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Interreg
North-West Europe
NWE-REGENERATIS

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MESIS, the innovative inventory structure for Past Metallurgical Sites and Deposits-

Advisory board meeting –
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Content

- What is MESIS?
- The place of MESIS in the methodology
- Data and composition of the inventory structure, a completed MESIS example for the DUFERCO site

What is MESIS (MEtallurgical Sites Inventory Structure)?

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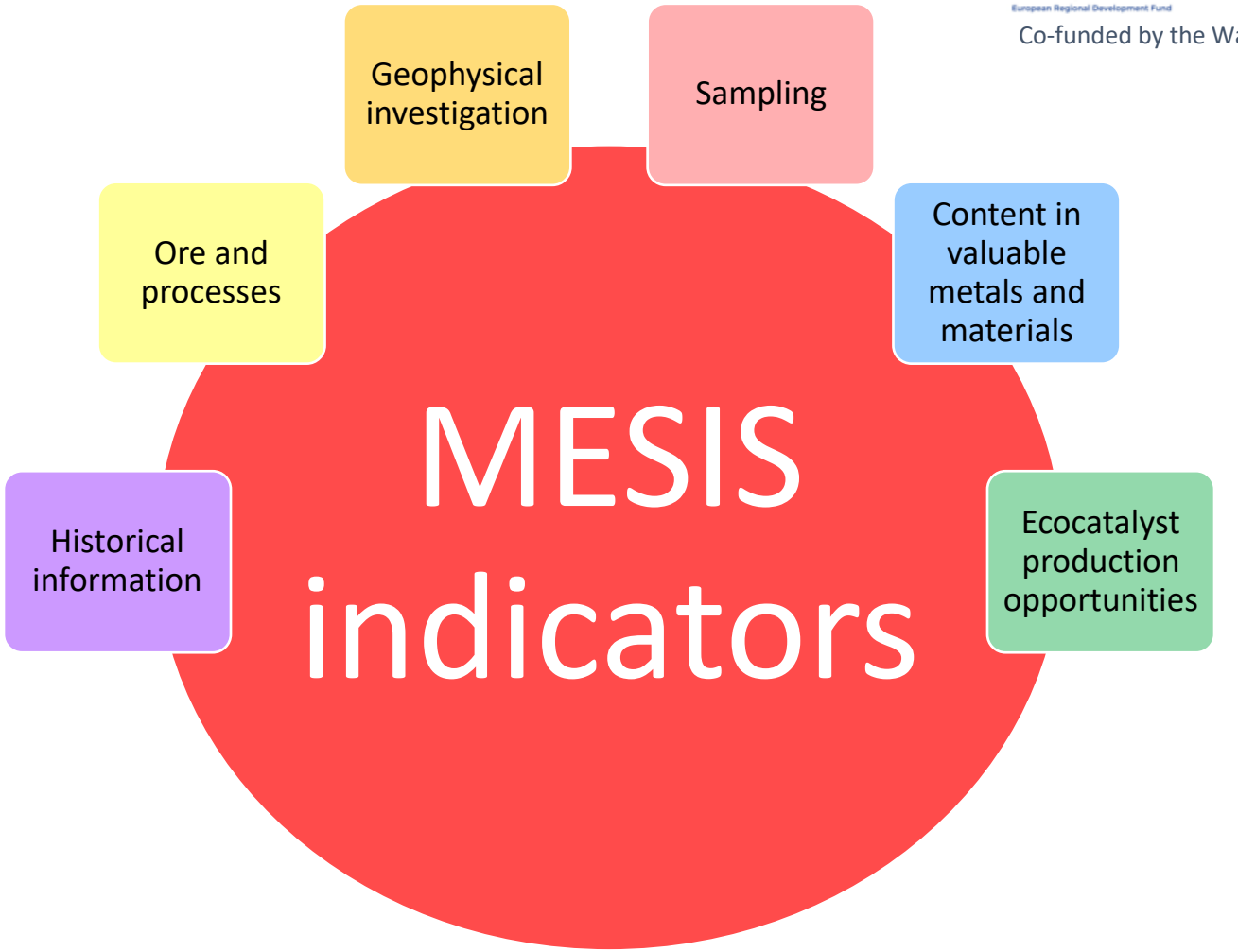
MESIS is a database structure :

