EUROPEAN COMMISSION
JOINT RESEARCH CENTRE

Directorate B – Fair and Sustainable Economy
Circular Economy and Sustainable Industry (JRC.B.5)
European Bureau for Research on Industrial Transformation and Emissions (EU-BRITE)

Seville, 16 January 2026
JRC.B.5/EU-BRITE

KICK-OFF MEETING

FOR THE DRAWING UP OF THE

BEST AVAILABLE TECHNIQUES (BAT) REFERENCE DOCUMENT FOR LANDFILLS
(LAN BREF)

Hybrid meeting, 6 – 9 October 2025

MEETING REPORT

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LISTS OF ABBREVIATIONS

General acronyms

Acronym	Full name/meaning
BAT	Best Available Technique(s) (as defined in Article 3(10) of the IED)
BAT-AEL	BAT-associated emission level (as defined in Article 3(13) of the IED)
BAT-AEPL	BAT-associated environmental performance level (as defined in Article 3(13a) of the IED)
BATc	BAT conclusion(s)
BATIS	BAT information system
BP	Background paper
BREF	BAT reference document (as defined in Article 3(11) of the IED)
BREF Guidance	Commission Implementing Decision 2012/119/EU laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance
CBI	Confidential Business Information
D1	First draft
EC	European Commission
ECHA	European Chemicals Agency
EIEP	European Industrial Emissions Portal
EU	European Union
ET	Emerging technique. A novel technique for an industrial activity that, if commercially developed, could provide either a higher general level of protection of human health and the environment or at least the same level of protection of human health and the environment and higher cost savings than existing best available techniques (as defined in Article 3(14) of the IED).
ET-AEL	ET-associated emission level. The range of emission levels obtained under normal operating conditions using an emerging technique or a combination of emerging techniques, as described in BAT conclusions, expressed as an average over a given period of time, under specified reference conditions (as defined in Article 3(48) of the IED).
ET-AEPL	ET-associated environmental performance level. The range of environmental performance levels obtained under normal operating conditions using an emerging technique or a combination of emerging techniques as described in BAT conclusions (as defined in Article 3(49) of the IED)
EU-BRITE	European Bureau for Research on Industrial Transformation and Emissions (formerly EIPPCB)
IED	Directive 2010/75/EU, as amended by Directive (EU) 2024/1785 of the European Parliament and the European Council of 24 April 2024, on industrial and livestock rearing emissions (integrated pollution prevention and control)
INCITE	European Innovation Centre for Industrial Transformation and Emissions
KEI	Key environmental issue (for the drawing up of this BREF)
KoM	Kick-off Meeting
LAN BREF	Best Available Techniques (BAT) Reference Document for Landfills
LCP BREF	Best Available Techniques (BAT) Reference Document for Large Combustion Plants (2017)
LWD	Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste
MS	Member State (of the European Union)
MCPD	Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants
NGO	Non-governmental organisation
OTNOC	Other than normal operating conditions

Acronym	Full name/meaning
REACH Regulation	Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals, administered by ECHA
TWG	Technical Working Group
WAC	Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC
WWTP	Waste water treatment plant

Substances and parameters

Term used	Full name/meaning
ABFRs	Aromatic brominated flame retardants
As	Arsenic
Ba	Barium
BOD	Biochemical oxygen demand
BTEX	Benzene, toluene, ethylbenzene and xylene
Cd	Cadmium
CFCs	Chlorofluorocarbons
CN^-	Free cyanide
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Chemical oxygen demand
Cr	Chromium
Cu	Copper
HCFCs	Hydrochlorofluorocarbons
Hg	Mercury
HOI	Hydrocarbon oil index
H_2S	Hydrogen sulphide
H_2SO_4	Sulphuric acid
K_2SO_4	Potassium sulphate
Na_2SO_4	Sodium sulphate
Mo	Molybdenum
NH_3	Ammonia
NH_4	Ammonium
Ni	Nickel
NMVOC	Non-methane volatile organic compounds
N_2O	Nitrous oxide
NO_2^-	Nitrite
NO_3^-	Nitrate
NO_x	Nitrogen oxides
PAHs	Polycyclic aromatic hydrocarbons
PFAS	Per- and poly-fluoroalkyl substances
Pb	Lead
PM	Particulate matter.
PO_4^{3-}	Phosphate
Sb	Antimony
Se	Selenium
SO_2	Sulphur dioxide
SO_x	Sulphur oxide
SO_4^{2-}	Sulphate
TN	Total nitrogen
TOC	Total organic carbon
TP	Total phosphorus
TSS	Total suspended solids

Term used	Full name/meaning
VOC	Volatile organic compound (as defined in Article 3(45) of the IED)
Zn	Zinc

Delegations in the Kick-off Meeting

Acronym/code	Name
EU Member States	
AT	Austria
BE	Belgium
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IT	Italy
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
SE	Sweden
SI	Slovenia
SK	Slovakia
Other countries	
NO	Norway
Environmental non-governmental organisations	
EEB	European Environmental Bureau
ZWE	Zero Waste Europe
Industry associations	
CEFIC	European Chemical Industry Council
CEWEP	Confederation of European Waste-to-Energy Plants
ELA	European Landfill Association
ESWET	European Suppliers of Waste to Energy Technology
EURIMA	European insulation manufacturers association
Eurits	European Union for Responsible Incineration
EUROFER	European Steel Association
Euroheat & Power	The international network for district energy, promoting sustainable heating and cooling in Europe and beyond
EUROMETAUX	European Non-ferrous Metals Association
Euromines	European Association of Mining Industries, Metal Ores & Industrial Minerals
FEAD	European Federation of Waste Management and Environmental Services
FuelsEurope	European Fuel Manufacturers Association
HWE	Hazardous Waste Europe
IMA Europe	Industrial Minerals Association
MWE	Municipal Waste Europe

Acronym/code	Name
Other agencies	
ECHA	European Chemicals Agency
European Commission	
DG ENV	Directorate-General for Environment
EU-BRITE	Joint Research Centre of the European Commission – European Bureau for Research on Industrial Transformation and Emissions

1 INTRODUCTION

The Technical Working Group (TWG) for the drawing up of the Best Available Techniques (BAT) Reference Document for Landfills (LAN BREF) held its Kick-off Meeting (KoM), in a hybrid format (in Seville, Spain and online), from 6 to 9 October 2025.

A total of 171 participants, including 5 representatives of EU-BRITE, attended the meeting (86 in-person and 85 online), representing EU Member States and Norway, industry, environmental NGOs, ECHA and services of the European Commission (for further details, see Annex 1).

TWGs are set up to facilitate the exchange of information under Article 13(1) of the IED[1]. As of 21 November 2025, the TWG for the drawing up of the LAN BREF comprises 259 members, including 5 representatives from EU-BRITE. The group represents EU Member States, Norway, industry associations, environmental non-governmental organisations (NGOs), the European Commission, and the European Chemicals Agency (ECHA).

The TWG for the drawing up of the LAN BREF was activated on 22 November 2024 by EU-BRITE. In the following frontloading process, the nominated TWG members were invited via email dated 14 February 2025 to frontload the information exchange in order to gather information and views on the main issues for the drawing up of the LAN BREF. To facilitate the frontloading work and data management, EU-BRITE prepared a survey using the European Commission's EU Survey tool. In this LAN frontloading survey, the TWG could find initial proposals by EU-BRITE and requests for information related to these proposals, as well as an invitation to send bulk information on landfills.

In total, 35 stakeholder groups responded. EU-BRITE received a total of 33 filled-in surveys and five contributions from Malta (1) and the European Chemicals Agency (ECHA) (4). Here is a summary of the documents received and uploaded onto BATIS:

- 18 surveys and several supporting documents from Member States (BE, DE, NL, PL, PT, AT, HR, HU, FR, SE, SK, CZ, EE, IT, ES, FI, DK) and NO;
- 1 non-hazardous waste landfill permit from MT;
- 2 surveys and supporting documents from environmental NGOs (EEB and ZWE);
- 4 documents from ECHA;
- 13 surveys and supporting documents from industry associations (Euromines, Eurits, FEAD, ESWET, CEWEP, ELA, Eurometaux, MWE, EUROFER, Euroheat & Power, HWE, FuelsEurope, Cefic).

