Ministerial Decree establishing the standard procedure for the exploratory soil investigation under the Soil Decree of 27 October 2006

Legal bases

This Decree is based on:

- the Soil Decree of 27 October 2006, Article 28(2), as replaced by the Decree of 8 December 2017;
- the VLAREBO Decree of 14 December 2007, Article 7.

Procedural requirements

The following procedural requirement has been met:
- Having regard to the proposal of the standard procedure for the exploratory soil investigation by OVAM of 9 December 2024.

Legal context

This Ministerial Decree is in line with the following regulations:
- the Ministerial Decree of 7 March 2023 establishing the standard procedure for exploratory soil investigation under the Soil Decree of 27 October 2006.

THE FLEMISH MINISTER OF ENVIRONMENT AND AGRICULTURE DECREES:

Chapter 1. Establishing standard procedure

Article 1. The standard procedure for the exploratory soil investigation is set out in the Annex to this Decree.

Chapter 2. Repeal provision

Article 2. The Ministerial Decree of 7 March 2023 establishing the standard procedure for exploratory soil investigation under the Soil Decree of 27 October 2006 is hereby repealed.

Chapter 3. Transitory provisions

Article 3. Exploratory soil investigations for which the report is submitted to the OVAM before 1 February 2025 and which the OVAM assesses after 31 January

2025 shall be assessed in accordance with the standard procedure in force at the time the orientation soil investigation report was submitted.

Article 4. Exploratory soil investigations for which the report is submitted to OVAM in the period from 1 February 2025 to 30 April 2025 must comply with:
1° the standard procedure for the exploratory soil investigation, laid down in the annex to the Ministerial Decree of 7 March 2023; or
2° the standard procedure for the exploratory soil investigation, as set out in the Annex to this Ministerial Decree, with the exception of the provisions of the aforementioned standard procedure in italics; or
3° the standard procedure for the exploratory soil investigation, established in the Annex, attached to this Ministerial Decree.

Article 5. Exploratory soil investigations for which the report is submitted to OVAM in the period from 1 May 2025 to 31 August 2025 must comply with:
1° the standard procedure for the exploratory soil investigation, as set out in the Annex attached to this Ministerial Decree, with the exception of the provisions of the aforementioned standard procedure in italics; or
2° the standard procedure for the exploratory soil investigation, established in the Annex, attached to this Ministerial Decree.

Chapter 4. Entry into force of the provision.

Article 6. This Decree shall enter into force on 01 February 2025.

Brussels, ... (date).

The Flemish Minister for Environment and Agriculture,

Jo BROUNS

Annex. Standard procedure for the preliminary soil investigation

Sole article. The standard procedure for the exploratory soil investigation referred to in Article 1 of the Ministerial Decree of (MD date) establishing the standard procedure for the exploratory soil investigation under the Soil Decree of 27 October 2006 is established as follows:

STANDARD PROCEDURE FOR THE EXPLORATORY SOIL INVESTIGATION

CONTENTS

Part 1: Introduction

1 FRAMEWORK

1.1 SYNOPSIS

This standard procedure is a manual for conducting an exploratory soil investigation, and for drawing up and submitting a report on it as referred to in Article 28(2) and (3) of the Soil Decree.

An exploratory soil investigation will be conducted and its report will be drawn up under the supervision of a Type 1 or Type 2 soil remediation expert. This standard procedure is addressed to the soil remediation expert and is therefore written accordingly.

This standard procedure uses the following symbols as a reading guide [1]:
- **Binding elements** (↑) are always mentioned in the approach, and are highlighted in the report.
- You can deviate from the **guiding elements** (↗) with justification. Include the substantiated and credible motivation in the report.
- You may deviate from the **advisory elements** (↘) with justification. You should not mention the deviation and the justification in the report.
- **Additional clarification** (↓).

Codes of good practice and other technical-scientific information are available as support. Consult www.ovam.vlaanderen.be for this.

An explanation of the terms used in this standard procedure can be found in Annex 1.

This standard procedure describes the steps to be followed in carrying out an exploratory soil investigation (part 2) and in reporting and data transfer (part 3).

1.2 PURPOSE OF THE EXPLORATORY SOIL SURVEY

An exploratory soil investigation determines whether there are clear indications of the presence of soil contamination. Collect all the data so that you can express your opinion on the need for a descriptive soil investigation.

The exploratory soil investigation will:
- be clear and unambiguous for all parties (soil remediation experts, OVAM, the client, third parties, etc.);

1 The reading guide is only relevant if the element is applicable. Example: the performance of an DAEB is of course not binding if there is no historical contamination above the soil remediation standard in the solid part of the earth or the groundwater. This should therefore not be highlighted in the report.

- allow for the verification of a qualitative implementation;
- by its structure allow the information to be easily found (and exported).

In the exploratory soil investigation, you collect all the data needed to support your conclusions. Evaluate this data in order to arrive at a reasoned decision or opinion.