- **containing relevant indicators useful to launch a valorisation/rehabilitation project following NWE-REGENERATIS methodology**
- **to be used as a guideline for stakeholders having to develop their own database in their own IT system**

MESIS will help:

- To directly identify important missing information
- To rank several sites to select the *a priori* most profitable projects (SMART-PHOENIX tool directly included in MESIS)
- To feed our MARIA DB (1) with necessary information for the SMARTIX tool
- To assess feasibility, business plan & business cases for launching profitable projects

(1) Maria DB is the database developed by PPs for internal use and tests


Geophysical investigation
Sampling
Ore and processes
Content in valuable metals and materials
MESIS indicators
Historical information
Ecocatalyst production opportunities

Setup of data sources, data flow and longtime data storage: The place of MESIS in the methodology

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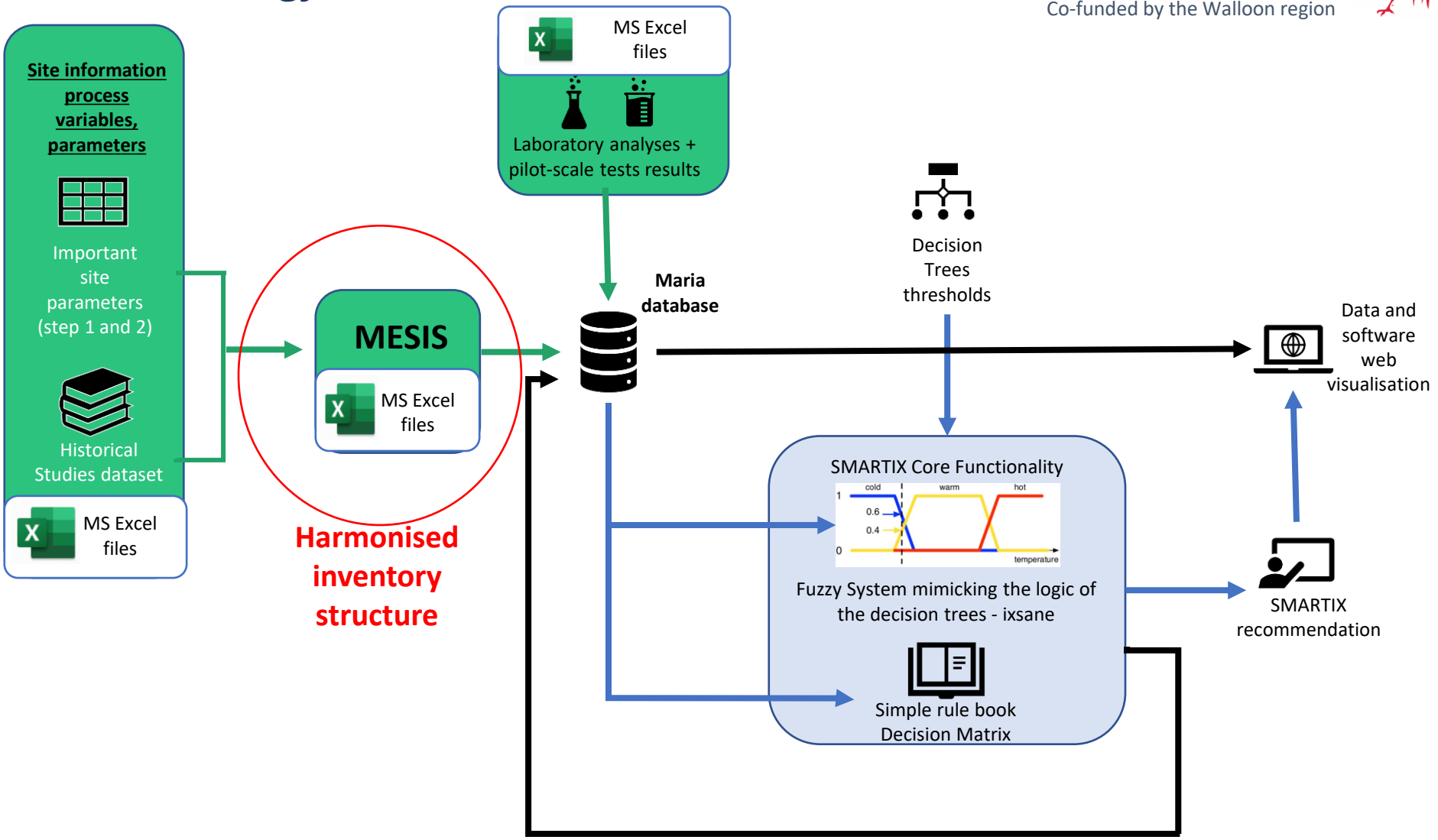