Based on these responses, EU-BRITE prepared a Background Paper (BP) to assist TWG members in their preparation for the KoM. The BP aimed to establish a common basis for the discussion and facilitated the discussion during the KoM. It summarised and assessed the views and information provided by the TWG through the frontloading exercise and presented EU-BRITE's proposals. The BP identified items for discussion (BP Section 2) and not for discussion at the KoM (BP Section 3). EU-BRITE uploaded the BP to BATIS on 17 July 2025.

The agenda of the KoM (Table 1) included presentations and discussions on, for example, scope, key environmental issues (KEIs) for emissions to air and to water, as well as for chemicals consumption, auxiliary materials used in landfill operations, recovery of residues/waste, and energy recovery, energy consumption, decarbonisation and greenhouse gas emissions, odour

[1] Directive 2010/75/EU, as amended by Directive (EU) 2024/1785 of the European Parliament and the European Council of 24 April 2024, on industrial and livestock rearing emissions

emissions and other items relevant for the drawing up of the LAN BREF. In response to the reactions and comments on the BP received by 15 September 2025, which were provided by the TWG members, it was decided to discuss at the KoM additional items that were originally proposed as not for discussion in the BP as well as new items proposed by TWG members. Those were: noise management, normal operating conditions and other than normal operating conditions (NOC/OTNOC), fire prevention, proposed structure of the LAN BREF, confidentiality issues, information and data collection - expression of BAT-AELs and BAT-AE(P)Ls and next steps (tentative timeline). During the KoM, the items production and use of recovered material/residues were additionally included for discussion.

Table 1: Agenda of the LAN TWG KoM

Item	BP Section(s)
Day 1: 6 October 2025	
Introduction to the meeting: welcome, meetings rules	—
Introductory presentation DG ENV – IED 2.0	—
Introductory presentation EU-BRITE - The Sevilla process	—
Introductory presentation EU-BRITE - Overview of the work - Structure of the meeting	—
Scope – Activities and classes of landfills	2.1.1
Scope - Landfill operations	2.1.2
Scope – Independently operated WWTP and combined treatment of waste water	2.1.3
Scope – Interface with other BREFs, the LWD, MCPD and WAC	2.1.4
Scope – Independently operated WWTP and combined treatment of waste water	3.1.3
Chemical frontloading outcome: ECHA´s assessment	2.2.7/2.2.3.12/ 2.2.5.17
Chemicals consumption (Chemicals consumption data and information collection + Chemicals possible substitution, recovery and/or reuse)	2.2.7.1/2.2.7.2
Day 2: 7 October 2025	
KEI - Emissions to water - Contextual information: waste water characteristics	2.2.5.1/ 2.2.5.2
KEI - Emissions to water - Metals and metalloids	2.2.5.3
KEI - Emissions to water - TOC + COD	2.2.5.4
KEI - Emissions to water - Total Nitrogen (TN) + total phosphorus (TP)	2.2.5.5/ 2.2.5.6
KEI - Emissions to water - Chlorides and fluorides	2.2.5.7
KEI - Emissions to water - Microplastics	2.2.5.11
KEI - Emissions to water – PFAS + Bisphenols + ABFRs + Heat stabilisers + Phthalates	2.2.5.12/2.2.5.13/ 2.2.5.14/2.2.5.15/ 2.2.5.16
KEI - Emissions to water – Halogenated organic compounds + Phenols + PAHs	2.2.5.8/2.2.5.9/ 2.2.5.10
KEI - Emissions to water – Other proposals from TWG	2.2.5.17
Water and leachate management	2.2.6
KEI - Auxiliary materials used in landfill operations	2.2.8.1
KEI - Recovery of residues/waste and energy recovery	2.2.8.2
KEI - Energy consumption	2.2.9

Item	BP Section(s)
Day 3: 8 October 2025	
KEI - Emissions to air - General + contextual information: landfill gas characteristics	2.2.3.1/2.2.3.2
KEI - Emissions to air - Methane	2.2.3.3
KEI - Emissions to air - Carbon dioxide	2.2.3.5
KEI – Decarbonisation and greenhouse gas emissions (Techniques related to the reduction of greenhouse gas emissions and on-site combustion plants)	2.2.10.1/2.2.10.2
KEI - Emissions to air - Ammonia	2.2.3.4
KEI - Emissions to air - Nitrous oxide + H_2S	2.2.3.6/2.2.3.8
KEI - Emissions to air - PM	2.2.3.7
KEI - Emissions to air - NO_X + SO_X	2.2.3.9
KEI - Emissions to air - CFCs and HCFCs and NMVOC	2.2.3.10/2.2.3.11
KEI - Emissions to air - Other proposals from TWG	2.2.3.12
KEI - Odour emission	2.2.4
New item: Noise management	*new*
Additional item: Normal operating conditions and other than normal operating conditions	*3.3*
New item: Fire prevention	*new*
Additional item: Proposed structure of the LAN BREF	*3.2*
Additional item: Confidentiality issues	*3.5*
Additional item: Information and data collection - Expression of BAT-AELs and BAT-AE(P)Ls	*3.4.3/3.4.4*
Additional item: Next steps (tentative timeline)	*3.1/3.6*
Day 4: 9 October 2025	
Introduction to BATIS	—
Summary of preliminary draft conclusions of the meeting	—
Feedback on preliminary draft conclusions of the meeting	—
Closure of the meeting	—

The Head of EU-BRITE chaired the KoM. EU-BRITE’s LAN BREF author team introduced each topic and led the technical discussions. All items were discussed in a similar manner. First, for each issue, a proposal was presented by EU-BRITE. TWG members then had the opportunity to discuss the proposal and reach a conclusion by consensus.

This document summarises the discussion at the KoM and presents all conclusions reached by the TWG. It does not list or repeat all interventions but instead provides a synthetic overview of the arguments put forward by TWG members in order to conclude on the proposals made by EU-BRITE.

The following sections first present EU-BRITE’s proposal, then a summary of the discussion, and finally the conclusions reached by the TWG. For transparency, all conclusions that were formally adopted by the TWG are shown in grey boxes. For the sake of brevity, the presentation of the EU-BRITE proposal is omitted where it is similar to the final conclusions, whether or not it was discussed at the KoM.

All presentations given at the KoM and the KoM conclusions are available to TWG members in BATIS.

2 INTRODUCTORY PRESENTATIONS

The Directorate-General for Environment of the European Commission (DG ENV) delivered a presentation outlining the legal context and framework, followed by key messages for the development of the LAN BREF. DG ENV introduced the IED, as the legal basis for the drawing up of the LAN BREF, as well as the existing legal framework for landfills, namely the LWD[2] and the WAC[3]. The presentation emphasised that, thanks to the amendment to Article 1 of the LWD, made in 2024 within the framework of the IED revision, the adoption of BAT conclusions on landfills is now required, considering technical developments since the LWD's adoption. The Directive amending the IED has deleted Article 1(2) of the LWD, which stated that landfills complying with the LWD were deemed compliant with the IED. Landfills now also need to comply with the future BAT conclusions. In relation to the LWD and WAC, DG ENV clarified that the LAN BREF / BAT conclusions cannot interpret EU legislation.

Following the presentation as well as at the end of the meeting, some TWG members requested clarification on how the future LAN BAT conclusions will interact with existing legislation, particularly the LWD, as well as the WAC and other relevant pieces of legislation. DG ENV confirmed to the TWG that further clarity will be brought to the TWG about this aspect. Some TWG members also expressed concerns about the potential impact of a future revision of the LWD.

EU-BRITE gave a general introduction to the *Sevilla process* for drawing up and reviewing BREFs. The presentation highlighted the approach to derive BAT, as well as BAT-associated emission levels (BAT-AELs), BAT-associated environmental performance levels (BAT-AEPLs) and benchmarks. It is a pragmatic and iterative process involving the whole TWG. In this process, EU-BRITE's responsibility is to make concrete proposals on BAT, BAT-AELs, BAT-AEPLs and benchmarks to the whole TWG based on the information collected, especially based on the data collected through questionnaires. The TWG is invited to comment on these proposals and to submit any evidence supporting alternative proposals. Decisions on BAT (including on BAT-AELs and BAT AEPLs and/or benchmarks) as well as ET (including ET-AELs and ET-AEPLs) are taken by consensus by the whole TWG at the Final Meeting. The work of the LAN TWG will follow the BREF Guidance for the exchange of information under the IED as stated in Commission Implementing Decision 2012/119/EU[4], which is currently being updated following the revision of the IED.

