details required?
What needs to be done based on the information gathered so far?
006 SAMPLING APPROACH & TECHNIQUES
TECHNICAL EXPERT
Provide a map of sampling areas.
Provide initial sampling advice, e.g. testing suite required etc.
Decide on sampling approach and techniques & report final decisions in D5 Form
007 LAB ENGAGEMENT
1. Waste Management Companies with internal expertise may liaise with the laboratory directly
2. Where there is no expertise any member of staff may manage sampling with the full support of a quality UKAS-accredited laboratory
3. A consultant may fully arrange sampling on behalf of the principle contractor.
4. A supply chain partner may carry out their own testing
008 CLASSIFY WASTE
Classify waste based on outcome of step 004 assessment, laboratory & information from the Technical Expert
009 PLANNING FOR DISPOSAL/REUSE
1. Plan budget and design OR if starting on site plan reuse/ disposal of material
2. Waste Management Companies can produce contract for removal
3. Tier 3 construction contractors can provide a costed package to the principle contractor
4. Sole traders can provide information to Waste Management Companies for their customer's contract

Demonstrating Competence

Before appointing any individual or organisation to undertake any of the roles above, checks should be completed to confirm that they understand the task and are competent to carry it out.

This could include reviewing their CV, professional qualifications, memberships and references from other organisations.

For laboratories carrying out testing and analysis, further guidance can be found on the UKAS website.

Although there are currently no mandatory training or competence requirements for waste carriers, requirements are expected from 2027. Key aspects of the future competence requirements include:

- Formal Qualifications: Applicants for a permit (transporter, controller, or both) will need to demonstrate competence, likely through government-approved schemes such as those run by the Chartered Institution of Wastes Management (CIWM) and the Waste Management Industry Training and Advisory Board (WAMITAB), or the Energy & Utility Skills (EU Skills) scheme.
- Modular Assessment: Competence will be assessed on a modular basis relevant to the specific activities (e.g., transport, classification, import/export).
- Nominated Person: A nominated person within the company will be responsible for demonstrating competence and ensuring training is cascaded to all relevant staff.
- Continuing Competence: Evidence of updated knowledge will be required at permit renewal (every 3 years) and may be audited.





Managing Stockpiles

Soil stockpiles on construction sites should be managed to minimise the risk of erosion, contamination and environmental impact. Stockpiles must be located away from watercourses and site traffic areas, on cleared ground free of vegetation and debris. Topsoil and subsoil should be segregated and stored in separate piles, ideally no higher than health and safety limits to avoid compaction and loss of soil structure.

Stockpiles should be managed to avoid mixing material types. Waste should be stored separately from materials that are suitable for reuse. Stockpile management is an ongoing activity and housekeeping checks are required. All site operatives must be aware of the requirements for managing waste stockpiles carefully.

Caution: hazardous waste mixing

Hazardous waste must not be mixed with non-hazardous waste, other hazardous waste streams, soils intended for reuse, or other materials to dilute or change its classification. Stockpiles and waste streams should be kept physically segregated, clearly labelled and managed so that the waste classification remains representative of the material being moved.

If mixing is suspected or has occurred, stop movement of the material and seek competent technical advice before sampling, classifying, transporting or sending the waste to a receiving site.

Representative Sampling

(006 Sampling Approaches and Techniques)

This means collecting samples that accurately reflect the overall characteristics of the soil being managed, disposed of or recovered. Representative sampling is essential for correct waste classification under UK guidance, such as WM3, and for compliance with the CL:AIRE Definition of Waste Code of Practice if the material is to be reused.

The purpose is to ensure that laboratory analysis and subsequent classification (hazardous or non-hazardous) represent the entire soil mass, not just isolated portions. This avoids misclassification, which could lead to legal breaches or environmental harm.

Waste Classification Report

(008 Classify Waste)

An interpretative report should be produced as an output from the waste classification process and made available to interested third parties or stakeholders on request. This report, often referred to as a Waste Classification Report, should include:

- Sampling Plan – including any supporting reports documents as required including the thought process/ justification for sampling locations and testing suites.
- Chemical composition of the waste – Laboratory analysis results.
- Hazardous substances in the waste e.g. Hazard class, category and statement code(s).
- Hazardous property assessment. Assign properties from HP1 to HP15 to the waste.
- The correct waste classification code (EWC) – this needs to be assigned i.e. 17 05 04 (non-hazardous) or 17 05 03 (hazardous).

001 Preparation and 002 Gather Information

WM3 Information gathering for Waste Classification

The table below is based on Figure D5 from WM3. It provides guidance on the workflow to be followed and is not intended to be used as the basis of reporting. This first part should be completed by the waste producer.