Data and composition of the inventory structure, a completed MESIS example for the DUFERCO site

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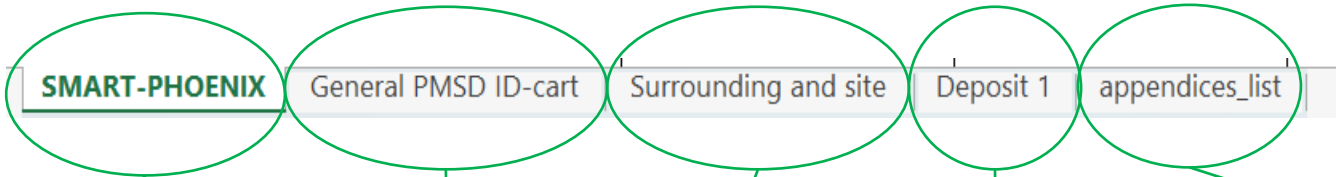

Answers and confidence for the 16 questions of the smart-phoenix (go/no go tool)

➔ First scan score , revealing the potential recovery interest of the PMSD

- General site and surrounding information
- Social aspects
- Industrial processes
- Remedial actions

= List of any appendices / documents that would be interesting to provide in attachment to MESIS

- General information about the site
- Current/ past ownership
- Permits list

- General deposit information
- Technical information
- Environmental context

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N°	QUESTIONS	SITE		DEPOSIT 1	
		Answer	Confidence	Answer	Confidence
1	Does the site contain a landfill, deposit or backfill with significant amount of metallic residues (mainly Pb, Cu, Zn and Fe)?***	Yes	Very high (100%)		
2	Is the site a PMSD*?***	Yes			
3	Is the site registered in a database?***	Yes	Very high (100%)		
4	What main kind of residues (from metallurgical origin) are present? ***				
	Slag			Yes	ery high (100%)
	Metal scraps			Yes	↑ please only indicate confidence just above for all types of residues
	Ashes			Yes	
	Dust			Yes	
	Sludges			Yes	
	Refractories			Yes	
	None from the list			No	
5	Estimated total volume of the residues from metallurgical origin (m^3) in the deposit ***			1000000	Very high (100%)
6	Estimated surface occupied by the deposit (m^2) ***			1000000	Very high (100%)
7	Are the residues clearly separated from each other, or mixed? ***			Mixed	Very high (100%)
8	Surface occupied by constructions:***	50 to 75%	Very high (100%)		
9	Surface occupied by trees:***	0 to 50%	Very high (100%)		
10	Is there historical data available?***	Yes	Very high (100%)		
11	Is the site easy to access for trucks and heavy equipment?***	Easy to acces	Very high (100%)		
12	Is the site considered as hazardous?***	Moderate ris	Very high (100%)		
13	Must the site / an area of the site be rehabilitated?***	Yes, from oth	Very high (100%)		
14	Is there a known interest for the reconversion of the site (public or private projects/interests) ?***	Yes	Very high (100%)		
15	Surface occupied by low vegetation:***	0 to 25%	Very high (100%)		
16	Current use of this surface, regardless of the official use of the deposit ***			Abandoned (	Very high (100%)