[2] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste
[3] Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC
[4] Commission Implementing Decision 2012/119/EU laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance

3 PRESENTATION OF THE CHEMICALS FRONTLOADING OUTCOME

During the chemicals frontloading process, TWG members were asked to provide information regarding the chemicals associated with landfill activities. ECHA presented its assessment of the information provided by the TWG, initially outlining the REACH and ECHA methodology, and then detailing the results according to chemicals used and chemicals emitted.

It was agreed that the outcome of the chemical frontloading phase should be considered discussing the following sections: for the chemicals used in landfill operations in the section ‘Chemicals consumption’ (Section 7.1.1), and for the chemicals emitted in the sections ‘Emissions to air’ (Section 6.2) and ‘Emissions to water’ (Section 6.3).

4 SCOPE OF THE LAN BREF

4.1 Activities and classes of landfills

In BP Section 2.1.1, EU-BRITE proposed the following:

- To cover in the LAN BREF activity 5.4 of Annex I to Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial and livestock rearing emissions:
  - 5.4 Landfills, as defined in Article 2(g) of Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25 000 tonnes, excluding landfills of inert waste.
- Not to cover in the LAN BREF activity 5.6 of Annex I to Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial and livestock rearing emissions:
  - 5.6 Underground storage of hazardous waste with a total capacity exceeding 50 tonnes.
- To cover in the LAN BREF hazardous waste and non-hazardous waste landfills.
- To collect information, data and techniques about landfill mining.

The discussion began with the TWG commenting on the different types of landfills according to various national circumstances and the waste deposited, as well as the applicability of BAT to all types of landfills. EU-BRITE responded to this concern by indicating that during the questionnaire design phase sufficient information should be gathered to differentiate between the various types of landfills and the applicability of BATc.

Some TWG members argued that it is necessary to first clarify the interface of the LAN BREF with other regulations (i.e. LWD and WAC) before discussing the scope. Additionally, some TWG members requested that all significant newly introduced terms should be defined to ensure a common understanding.

There was broad consensus within the TWG that the LAN BREF should cover activity 5.4 of Annex I to Directive 2010/75/EU (IED). Regarding the question of whether activity 5.6 of Annex I to the IED should be excluded from the scope, the relevance of these sites was discussed in detail. Based on data extracted from the EIEP, there were two underground storages of hazardous waste in the EU permitted under activity 5.6 of Annex I to the IED, both located in Greece, for the reporting year 2022[5]. Some Member States and industry associations requested a clarification of the differences between activities 5.4 and 5.6. DG ENV explained that activity 5.4 is directly linked to the definition of 'landfill' in Article 2(g) of the LWD, which includes underground waste disposal sites. In contrast, Activity 5.6 is associated with the definition of 'underground storage' in Article 2(f) of the LWD. DG ENV confirmed to the TWG that it would provide further clarity to the TWG on this issue. One Member State (DE) and relevant industry associations noted that there are four underground disposal sites in salt mines in Germany. These are classified under activity 5.4, as their primary focus is waste disposal. They should be included within the scope of the LAN BREF. One industry association raised questions about the classification of underground mines in hard rock. No other underground disposal sites or underground storage facilities were mentioned by TWG members. Based on the information available at the KoM, it was decided not to include activity 5.6 of Annex I to the IED in the LAN BREF, due to the limited number of facilities in only one Member State.

[5] DE and FI have informed the EU-BRITE team that the two installations of DE and the one installation of FI reported in the EIEP under activity 5.6 are incorrectly assigned.

There was broad consensus within the TWG to include hazardous waste and non-hazardous waste landfills in the LAN BREF.

Regarding the collection of information, data, and techniques on landfill mining, discussions focused on whether landfills fall under the scope of the IED at the time of landfill mining. There was also a discussion about the potentially misleading term ‘landfill mining’, since mining waste is not within the scope. DG ENV clarified that ‘landfill mining’ in the context of the LAN BREF refers to the extraction of materials from landfilled waste and not to waste from mining activities. Legally, as long as this activity is carried out in an installation covered by an IED permit, it could be considered a directly associated activity to the IED activities.

One Member State (FR) requested that future BAT conclusions do not apply to the outermost regions, as defined by Articles 349 and 355 of the TFEU, due to their specific geographic, climatic, social, and economic conditions. DG ENV clarified that the IED applies to all installations within its scope, but there is a derogation mechanism in Article 15(5) of the IED for disproportionately higher costs compared to the benefits, e.g. due to geographical location, which could address this issue.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- To cover in the LAN BREF activity 5.4 of Annex I to Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial and livestock rearing emissions:
  - 5.4 Landfills, as defined in Article 2(g) of Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25 000 tonnes, excluding landfills of inert waste.
- Not to cover in the LAN BREF activity 5.6 of Annex I to Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial and livestock rearing emissions:
  - 5.6 Underground storage of hazardous waste with a total capacity exceeding 50 tonnes.
- To cover in the LAN BREF hazardous waste and non-hazardous waste landfills.
- To collect information, data and techniques about recovery of waste in landfills under the scope of the LAN BREF.

4.2 Landfill operations

In BP Section 2.1.2, EU-BRITE proposed the following:

- To cover the following landfill operations/phases in the LAN BREF, with a view to identify BATs additional or complementary to LWD and WAC:
  - Waste characterisation and acceptance procedure, in particular for waste containing organic matter
  - On-site transport and handling of waste
  - On-site transport and handling of auxiliary materials
  - General management operations
  - Strategies for waste disposal
  - Leachate management
  - Landfill gas management
  - Surface and ground water management
  - End-of-life landfill cell capping
  - Closure phase
  - After-care phase
- To develop a separate section in the LAN BREF (see [BP] Section 3.2) for underground disposal of waste under point 5.4 of Annex I to the IED.

TWG members mainly focused their comments on waste characterisation and acceptance procedures as well as the after-care phase.

Some TWG members suggested that defining BAT for waste characterisation and acceptance procedures could be included in the LAN BREF scope. Others argued that this topic should not be part of the LAN BREF scope but should be addressed within the revisions of the LWD and WAC. Some TWG members called for clarification of the interface of the LAN BREF with other regulations (i.e. LWD and WAC).

Concerning waste characterisation and acceptance procedures, several TWG members highlighted that methane emissions, organic load in leachate and potential fires are linked to landfilling biodegradable waste. Therefore, they suggested that the LAN BREF might conclude that restricting biodegradable waste in landfills could be considered a BAT. Other members argued that setting restrictions like banning biodegradable waste from landfills is not within the LAN BREF's scope. Instead, the LAN BREF should focus on BAT regarding the resulting emissions.

EU-BRITE noted that currently the goal is to collect data, such as waste characterisation and acceptance procedures, to determine the existing types of landfills and associated specific emissions linked to input materials, with BAT decisions to follow later.

Several TWG members emphasised that the design and construction phase of landfills is crucial to minimising emissions into soil, groundwater and air during the disposal and after-care phases.

Regarding waste disposal strategies, a Member State suggested adding 'Stability of Landfills' to prevent system damage potentially causing uncontrolled leachate or gas emissions. An industry representative requested clarification as to whether 'management' includes monitoring.

The after-care phase was intensely debated. Some TWG members argued that it should not fall within the LAN BREF scope since the landfill is no longer operational when it has entered the after-care phase. Others considered that this phase should be included in the scope as it could still pose environmental concerns.

DG ENV highlighted the obligation of the operator based on provisions of IED Article 22, which finishes after the requirements of this article are fulfilled, i.e. when the permitted activity ceases to pose any significant risk to human health or the environment.

One industry association (FuelsEurope) did not agree that after-care could be addressed under IED Article 22.

DG ENV clarified the legal perspective on retroactivity. If the landfill is no longer covered by the IED, the LAN BAT conclusions do not apply. There is no intention or possibility for retrospective application of BAT conclusions to landfills no longer covered by the IED.

EU-BRITE explained that the aim is to gather information on the topics under the scope. There are provisions in the LWD and WAC related to waste characterisation and after-care. The goal is to determine what added value the BREF process can provide.

The proposal to develop a separate section in the LAN BREF for underground disposal of waste was removed as it is not a matter of scope and will be discussed within the LAN BREF structure.

At the end of the discussion, consensus was reached on all topics as follows except the after-care phase. One Member State and four industry associations did not see a need to include the after-care phase in the LAN BREF scope.