(001 Preparation)

Waste Producer

Sampling plan for Waste Classification and Assessment	
Sampling plan name/ ref:	
Date prepared:	
Prepared by:	
Prepared for:	

(002 Gather Information)

Preparatory steps

Involved Parties- Roles and Responsibilities	
Technical Expert	
Waste Producer	
Waste Classifier	
Waste Sampler	
Laboratory	
Waste Receiver	
Health and safety precautions	*Include project- and site-specific risks and associated documentation, such as site rules, risk assessments, inductions and PPE requirements. A specific risk assessment should be in place for taking samples.*
Access restrictions	
Background information researched	*Include information under the following headings in this section:* • *Site details* • *Process or nature of the arising* • *Type, form and amount of material* • *Known physical, biological or chemical characteristics* • *Operational procedures that may affect characteristics* • *Previous investigations or analysis*
Project objectives	This is the standard objective, *amend if not applicable*: To obtain sufficient information on the nature, composition and properties of the waste to determine whether it is hazardous, assign hazardous properties and inform the allocation of the appropriate waste code.

(003 Define Areas) / (004 Prepare to Assess Waste) /
(005 Practical Instructions)

Technical Expert

This section should be completed by the technical expert supporting the waste producer.

Technical Goals	
Define: • Populations, and • Sub populations	*The population is the total amount of waste that you want to obtain information on by sampling. It may be divided into sub-populations that need to be considered separately, for example if you have already excavated material and placed it into stockpiles for different areas of the site. You should identify:* • *Overall or sub-population* • *Whether it is a one-off or continuous waste stream* • *If the material is still in the ground or if it has been excavated and segregated* • *Whether the waste is mixed, such as concrete, bricks, tiles and ceramics, or segregated into constituent parts. Note: it is illegal to mix hazardous waste with any other waste stream* • *The volume(s)* How waste minimisation has been considered.
Variability and causes: • Spatial • Temporal	***Spatial:*** *Is the material heterogeneous?* *Has it arisen from physically different locations?* *Has contamination occurred in certain areas of the site?* *Is variability expected between samples taken from different sub-populations or strata?* *Is there separation in the waste e.g. solids separating out from liquids?* ***Temporal:*** *Was the material produced at the same time or at different times?* *Is the variability cyclic, driven or random?*
Scale of Sampling:	
Constituents to be tested:	*The regulations require that hazardous substances and persistent organic pollutants (POPs) are identified and recorded. In many instances it will be possible to reduce the number of constituents to be tested to a much smaller number of key constituents based on historical information, surveys, site investigations and previous analysis.* *This is the basic list for excavated waste, please amend based on the above information:* • *Heavy metals (As, Ba, Cd, Cu, Mo, Pb, Hg, Ni, Sb, Se, Zn)* • *Chromium III & VI* • *pH* • *Phenol index* • *Asbestos screen (+ identification and quantification if found)* • *TPH CWG & Chromatographs* • *Confirm: has TPH arisen from diesel or petrol?* • *BTEX* • *Speciated 16 PAHs (US EPA)* • *Persistent organic pollutants* • *All results corrected to dry weight terms* • *Confirm: moisture content correction type (i.e. wet or dry correction) and value specified* • *Full WAC leachate analysis (single step leaching test) – if waste is being sent to landfill or if inert classification is sought* *Additional requirements may include:* *Any other hazardous substances identified in the Site Investigation, Remediation Strategy or Remediation Statement – to be defined by the project and added to existing test suite.*

(006 Sampling Approaches and Techniques)

This section should be completed by the laboratory and the person undertaking the sampling, if different.