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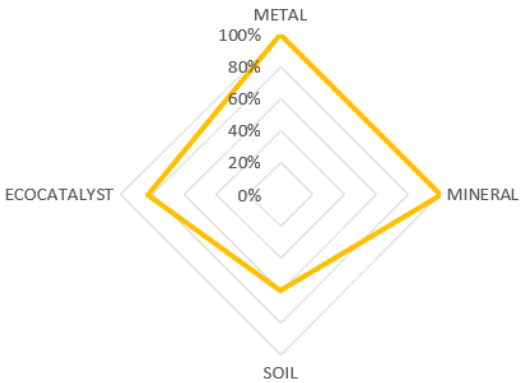
Answers and confidence for the 16 questions of the smart-phoenix (go/no go tool)

YOUR SCORE:

	DEPOSIT 1	
	SCORE	RATING (%)
METAL recovery potential score	930	100%
MINERAL recovery potential score	930	100%
SOIL improvement potential score	120	60%
ECOCATALYST production potential score	330	83%
TOTAL SCORE	4005	95%
CONFIDENCE LEVEL		100%

DEPOSIT 1: RECOVERY POTENTIAL



WARNING: Make sure your confidence level is high enough in order to ensure your s	DEPOSIT 1
number of questions whose confidence is below or equal to 50	0
number of questions whose confidence is not indicated	0

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Thank you for your attention!

Q&A?

https://www.nweurope.eu/NWE-REGENERATIS/

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General PMSD Information | Current/past ownership and operation | Permits list

Current/ past ownership and operation

N°	Name	Owner or
1	Moines d'Aulnes (Ferme Tout-il-faut)	Both owner ar
2	Fonderies et Laminoirs Ernest Boucquéau| Société du Chemin de Fer de Braine-le-Comte à Gand	Both owner ar
3	Usines Boël	Both owner ar

Permits and authorisations list

N°	Reference (file or internal	Date (year) of autorisatio	Expiration date (year)	Nature of permit	Permit description	Permit/ Authorisation Holder
1	-	1898	1955	Operating permit	Drawn steel wire plant	Gustave Boël SA
2		1955	1957	Operating permit	Authorisation to operate a metallurgical plant ("Ancienne Usine" division, Blast furnace, Steel mill Thomas, Rolling mill division, "Force motrice"	Gustave Boël factory
		1974	2004	Operating permit	Commissioning of the new blast furnace complex and the cold rolling mill, including several operating licence authorisation to operate for 5 boiler type steam	Gustave Boël SA

Street:	Rue des Rivaux 2
Code NUTS:	BE329
X (WGS 84):	4,18087788 °
Y (WGS 84):	50,48613186 °
Site area (m²):	1200000
Administration in charge:	DUFERCO Wallonie SA
Full adress:	Rue des Rivaux 2, 7100 La Louvière

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SURROUNDING AND SITE

Key information:

How many deposit (homogeneous volume) are there on the site? 1

Complementary information on the site	
Total site area (m^2) occupied by residues from metallurgical origin (before investigation)	
Total estimated volume of all the deposits (before investigation)	
Soil and groundwater restriction (related to the presence of hazard):	Yes, industrial use
Have any remediation actions happened on the site?	Yes
Do the site still need to be remediated?	Yes
Urgency of need for remedial actions	Medium
Did the site received metallurgical waste from other industries?	No
Do the site have any infrastructure of historical, architectural or aesthetic (or potential) heritage interest?	No
Presence of a wastewater treatment	Unknown
Presence of a railway access nearby (loading dock)?	Yes
Presence of a waterway nearby (loading dock)?	Yes
Area of bareland > 1ha	Yes