Conclusions reached by the TWG:

- To cover the following landfill operations/phases in the LAN BREF data collection, and to decide at a later stage about related BAT:
  - Waste characterisation and acceptance procedure, including biodegradable waste.
  - On-site transport and handling of waste and materials.
  - Design and construction of landfills under the scope of the LAN BREF (including the use of recovered materials/residues, see [BP section] 2.2.8.2).
  - General management operations (e.g. good housekeeping).
  - Waste disposal configuration.
  - Leachate and waste water streams management (including monitoring).
  - Landfill gas management (including monitoring).
  - Surface and ground water management (including monitoring).
  - End-of-life landfill cell surface sealing.
  - Closure phase.
  - After-care phase.

FR, CEFIC, EUROFER, Euromines and FUELS EUROPE do not see the need to include the after-care phase in the scope of the LAN BREF.

4.3 Independently operated WWTP and combined treatment of waste water

In BP Section 2.1.2, EU-BRITE proposed the following:

- To cover in the scope of the LAN BREF the activity in point 6.11 of Annex I to the IED (independently operated treatment of waste water not covered by Directive (EU) 2024 /3019) if the main pollutant load originates from the activity covered in point 5.4 of Annex I to the IED, as addressed in recent BREFs.
- To cover in the scope of the LAN BREF the combined treatment of waste water from different origins if the main pollutant load originates from the activity covered in point 5.4 of Annex I to the IED, as addressed in recent BREFs.

One Member State proposed adding to the second bullet point that the waste water treatment is not covered by the Urban Waste Water Treatment Directive, to ensure alignment with the text in other recent BREFs as well as with the first bullet point.

EU-BRITE suggested deleting the phrase 'as addressed in recent BREFs' since it is more of a comment.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- To cover in the scope of the LAN BREF the activity in point 6.11 of Annex I to the IED (independently operated treatment of waste water not covered by Directive (EU) 2024/3019) if the main pollutant load originates from the activity covered in point 5.4 of Annex I to the IED.
- To cover in the scope of the LAN BREF the combined treatment of waste water from different origins if the main pollutant load originates from the activity covered in point 5.4 of Annex I to the IED and the waste water treatment plant (WWTP) is not covered by Directive (EU) 2024/3019.

4.4 Interface with other BREFs and the MCPD

In BP Section 2.1.4, EU-BRITE proposed the following:

- Not to cover waste treatment activities carried out on site that are already covered by other BREFs to avoid duplication, instead cross-referencing to these documents where applicable.
- Not to cover the waste incineration activities carried out on site, to avoid overlaps with the scope of other IED BREFs.
- Not to duplicate in the LAN BREF information already covered in the LCP BREF and in the MCPD, instead cross-referencing to these documents where applicable.

There was consensus among TWG members to avoid duplication by using cross-references in the LAN BAT conclusions. The draft was supported by TWG members, but there was a need for clarification regarding the wording.

One environmental NGO pointed to the ruling of the European Court of Justice in the Malagrotta case[6]. The NGO considered that this issue was not strongly reflected in the Background Paper. The NGO insisted that data is only collected from installations where biodegradable waste is stabilised before landfilling.

EU-BRITE commented that the data collection should focus on well-performing plants.

At the end of the discussion, the consensus reached on the interface with other BREFs and the MCPD was as follows.

Conclusions reached by the TWG:

- Not to cover activities (e.g. waste stabilisation, waste incineration) carried out on site that are already covered by other BREFs to avoid duplication, instead cross-referencing these documents where applicable.
- Not to duplicate in the LAN BAT conclusions requirements related to combustion plants already in the LCP BAT conclusions and in the MCPD, instead cross-referencing these documents where applicable.

[6] Judgment of the Court (Sixth Chamber) of 15 October 2014, Case C-323/13.

5 GENERAL ADDITIONAL INFORMATION

In the BP, EU-BRITE did not make any proposal.

During the discussion on chloride, fluoride and sulphate emissions to air, it was determined that information on the type(s) of waste disposed of in the landfill, including details on any prior treatment, is fundamental for data evaluation and to identify the types of landfills and structure of the BREF. Since this is applicable to all the environmental issues discussed, the TWG members discussed the option to add a relevant conclusion immediately after the conclusions regarding the scope.

The consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on the type(s) of waste disposed of in the landfill, including information on any prior treatment.

6 EMISSIONS

6.1 Overview

A large part of the KoM was dedicated to discussing and agreeing upon the key environmental issues (KEIs) to be addressed in the drawing up of the LAN BREF and the related substances and parameters to be included in the data collection via questionnaires.

The EU-BRITE assessment related to KEIs was included in the BP and was based on the following criteria:

Criterion 1: environmental relevance of pollution caused by the activity or process, i.e. whether it may cause an environmental problem,

Criterion 2: significance of activity (number of installations, geographical spread, contribution to total (industrial) emissions in the EU),

Criterion 3: potential of the BREF review/drawing up for identifying new or additional techniques that would further significantly reduce pollution,

Criterion 4: potential of the BREF review/drawing up to set BAT-AELs, BAT AEPLs and/or benchmarks that would significantly improve the level of environmental protection compared to current emission levels.

This approach was detailed in BP Section 2.2.

Regarding certain pollutants, the TWG decided to initially gather data and information, and then decide at a later stage, based on the collected data, whether these pollutants should be considered as KEIs.

Unless specified otherwise, for substances and parameters that are not proposed as KEIs, ‘bulk information’ on associated techniques can be collected by the TWG and may be considered for drawing up the LAN BREF.

This section does not aim to report the detailed discussions at the KoM for each substance and parameter. Instead, it focuses on the most important points.

6.2 Emissions to air

Based on the proposals in BP Section 2.2.3, discussions during the KoM took place on general and contextual information as well as on specific substances, groups of substances or parameters related to emissions to air. The proposals were revised accordingly during the KoM to take account of the comments made.

Among other things, the following topics were discussed:

- It was noted that measuring diffuse methane emissions is possible, and the relevance of these emissions for landfill operations needs to be evaluated. TWG members emphasised potential challenges in monitoring and pointed out the absence of a European standard. An industry association (ESWET) informed that a CEN working group (CEN TC 264 WG 38) is developing a standard for monitoring diffuse methane emissions. Consequently, during the KoM, it was agreed to plan a workshop focusing on monitoring diffuse methane emissions to air. One industry association (FEAD) and one Member State (DE) offered support in the preparation and realisation of the workshop.
- The industry association representing underground hazardous waste landfills in salt mines stated that emissions to air are not relevant for these landfills.
- It was concluded that carbon dioxide (CO_2) and ammonia (NH_3) emissions to air are not a KEI.
- It was intensively debated whether PFAS should be classified as a KEI, particularly regarding whether sufficient data is available for this classification and given that no EU standards for measurement exist.
- One Member State (BE) stated that they already collect data on PFAS and offered to share the data once available, probably by the end of 2026. Another Member State (SE) stated that PFAS is measured at the university both in leachate and landfill gas so they can share data.
- One industry association (ESWET) informed that a new CEN working group (CEN TC 264 WG 48) has been established to develop a standard for monitoring PFAS emission to air.

At the end of the discussion, the conclusions shown in Table 2 and Table 3 were reached.

Table 2: KoM conclusions on emissions to air concerning general information and contextual information

Consideration/Parameters	KoM conclusion
General information	• To collect information on the techniques (including emerging techniques) used to prevent/reduce the emissions of pollutants identified as KEIs for emissions to air, as well as associated emissions data. • To collect information on the techniques (including emerging techniques) used to monitor (through measurement, calculation, estimation) the diffuse emissions of pollutants identified as KEIs. • To hold a TWG workshop on monitoring of diffuse methane emissions to air.
Contextual information: landfill gas characteristics	• To collect contextual information on landfill gas characteristics (e.g. flow, composition, temperature, moisture content) before and after treatment and how these vary over time. • To collect information on the collection/sampling points for landfill gas.