Practical Instructions and Sampling Methodology	
Name and organisation of sampler	
Other parties present during sampling (name and organisation)	
Statistical approach to be used	*See WM3 Appendix D Figure D2 and use the decision tree to decide. We usually use parametric method A to obtain a 95% certainty in the classification.*
Sampling approach and pattern	*Identify and justify the sampling approach and pattern to be used.* *Sampling Approach: There are two approaches to sampling:* *1. Probabilistic – has an equal chance of sampling any individual part of a waste and implies that the entire population is accessible for sampling.* *2. Judgemental – where part of the waste is excluded from sampling.* *Note: In most cases probabilistic sampling is applicable for excavated waste.* *Sampling pattern:* *There are 3 approaches for probabilistic sampling patterns:* *1. Simple random sampling – where the samples are taken at random from the population* *2. Stratified random sampling – Where the population is divided into sub-populations and a specified number of samples are taken randomly from each* *3. Systematic random sampling – where the samples are evenly spread across the population* *Note: In most cases stratified random sampling is applicable for excavated waste.*
Identify sampling place and points, site plans and sample locations	*Identify the sampling locations (as identified by the above approaches) on a plan of the site. Provide a reference to the plan or attach it to this document. Ensure that each location is identified using a unique reference.*
Sampling equipment needed	*Identify the sampling equipment that needs to be provided by the site, for example insulated hand digging tools or a mechanical excavator.*
Sampling equipment to be used	*Identify the equipment to be provided by the laboratory, for example sampling vessels, two 1-litre plastic tubs, amber jars and amber vials per sample.*
Sample details • Individual or composite • Number of samples/ increments • Size of samples/ increments	*Identify if individual or composite samples will be taken.* *Individual – material taken from a single location that is analysed as a single unit.* *Composite – a collection of 5 samples, each taken from a single location around the sampling point, that are combined to form a single unit for analysis.* *Note: In most cases composite sampling is applicable for excavated waste.* *Number of samples: see WM3 Appendix D, section 3.3, to calculate the number of samples required.* *Size of samples: Identify how much material must be collected for each sample e.g. 2.5kg per sample. This should be confirmed by the laboratory undertaking the analysis.*
Requirements for sample reduction	
Requirements for on-site determinations	
Sample ref. number methodology	
Anticipated restrictions or limitations that may impact on data reliability	*Identify any restrictions or limitations, these may include:* • *Insufficient sample preservation* • *Not collecting samples as required* • *Sampling area being inaccessible*

(007 Laboratory Engagement)

Sub Sampling	
Detail procedure used (if applicable)	
Packaging, preservation, storage and transport requirements	
Packaging: (type, size and material, considering risks such as adsorption, reaction and cleaning requirements)	*Containers/packaging to be confirmed by the laboratory.*
Preservation: (samples should be packed and transported in a way that preserves their condition at the time of sampling)	*Preservation requirements to be confirmed by the laboratory.*
Storage	*Storage requirements on site, during transport and at the laboratory should be confirmed by the laboratory.*
Transport method	
Transport company details Contact details Delivery date	*Transport method to be confirmed by the laboratory.*
Analytical laboratory	
Company details	
Contact name:	

Appendix 1 – Waste Characterisation Poster

What testing should I be doing?

(008 Classify Waste)

Waste characterisation is the process used to identify what is in the waste and how it might affect the environment. This information is important when waste is transported, treated, recovered or disposed of.

Testing:

- Carry out the WM3 hazardous properties assessment, also known as a solids test, characterisation test or hazardous waste test, using a UKAS-accredited laboratory.
- You only need WAC testing, Waste Acceptance Criteria testing, to help determine which landfill class your waste may be accepted at. The landfill operator makes the acceptance decision.

WM3 Classification: What is in the tea bag? – the solid waste.

Means you can work out the EWC Code



WAC data tells you what's in the water – what will come out of the waste when it's squeezed?

If your waste is not going to landfill, you do not need WAC testing.

Appendix 2 – Groundworker and Sole Trader Poster

WASTE CLASSIFICATION

WHY CLASSIFY WASTE?

QUICK GUIDE FOR GROUNDWORKERS

WHO DOES WHAT?

WASTE CLASSIFIER	GROUND WORKER	TECHNICAL EXPERT	SAMPLE	LABORATORY	CARRIER
Decides how waste is classified (In-house or External)	Produces, helps classify, and arranges removal	Advises on sampling and classification	Collects samples as per plan	Analyses samples	Transports waste to disposal sites

STEPS TO FOLLOW

BEFORE YOU START → **Check if waste will be generated** → **Know your role: sampling, moving or arranging moving**

SAMPLING WASTE

Follow the sampling plan → **Use correct equipment and methods** → **Record sample locations, methods and people involved**

ALWAYS USE PPE AND FOLLOW SAFETY RULES

SOLE TRADER

Waste classification responsibilities

If you create, move or arrange disposal of excavated soil, you have duty of care responsibilities.

PLAN BEFORE YOU DIG

Check if soil will become waste and whether sampling is needed.

GET COMPETENT ADVICE

Use a competent waste classifier or technical expert if you are unsure.

SAMPLE PROPERLY

Collect representative samples and use a UKAS accredited laboratory.

CLASSIFY THE WASTE

Use WM3 to decide hazardous or non-hazardous and assign the correct EWC code.

USE AUTHORISED CARRIERS AND SITES

Check carrier registration and that the receiving site can accept the waste.

KEEP RECORDS

Keep sampling plans, lab results, classification report and waste transfer notes.

CIWM

Thanks to the sub-group:
Taryn Clements
Alison Brough
Jonathan Atkinson
Ed Everall

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