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Social aspects	
Current use	
	Answer
Current status (legal use) of the site	Industrial use
Current use of the site, regardless its official use:	Activities still present (industry, use by pec
Which activities?	Industrial use
Territorial strategy aspects	Existence of a redevelopment project near
Intended future site use	
General risk evaluation	
Severe risk for human health	Yes
Olfactory pollution	No
Distance from the nearest housing (m)	
Surrounding	
Use of land (present or potential, i.e. in the future) within a radius of 50m around the boundaries of the site	
Natural	Not potential
Agricultural	Not potential
Forest	Not potential
Residential	Present
Recreational/touristic	Potential
Economical services	Present
Industrial	Present
Social support	
Wishes of local residents or associations to see the site rehabilitated	Unknown
Description of the social support	

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	Description of industrial processes (historical information)								
	Operator Name	Beggining year date	End year date	Public/ Private?	Processing details and description	Type of industry	Technologies and processes related to infrastructures and activities	List of inputs (include ore ?)	List of outputs (products, coproducts and waste)	spected ones?
1	G. Boël Factory	1850	1994	Private	The coal, heated with gas recovered from the blast furnaces, is then distilled and transformed into coke after 18h.	Coke oven	coking plant, gas cleaning	lean coal	coke, coal gas, benzol, town gas (tar, ammonia sulphate, naphthalene and benzol)	eral oils, omplex esols, te, nitrate sulphur, romatics, heavy
2	G. Boël Factory	1913	1997	Private	The ore and coke are brought in via gueulard and allow to produce 2000 tons of cast iron per day. Then the cast iron is transported in ladles to the steel mill.	Blast furnace	blast furnaces, batch preparation stations and hoists, casting floors, gas cleaning stations and cowpers (hot air production).	ore agglomerate, ore grit, ore fines, coke heavy fuel oil for HF n°6)	Primary cast iron (pig iron), slag, fines dust, gas dust, (black wash sludge sludge, black wash dust, various dust)	Zn),
							ore crushing and			

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Remedial actions

Remedial actions done in the past

	Main type of remediation	Date (year)	Remediation strategy: summary of decisions taken	Residual main metallic soil contamination?	Which one?	Content (mg/kg) in soil	Contamination area (m²)
1	Other	2007	Orientation study made by the Environ company	Yes			
2	Other	2011	SITEREM soil study and remediation plan on the blast	Yes			
3							
4							
5							

Remedial actions planned

	Main type of remediation	Date (year)	Remediation strategy: summary of decisions taken
1			
2			
3			
4			
5			

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DEPOSIT (Homogeneous volume) 1

Name of deposit 1	NWE-REGENERATIS deposit
Description of deposit 1	Deposit mainly constituted by white slags and mixed metallurgical waste (merlon tout-venant)
Current occupation of deposit 1 compared to all volume of deposit (%)	

Main description

General information (before investigation)

Type of residues from metallurgical origin	Presence in deposit 1 ***	Confidence ***	Main Physical state	% (weight)	Total weight (T)	Estimated volume (m^3)	Bulk Density (T/m^3)
Slag	Yes	Very high (100%)	Solids (rock, gravel)				
Metal scraps	Yes	↑ *please only indicate confidence just above for all types of residues*	Solids (rock, gravel)				
Ashes	Yes		Powdered (fine particles)				
Dust	Yes		Powdered (fine particles)				
Sludges	Yes		Sludge				
Refractories	Yes		Solids (rock, gravel)				
None from the list	No						
Total		Very high (100%)		0%	0	0	0

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Main description

General information (before investigation)

	Answer	Confidence level
Estimated total volume of the residues from metallurgical origin (m³) in deposit 1 ***	1000000	Very high (100%)
Estimated surface occupied by deposit 1 (m²) ***	1000000	Very high (100%)
Are the residues clearly separated from each other, or mixed? ***	Mixed	Very high (100%)
Current use of this surface, regardless of the official use of deposit 1 ***	Abandoned (without prote	Very high (100%)

Exploitation/production period

Beginning date	
End date	

Waste deposit location:*

Corner 1	x coord		y coord	
Corner 2	x coord		y coord	
Corner 3	x coord		y coord	
Corner 4	x coord		y coord	