Table 3: KoM conclusions on emissions to air concerning substances and parameters

Substances/parameters	KoM conclusion
Methane (CH_4)	• To include methane (CH_4) as a KEI for channelled and diffuse emissions to air for both hazardous and non-hazardous waste landfills. • FR and HWE do not support the inclusion of CH_4 as a KEI for hazardous waste landfills.
Nitrous oxide (N_2O)	• To collect information and data on N_2O emissions and the conditions under which they occur for inclusion in the descriptive part of the BREF.
Hydrogen sulphide (H_2S)	• To collect information and data on H_2S emissions and the conditions under which they occur for inclusion in the descriptive part of the BREF.
Dust	• To include dust as a KEI for diffuse emissions to air for both hazardous and non-hazardous waste landfills.
Nitrogen oxides (NO_X) and sulphur oxides (SO_X)	• To collect information on techniques to prevent and/or to reduce nitrogen oxides (NO_X) and sulphur oxides (SO_X) for channelled emissions to air in combustion processes in landfills not covered by the LCP BREF and MCPD.
Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs)	• To collect information and data on the presence of CFCs and HCFCs in landfill gas before and after treatment, data for channelled emissions to air for both hazardous and non-hazardous waste landfills as well as techniques applied to prevent/reduce emissions.
Non-methane volatile organic compounds (NMVOC)	• To collect information and data on the presence of NMVOC in landfill gas before and after treatment, data for channelled emissions to air for both hazardous and non-hazardous waste landfills as well as techniques applied to prevent/reduce emissions.
Per- and polyfluoroalkyl substances (PFAS)	• To collect information on the presence of PFAS in landfill gas. • To collect information on monitoring methods for PFAS emissions to air. • To collect information on techniques to prevent and/or to reduce PFAS present in landfill gas (e.g. high-temperature flares).

6.3 Emissions to water

Following the proposals in BP Section 2.2.5 discussions during the KoM took place on general and contextual information as well as on specific substances, groups of substances or parameters related to emissions to water. The proposals were revised accordingly during the KoM to take account of the comments made.

Among other things, the following topics were discussed:

- utilisation of waste water inventory;
- reuse of treated leachate;
- definitions regarding water streams;
- differentiation between direct and indirect discharge;
- collection of contextual information (e.g. on loads);
- identification of relevant substances and parameters;
- determination of how these substances and parameters should be addressed.

The discussion particularly focused on per- and poly-fluoroalkyl substances (PFAS), with leachate being identified as an important source. PFAS consists of a group of individual substances. Several Member States reported having data on PFAS, with some indicating that they had established guidelines for measuring these substances. At the moment, there is no European standard that specifies which PFAS compounds should be measured in waste water from landfills. At the end of the discussion, the majority of TWG members were in favour of including PFAS as a KEI. However, ELA did not support the inclusion of PFAS as a KEI, and CEFIC and FEAD did not support the inclusion of all PFAS as a KEI.

At the end of the discussion, the conclusions shown in Table 4 and Table 5 were reached.

Table 4: KoM conclusions on emissions to water concerning general information and waste water characteristics

Consideration/Parameters	KoM conclusion
General information	• To collect information on the techniques (including emerging techniques) used to remove/abate the pollutants identified as KEIs from leachate and contaminated waste water (e.g. that have been in contact with waste) and associated data on emissions to water. • To collect information on the concentration of pollutants present in both the leachate and waste water streams, as well as associated volume flows, before and after on-site waste water treatment, also distinguishing between direct and indirect releases. In addition, to collect information on the sampling/measurement points. • To collect contextual information on the background levels of pollutants/parameters in surface water and groundwater, as well as on the type and characteristics of the receiving water body (e.g. sea or river, salinity) for direct emissions to water.
Contextual information: waste water characteristics	• To collect contextual information on the characteristics (i.e. flow, temperature, pH, BOD, conductivity, redox potential, direct or indirect releases) of waste water streams, including leachate, before and after on-site treatment and efficiency of the waste water treatment for each pollutant concerned. Information on flow will be used to calculate the pollutant load. • To collect contextual information on the meteorological conditions of the landfill.

Table 5: KoM conclusions on emissions to water concerning substances and parameters

Substance(s)/parameters	KoM conclusion
Metals and metalloids	• To include Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), and Zinc (Zn) and their compounds as KEIs for emissions to water for both hazardous and non-hazardous waste landfills. • To collect data and information on emissions of Antimony (Sb), Barium (Ba), Molybdenum (Mo) and Selenium (Se) and their compounds. The TWG to decide at a later stage, based on the data and information collected, whether these metals/metalloids may be considered as KEIs and if BAT-AELs should be derived.
Total organic carbon (TOC)	• To include total organic carbon (TOC) and chemical oxygen demand (COD) as KEIs for emissions to water for both hazardous and non-hazardous waste landfills.
Chemical oxygen demand (COD)	
Total nitrogen (TN)	• To include total nitrogen (TN) as a KEI for emissions to water for both hazardous and non-hazardous waste landfills. • To include emissions to water of ammonium (NH_4-N), nitrites and nitrates as contextual information to be collected.
Total phosphorus (TP)	• To include total phosphorus (TP) as a KEI for emissions to water for both hazardous and non-hazardous waste landfills.
Chlorides	• To collect data and information on emissions to water of chlorides, fluorides and sulphates, for both hazardous and non-hazardous waste landfills. The TWG to decide at a later stage, based on the data and information collected, whether these substances may be considered as KEIs and if BAT-AELs should be derived.
Fluorides	
Sulphates	
Microplastics	• To collect data and information on microplastics monitoring and microplastics emissions to water for both hazardous and non-hazardous waste landfills.
Per- and poly-fluoroalkyl substances (PFAS)	• To include PFAS as a KEI for emissions to water for both hazardous and non-hazardous waste landfills. • To collect information on monitoring methods for PFAS emissions to water. The TWG to decide at a later stage, based on the data and information collected, if a BAT-AEL may be derived and for which PFAS. ELA does not support the inclusion of PFAS as a KEI. CEFIC and FEAD do not support the inclusion of all PFAS as a KEI.
Bisphenols	• To collect data and information on bisphenols emissions to water for both hazardous and non-hazardous waste landfills.
Aromatic brominated flame retardants (ABFRs) and phosphorus flame retardants	• To collect data and information on ABFRs emissions to water for both hazardous and non-hazardous waste landfills.
Heat stabilisers (e.g. organotin compounds)	• To collect data and information on heat stabilisers emissions to water for both hazardous and non-hazardous waste landfills.
Phthalates	• To collect data and information on phthalates emissions to water for both hazardous and non-hazardous waste landfills.
Halogenated organic compounds	• To include halogenated organic compounds as a KEI for emissions to water for both hazardous and non-hazardous waste landfills.
Phenols	• To include phenols as a KEI for emissions to water for both hazardous and non-hazardous waste landfills.
Polycyclic aromatic hydrocarbons (PAHs)	• To collect data and information on PAHs monitoring and emissions of PAHs to water for both hazardous and non-hazardous waste

Substance(s)/parameters	KoM conclusion
Benzene, toluene, ethylbenzene and xylene (BTEX)	landfills. The TWG to decide at a later stage, based on the data and information collected, whether PAHs may be considered as a KEI and if a BAT-AEL should be derived. • To collect information on monitoring methods for PAHs emissions to water. • To collect information and data on BTEX (benzene, toluene, ethylbenzene and xylene) emissions to water for both hazardous and non-hazardous waste landfills.
Hydrocarbon oil index (HOI)	• To include hydrocarbon oil index (HOI) as a KEI for emissions to water for both hazardous and non-hazardous waste landfills.
Cyanide (free cyanide, expressed as CN^-)	• To include cyanide (free cyanide, expressed as CN^-) as a KEI for emissions to water for both hazardous and non-hazardous waste landfills.
Toxicity of emissions to water (toxicity test such as fish eggs, daphnia)	• To collect information on monitoring of toxicity of emissions to water (toxicity test such as fish eggs, daphnia) for both hazardous and non-hazardous waste landfills.
Total suspended solids (TSS)	• To collect information and data on total suspended solids (TSS) emissions to water for both hazardous and non-hazardous waste landfills. The TWG to decide at a later stage, based on the data and information collected, whether TSS may be considered as a KEI and if a BAT-AEL should be derived.

6.4 Odour emissions

In BP Section 2.2.4, EU-BRITE proposed the following:

- To include odour emissions as a KEI.
- To collect information on techniques to measure odour emissions to air.
- To collect information on techniques to prevent and/or to reduce odour emission.