*Estimated GPS coordinates of 4 corners of deposit 1

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Technical information	
Specific deposit characteristics	
Estimated average thickness (m)	
Estimated average height (above ground) (m)	
Estimated average depth (below ground) (m)	
Main water content of the excavated materials (above water table) (%)	
Estimated homogeneity	Homogeneous at small scale
Estimated proportion of large and hard exogenous material in the deposit	≤5%
Origin of the metallurgical waste	Produced on site
Stability	
General slope	Gentle slopes (less than 15° from horizontal)
Water table	Deposit >1m above the water table
Osha classification (stability) before excavation	Type C, e.g. granular soils (gravel, sand or loamy sand), or submerged soil or soil from which water is freely seeping or submerged rocks that are not stable
Rehabilitation status	
Rehabilitation status of the surface occupied by deposit 1	Necessary to rehabilitate
Sampling results	Sampling results available
Visually observable contamination	No
Odour perception	No
Presence of physical barriers*	No
*physical barrier to limit dispersion of pollutants	
Top layer	
Presence of a cover layer at the top	No
Watertightness layer	No specific watertightness layer
Rainwater drainage	No specific rainwater drainage layer
Gas drainage	No specific gas drainage layer
Type of cover layer	None
Bottom layer	
Presence of a cover layer at the bottom of the deposit	No
Watertightness layer	No specific watertightness layer
Leachate drainage layer	No specific leachate drainage layer
Describe any changes in cover over time	-

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Leachates and drainage	
Presence of water/ leachates table that can freely flow during works	Unknown
Height (below ground) of water table (m)	
Presence of a drainage system	
Presence of a leachates treatment plant on site	
Presence of a leachates treatment plant nearby	
Monitoring, gaz and other technical information	
Presence of a monitoring system still in use?	No
Presence of biogas	
Presence of venting system	
Presence of monitoring wells	Yes
Presence of pipes	
Presence of tanks	
Presence of cables	
Presence of aerial electric lines	
Presence of large structure, foundations or underground building (infrastructure)	Yes
Presence of sewers	
Presence of canals	Yes
Presence of available access roads (for trucks)	Yes
Nature and condition of the pavement	Gravel road

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Environmental context

Risk evaluation

Flood risk	Low
Fire risk	Low
Risk of collapse	Medium
Risk of person accident	Serious
Risk of direct exposition to hazardous substances, leachates or waste	Serious
Erosion risk	Medium
Air emission risk (e.g. biogas, industrial gas, dust)	
Other risk	No
Specific environmental issue (if it exist)	
Impact of the rehabilitation project on the environment	Positive

Type of waste		Presence in deposit 1	Main Physical state	% (weight)	Total weight (T)	Estimated volume (m^3)	Bulk Density (T/m^3)
Hazardous waste	radioactive waste	Possible					
	hospital waste	None					
	military waste	Possible					
	asbestos	Assessed					
	Tanks containing liquid	Possible					
	Other						
None from the list							
	TOTAL			0%	0	0	0

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Surface water and groundwater vulnerability

Surface water vulnerability	Medium risk of contamination
Groundwater vulnerability	High risk of contamination
Groundwater exploitation	Exploited
Drinking water protection zone	No
Level of upper groundwater table (meter below ground level)	
Leachates production	

Geological information

Bedrock description	
Geological context	

Soil and topsoil information

Presence of a topsoil layer on the top of the deposit	No
Thickness of the topsoil layer (m)	
Permeability	
Soil texture	

Fraction (%) :

Sand ->	
Silt ->	
Clay ->	

Fertility parameters :

pH	
Cation exchange capacity (cmol/kg)	
CaCO3 (g/kg)	
Available phosphorus (g/kg)	
Corg/Ntot (g/kg)	
Electrical conductivity (mS/cm)	

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Heavy metals/ Metallic trace elements concentration in the topsoil :

Metallic trace element name ->	Zn	Fe	Cu	Pb	...	...	...
Presence in high concentration?							
Content (mg/kg)							

Biodiversity

Valuable biodiversity on site	No
Description of the valuable biodiversity	
Is the site located in a Natura 2000 zone?	No