Several Member States reported that the primary source of odour emissions is the biological degradation of substances. An environmental NGO noted that if ammonia is present and the pH level shifts, chemical reactions can occur, which may also cause odours. An industry association pointed out that odour emissions also depend on the type of waste and the source (waste, leachate, landfill gas). Some Member States mentioned that odour emissions are limited in permits. An industry association noted that there are existing standards for measuring odour emissions. One Member State (FR) and an industry association (HWE) highlighted that in France the landfilling of biodegradable waste in hazardous waste landfills is prohibited, making odour emissions irrelevant for those sites. An industry association indicated that measuring odour emissions can be challenging. One industry association (EUROMETAUX) stated that landfilling of metal waste does not present any odour issues. The industry association (Euromines) representing the underground hazardous waste landfills in salt mines emphasised that odour emissions are not an issue for these landfills.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- To include odour emissions as a KEI.
- To collect information on odour sources (e.g. waste type, leachate, landfill gas) as well as information on techniques to measure odour emissions to air.
- To collect information on techniques to prevent and/or to reduce odour emissions.

6.5 Noise emissions

In the BP, EU-BRITE did not make any proposal on noise emissions.

One Member State (PT) proposed to collect information on noise sources in landfills and on noise management.

Some Member States and industry associations stated that noise emissions are not of great relevance for them, and they are already regulated by other laws.

One environmental NGO (ZWE) stated that, after particulate matter (PM), noise is the second leading cause of health issues.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on the sources of noise emissions from landfills as well as information on techniques applied in landfills to prevent/reduce noise emissions.

7 RESOURCES AND CIRCULAR ECONOMY

7.1 Chemicals

7.1.1 Chemicals consumption

In BP Section 2.2.7.1, EU-BRITE proposed the following:

- To collect data and information on the chemicals used in landfill operations under the scope of the LAN BREF. The TWG to decide at a later stage, based on the data and information collected, whether this issue may be considered as a KEI and/or if BAT-AEPLs and/or benchmarks should be derived.

Several TWG members argued that it is not beneficial to limit this consumption through BAT, since the use of chemicals primarily occurs in water and gas treatment. Chemicals are needed to reduce the environmental impact of landfill gas and leachate. Therefore, it was suggested to incorporate the collected data into the descriptive part of the BREF. As stated in the IED, cross-media effects should be taken into account.

One industry association stated that chemicals for packaging and laboratory chemicals should not be included.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect data and information on the chemicals input* in landfill operations under the scope of the LAN BREF as identified by the TWG and prioritised by ECHA. This information/data is to be included in the descriptive part of the BREF.

* Includes process chemicals but excludes laboratory chemicals and chemicals contained in the waste disposed of.

7.1.2 Chemicals possible substitution, recovery and reuse

The EU-BRITE proposal on chemicals possible substitution, recovery and reuse in BP Section 2.2.7.2 was adopted without any changes.

Conclusions reached by the TWG:

- To collect data and information on the possible substitution options involving alternative or less hazardous chemicals.
- To collect data and information on the recovery and reuse of chemicals used in landfill operation.

7.2 Water

In BP Section 2.2.6, EU-BRITE proposed the following on water and leachate management:

- To include waste water discharge as a KEI.
- To collect data on specific water consumption and specific waste water discharge in landfill operations.
- To collect information on techniques applied to reduce water consumption and waste water discharge.
- To collect information on leachate and water management systems applied in landfill operations.
- The TWG to identify, during the questionnaire development phase, the contextual information needed to understand and compare the specific water consumption and waste water discharge data collected through the questionnaires. (Contextual information includes applied techniques, landfill operations, methods used for monitoring and calculation, water reuse, water recycling rate, site configuration and defined boundaries, level of data aggregation, meteorological data, surrounding topography, landfill topography).

Some TWG members explained that water consumption in landfills is not relevant.

One Member State suggested that the focus should be more on the topic of water balance.

EU-BRITE, following the discussion, considered that the content of bullet points 1 to 4 was already addressed by the conclusions reached about the landfill operations (see Section 4.2).

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- The TWG to identify, during the questionnaire development phase, the contextual information on applied techniques, landfill operations, methods used for monitoring and calculation (e.g. water balance), water reuse, water recycling rate, site configuration and defined boundaries, level of data aggregation, meteorological data, surrounding topography, landfill topography.

7.3 Energy

In BP Section 2.2.9, EU-BRITE proposed the following on energy consumption:

- To collect information on energy consumption (e.g. from evaporation of leachate, waste water treatment, machinery).
- The TWG to identify the contextual information to understand and compare the energy consumption data collected.
- To collect information on techniques applied to increase energy efficiency.

Several Member States and industry associations pointed out that energy is primarily needed to operate the landfill properly. Therefore, energy savings could conflict with safe operation. Furthermore, energy consumption may not be a relevant factor in landfill operations.

It was agreed that the focus should be on energy recovery (e.g. from landfill gas) and energy production (e.g. solar panels), rather than energy consumption.

At the end of the discussion, the consensus reached on energy recovery and energy production was as follows.

Conclusions reached by the TWG:

- To collect information on energy recovery (e.g. from landfill gas) and energy production (e.g. solar panels).

7.4 Circular economy

In BP Section 2.2.8.1, EU-BRITE proposed the following on auxiliary materials used in landfill operations:

- To collect information on the types of auxiliary materials used in landfill operations

In BP Section 2.2.8.2, EU-BRITE proposed the following on recovery of residues/waste and energy recovery:

- To collect information on the generation and management of residues/waste (e.g. using waste as a substitute for auxiliary materials, for example for construction of on-site drainage layers, ramps or berms or as daily cover to prevent dispersal of lightweight waste).
- To collect information on the requirements for using residues/waste as a substitute for auxiliary materials.
- To collect information on energy recovery (e.g. from landfill gas).

Some TWG members noted that the term 'auxiliary material', as used in this context, is not commonly recognised, and the TWG decided not to classify it as a KEI. Additionally, it was agreed that the generation of residues/waste in landfills is not a KEI for landfill operations. Instead, the emphasis should be on the use of recovered materials/residues in landfills.

As a result of the discussion regarding the EU-BRITE proposal in BP Section 2.2.8.2, it was agreed that the generation of residues/waste in landfills is not considered a KEI for landfill operations. Instead, the emphasis should be placed on the use of recovered materials/residues in landfills. Energy recovery is discussed in Section 7.3.

At the end of the discussion, the consensus on the use of recovered material/residues reached was as follows.

Conclusions reached by the TWG:

- To collect information on the use of recovered materials/residues (e.g. stabilised organic fraction, slag, ashes) in landfills, for example for construction of on-site drainage layers, ramps or berms or as daily cover to prevent dispersal of lightweight waste.
- To collect information on the requirements for using recovered materials/residues.

8 GREENHOUSE GAS EMISSIONS

8.1 Techniques related to the reduction of greenhouse gas emissions

In BP Section 2.2.10.1, EU-BRITE proposed the following:

- To collect information on techniques related to the reduction of greenhouse gas emissions from the relevant landfill operations covered by the scope of the LAN BREF (e.g. landfill gas capture, prevention of landfill gas emissions, landfill gas uses, electrification).
- The TWG to identify, during the questionnaire development phase, the contextual information needed to understand and compare the collected data. *(Contextual information includes type of energy used/produces (including fuel types) in the installation, monitoring methods and calculations, landfill configuration and defined boundaries, size and depth of the landfills and waste characteristics).*

Since the topic is closely related to methane emissions to air, the techniques related to the reduction of greenhouse gas emissions will be addressed in the context of methane as a KEI.

8.2 On-site combustion plants

In BP Section 2.2.10.2, EU-BRITE proposed the following:

- To collect data and information on on-site combustion plants (e.g. firing landfill gas) and their characteristics (e.g. rated thermal input), and information on the use of the heat generated (e.g. direct or indirect leachate evaporation).

EU-BRITE, following the discussion, considered that the information related to on-site combustion plants was already addressed by the conclusions reached about landfill operations (see Section 4.2, landfill gas management). Therefore, it was agreed to not have specific conclusions for 'On-site combustion plants'.

9 OTHER THAN NORMAL OPERATING CONDITIONS (OTNOC)

9.1 General

This item was not initially intended for discussion. However, a Member State requested that this item be addressed during the KoM meeting.

In BP Section 3.3, EU-BRITE proposed the following on normal operating conditions (NOC) and other than normal operating conditions (OTNOC):

- To collect information on ‘normal’ operating conditions and ‘other than normal’ operating conditions for the landfilling operations under the scope of the LAN BREF.
- The TWG to identify ‘normal’ and ‘other than normal’ operating conditions for the different landfilling operations under the scope of the LAN BREF.

Some TWG members requested a definition of OTNOC in the context of landfills, as the typical cases of OTNOC observed in other industrial facilities (e.g. start-up or shutdown of a plant) do not apply.

TWG members cited various examples of OTNOC, e.g. instability in a compartment, gas engine failure, malfunctions in data monitoring systems, and fires.

One environmental NGO explained that the purpose of this proposal should be to prevent or reduce the impact on human health and the environment during OTNOC, as well as to decrease their frequency.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on ‘other than normal’ operating conditions for the landfilling operations under the scope of the LAN BREF, including measures to prevent/reduce the occurrence of OTNOC and reduce their impact on human health and the environment.

9.2 Fires as part of the OTNOC

In the BP, EU-BRITE did not make any proposal regarding the issue of fires.

However, some TWG members requested that the issue be addressed.

One industry association (ESWET) stated that fires represent a real risk and requested that information be gathered for prevention, such as monitoring hotspots and having emergency plans in place. Another industry association mentioned that fires should be classified as an OTNOC. One industry association explained that fires typically occur when organic waste is deposited. One industry association emphasised that preventive measures should be integrated into the landfill's design. Some Member States reported that fires are no longer an issue for them since biodegradable waste is no longer deposited. Some Member States and an industry association stated that the issue is already covered by other legislation and that double regulation should be avoided.

At the end of the discussion, it was agreed that fires should be classified as an OTNOC and the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on potential sources of fire ignition in landfills.
- To collect information on techniques to prevent fires in landfills and on techniques to minimise their consequences for human health and the environment.

10 PROPOSED STRUCTURE OF THE LAN BREF

See BP Section 3.2 for the proposed structure of the LAN BREF.

Some Member States and some industry associations requested that this topic be discussed.

Several TWG members requested that no new undefined categories be introduced in the structure, such as ‘mono-landfills’ or ‘municipal landfills’.

One industry association (EUROFER) explained that future generic BAT conclusions would not be applicable to the type of landfills used in the steel industry. Since the term ‘mono-landfill’ is undefined, the term ‘internal waste disposal sites’ as per Article 2(g) of the LWD could be used for classification purposes.

One industry association (Euromines) requested a separate section for underground landfills, as they differ significantly from other types of landfills. They further clarified that underground storage in hard rock differs considerably from underground landfills in salt mines.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:
• The detailed structure and layout of the LAN BREF and related BAT conclusions will be proposed when drafting D1, with the active contribution of the TWG, based on the landfill-specific data and bulk information collected, informed by the BREF Guidance.

11 INFORMATION AND DATA COLLECTION

11.1 Data collection procedure (questionnaire design)

The EU-BRITE proposal in BP Section 3.4.1 on data collection procedure (questionnaire design) was not foreseen for discussion in the KoM. The EU-BRITE proposal was adopted with one minor wording change. In sub-bullet 3 of bullet 1, the word ‘landfill’ was replaced by ‘landfill operators’.

Conclusions reached by the TWG:

- To follow the established BREF process for the collection of landfill data via questionnaires including the following:
  - the preparation of the draft questionnaire by EU-BRITE followed by the commenting of the whole TWG, if necessary in several iterations;
  - the organisation of a questionnaire workshop to finalise the questionnaire;
  - the testing of the draft final questionnaire by a selected (small) number of landfill operators;
  - the preparation of the final questionnaire by EU-BRITE;
  - the distribution of the final questionnaire through Member States’ representatives;
  - the filling in of the questionnaires by the landfill operators;
  - the collection of the filled-in questionnaires by Member States’ representatives;
  - the quality check of the filled-in questionnaires by Member States’ representatives (possibly) with the help of a checklist that the TWG and EU-BRITE could have developed;
  - the submission of the quality-checked questionnaires to EU-BRITE by Member States’ representatives:
    - for the non-confidential version: submission to the TWG via BATIS;
    - for the confidential version: submission to EU-BRITE via email;
  - the TWG decides on the content and format of the questionnaire during the preparation as described above.
- To collect data for the reference years 2024, 2023, 2022 or, if such data are not available, for the last 3 years for which data are available.

11.2 Selection of well-performing landfills for the data collection

The EU-BRITE proposal in BP Section 3.4.2 on the selection of well-performing landfills for the data collection was not foreseen for discussion in the KoM. TWG members did not request to discuss it before or during the KoM and thus the EU-BRITE proposal was adopted.

Conclusions reached by the TWG:

- The TWG to submit proposals, during the BREF development process, of well-performing (including best-performing) landfill installations to participate in the data collection.

11.3 Expression of BAT-AELs for emissions to air and water

The proposal by EU-BRITE in BP Section 3.4.3 on the expression of BAT-AELs for emissions to air and water was largely accepted by the TWG with minimal changes. The only modification was the removal of the words ‘or specific energy consumption’ in the second bullet point, to reflect the conclusion not to include energy consumption as a KEI.

Conclusions reached by the TWG:

- To generally express BAT-AELs for emissions to air and to water in concentrations, and/or if deemed appropriate as specific loads and/or coupled with abatement efficiencies.
- To include in the data collection the information needed to evaluate emission loads or abatement efficiencies.
- During the drafting of the questionnaire(s), to clearly define all parameters influencing emission concentrations, loads or abatement efficiencies.

11.4 Averaging periods for BAT-AELs related to emissions to air and to water

In BP Section 3.4.3.1, EU-BRITE proposed the following concerning averaging periods for BAT-AELs related to emissions to air:

- To generally express BAT-AELs as short-term averages, i.e. as daily averages (for continuous measurements) or as averages over the sampling period (for periodic measurements).

In BP Section 3.4.3.2, EU-BRITE proposed the following concerning averaging periods for BAT-AELs related to emissions to water:

- To generally express BAT-AELs as daily averages, obtained via 24-hour flow-proportional composite samples and in the case of batch discharges as average values over the release duration obtained via flow-proportional composite samples.
  - To complement that:
    - time-proportional composite samples may also be considered provided that sufficient flow stability is achieved;
    - spot sampling may also be considered provided that the effluent is appropriately mixed and homogeneous.

The TWG shared some reflections on averaging periods. For example, measuring diffuse air emissions and measurements during the after-care phase were brought up. These aspects were considered to be not sufficiently addressed.

EU-BRITE emphasised that this issue will be discussed during the development of the questionnaire.

At the end of the discussion, the consensus reached was as follows.

Conclusions reached by the TWG:

- The TWG to decide on the averaging periods for BAT-AELs related to emissions to air and to water at a later stage, based on the collected data and contextual information.

11.5 Expression of BAT-AEPLs on consumption, resource efficiency, reuse of materials/water and residue generation

The EU-BRITE proposal in BP Section 3.4.4 on the expression of BAT-AEPLs on consumption, resource efficiency, reuse of materials/water and residue generation was withdrawn because there was no decision at the KoM to collect the corresponding data.

11.6 Confidentiality issues

The EU-BRITE proposal in BP Section 3.5 on confidentiality issues was not foreseen for discussion in the KoM.

One Member State requested this issue for discussion with the aim of reaching a common understanding within the TWG on this issue.

One environmental NGO suggested that the industry should specify what information is CBI and non-CBI when drafting the LAN BREF, with validation from the European Commission.

One Member State argued that landfill data should not be considered CBI due to the lack of competition.

Another Member State emphasised the need for all industrial information to be available on BATIS, whereas an industry association stated that energy, water, and auxiliary materials consumption are considered CBI for the industry they represent.

One industry association highlighted effective practices from previous workshops of other BREFs and supported the revised guidelines.

One Member State (DK) expressed legal concerns about signing a Non-Disclosure Agreement (NDA).

At the end of the discussion, the consensus reached was as follows, leaving EU-BRITE's initial proposal unchanged.

Conclusions reached by the TWG:

- To design the questionnaire in a way that avoids requesting data considered CBI (confidential business information) as much as possible so that all data provided by operators can be posted directly onto BATIS by Member States' representatives and thus shared with the whole TWG.
- The TWG to decide during the questionnaire development phase about the type and format of potentially confidential information that needs to be collected.
- If certain data are considered CBI, the Member States' representatives in the TWG to:
  - submit the versions of the questionnaires containing the confidential information directly to EU-BRITE via email, and
  - post the versions of the questionnaires containing the non-confidential information onto BATIS.
- The TWG to agree on the confidentiality and non-disclosure agreement to be signed for data collected as CBI to be discussed and analysed, so as to ensure the largest possible participation of TWG members, while protecting the legitimate economic interests of landfill operators and minimising the risk of disclosure.

12 EMERGING TECHNIQUES (ET) AND LINK WITH INCITE

The EU-BRITE proposal in BP Section 3.7 on emerging techniques (ET) and link with INCITE was not foreseen for discussion in the KoM. TWG members did not request to discuss it before or during the KoM and thus the EU-BRITE proposal was adopted without any changes.

Conclusions reached by the TWG:

- To collect information and performance data on emerging techniques (ET) applicable to the activities covered by the LAN BREF and associated with the KEIs concluded at the Kick-off Meeting (e.g. emissions to air and to water, consumption of energy, water, raw materials, decarbonisation, chemicals).

13 TIME SCHEDULE

13.1 Long-term planning

EU-BRITE proposed in BP Section 3.1.1 a tentative timeline of the milestones for the whole process of drawing up the LAN BREF. It was not foreseen for discussion. EU-BRITE presented it for informational purposes in its introductory presentation ‘Drawing-up process, objectives, agenda and introduction to the discussion’.

An industry association expressed some concern as to the remaining time until the Final TWG Meeting planned in Q3 2028 and expressed the need to clarify which steps of the BREF process are covered by the 4-year period mentioned in IED Article 13.1.

DG ENV indicated that the duration of the information exchange was also being addressed in the context of the revision of the BREF Guidance.

The EU-BRITE proposal was adopted without any modifications as follows.

Table 6: Milestones for the drawing up of the LAN BREF

	Step	Milestone	Date
√	1	Activation of the TWG and frontloading (done)	22 November 2024
√	2	Nominations of TWG members (done)	31 January 2025 (deadline)
√	3	Frontloading (done)	16 April 2025 (deadline)
→	**4**	**Kick-off Meeting (KoM)**	**6 – 9 October 2025 (tentative)**
	5	Data and information collection (including questionnaire development and bulk information collection)	Q4 2025 – Q4 2026/Q1 2027 (tentative)
	6	First draft of the LAN BREF (D1)	Q3 2027 (tentative)
	7	TWG comments on D1	Q4 2027 (tentative)
	8	Final TWG Meeting	Q3 2028 (tentative)
	9	Final draft of the LAN BREF delivered to the IED Article 13 Forum for its opinion	2029 (tentative)
	10	Meeting of the IED Article 13 Forum to provide an opinion on the LAN BREF	2029 (tentative)
	11	BAT conclusions vote at an IED Article 75 Committee meeting	2029 (tentative)
	12	Publication of the BAT conclusions in the Official Journal of the European Union	2029 (tentative)
	13	Publication of the BREF on the EU-BRITE website	2029 (tentative)

13.2 Next steps

13.2.1 Tentative timeline of the information and data collection

EU-BRITE presented a tentative timeline for the next steps for the information and data collection of the LAN BREF drawing-up process proposed in BP Section 3.1.2 (Table 7).

EU-BRITE also mentioned that the intention is to conduct the data collection via a web-based tool for the first time. The work on the tool is expected to be completed by February 2026. Due to the high complexity, there may potentially be delays in the development, which could push the timeline for data collection back slightly. Nonetheless, EU-BRITE remained confident that the timeline would be met.

The EU-BRITE proposal was adopted without any modifications as follows.

Table 7: Next steps for the information and data collection of the LAN BREF

Step	Tentative time
Identification of well-performing landfills	
TWG to provide proposals of well-performing reference landfills for the data collection via template	January 2026
EU-BRITE to compile the list of well-performing reference landfills and to check its completeness	March 2026
Bulk information collection	
TWG to submit 'bulk' information	September 2026
Data collection procedure (questionnaire development and fill-in)	
EU-BRITE to prepare the questionnaire for data collection and to issue the first draft questionnaire template (Qr1)	February 2026
TWG to provide feedback on Qr1	March 2026
EU-BRITE to issue the second draft questionnaire (Qr2)	May 2026
TWG to provide feedback on Qr2	June 2026
Workshop on the questionnaire finalisation (if necessary)	June 2026
EU-BRITE to issue the draft final questionnaire for testing (Qrf)	September 2026
TWG to test the Qrf	October 2026
EU-BRITE to issue the final questionnaire (QrF) and distribution to the participating landfills	November 2026
TWG to submit filled-in questionnaires in BATIS	Q1 2027

13.2.2 Site visits

This item was not scheduled for discussion at the KoM. It was presented at the KoM by EU-BRITE for informational purposes as part of the next steps.

The TWG is invited to propose landfills for site visits. EU-BRITE explained the objectives and modalities of site visits according to Section 4.4.4 of the BREF Guidance. Site visits constitute an important part of the LAN BREF drawing-up process. They provide an insight into the techniques applied in landfills covered in the LAN BREF.

Site visits are proposed by Member States in coordination with operators, with the participation of BREF authors. The visits are also open to the entire TWG, although attendance is limited due to on-site capacity constraints. EU-BRITE emphasised the value of visiting a diverse range of installations, varying in terms of landfill type, age, geographical location, and climatic conditions, to obtain a broad overview of the issues facing the sector.

The EU-BRITE proposal was adopted without any modifications as follows.

Conclusions reached by the TWG:
• The TWG to suggest landfills for site visits, during the BREF development process.

14 INTRODUCTION TO BATIS

EU-BRITE introduced BATIS – the Best Available Techniques Information System, a web-based software to facilitate the exchange of information for the drawing up and review of BREFs. More specifically, BATIS is used to manage the list of TWG members and observers and to make all data and information collected in the BREF drawing-up process available to the TWG.

EU-BRITE provided hands-on guidance on basic BATIS features, e.g. obtaining and changing login credentials, reviewing and adapting personal information, the basic structure of LAN BREF folders, adding new posts, and uploading and downloading documents.

The TWG was invited to contact EU-BRITE with any further technical questions or comments.

ANNEXES

Annex 1 Delegations in the Kick-off Meeting

Acronym/code	Name of delegation	Number of participants	
		In Person	Online
	Member States		
AT	Austria	2	1
BE	Belgium	3	2
CZ	Czechia	1	4
DE	Germany	4	3[7]
DK	Denmark	2	
EE	Estonia		1
EL	Greece	1	1
ES	Spain	2	13
FI	Finland	2	2
FR	France	4	2
HU	Hungary		4
IE	Ireland	1	
IT	Italy	2[8]	7
MT	Malta	2	1
NL	Netherlands		2
PL	Poland	2	3
PT	Portugal		3
SE	Sweden	2	3
SI	Slovenia		1
SK	Slovakia		1
	Other countries		
NO	Norway	2	
	Environmental non-governmental organisations		
EEB	European Environmental Bureau	3	
ZWE	Zero Waste Europe	1	1
	Industry associations		
CEFIC	European Chemical Industry Council	3	2
CEWEP	Confederation of European Waste-to-Energy Plants	4	
ELA	European Landfill Association	3	1
ESWET	European Suppliers of Waste to Energy Technology	3[9]	1
EURIMA	European insulation manufacturers association		1
Eurits	European Union for Responsible Incineration	2	1
EUROFER	European Steel Association	3	8

[7] One person online at short notice instead of in person.
[8] In person from 7/10 afternoon till 9/10, the rest of the time online.
[9] One of the three people in person from 07/10 to 09/10, and online for the rest of the time.

Acronym/code	Name of delegation	Number of participants	
		In Person	Online
Euroheat & Power	The international network for district energy, promoting sustainable heating and cooling in Europe and beyond		1
EUROMETAUX	European Non-ferrous Metals Association	2	2
Euromines	European Association of Mining Industries, Metal Ores & Industrial Minerals	2	4
FEAD	European Federation of Waste Management and Environmental Services	12	2
FuelsEurope	European Fuel Manufacturers Association	1	
HWE	Hazardous Waste Europe	3	
IMA Europe	Industrial Minerals Association		1
MWE	Municipal Waste Europe	3	3
Other agencies			
ECHA	European Chemicals Agency	2	1
European Commission			
DG ENV	Directorate-General for Environment	2	2
EU-BRITE	Joint Research Centre of the European Commission – European Bureau for Research on Industrial Transformation and Emissions	5	