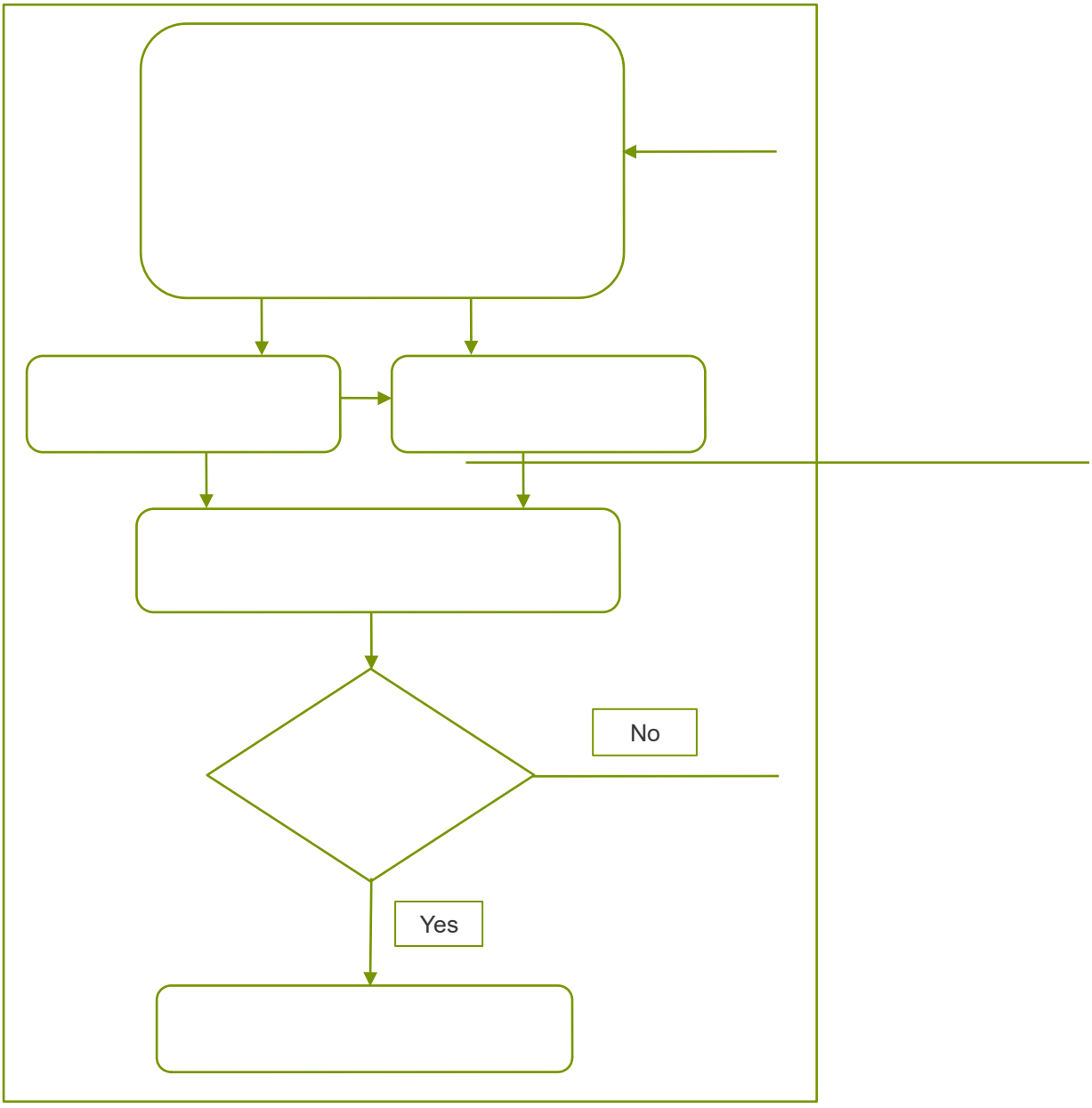


figure 1: cyclical approach to exploratory soil investigation

1.3 YOUR TASKS AND RESPONSIBILITIES

↓ It is your task and responsibility to follow the provisions of the Soil Decree, the VLAREBO, the VLAREL, the CMA, this standard procedure and the various codes of good practice during the conduct of the exploratory soil investigation and when drawing up the report. You are responsible for the tasks in-house, and for the outsourced tasks.

Seek assistance from external experts if you determine that the complexity of the assignment exceeds your resources and capacities as a soil remediation expert.

This standard procedure does not affect the obligations you have as a soil remediation expert under other legal regulations.

1.4 QUALITATIVE, INDEPENDENT AND OBJECTIVE IMPLEMENTATION: INCOMPATIBILITY – MANAGEMENT MEASURES

1.4.1 Incompatibility

Legal basis: Article 53/5(1) of the VLAREL

↑ In the first instance, you will have to assess for yourself whether you are able to carry out a specific assignment qualitatively, objectively, and independently. This assessment will be carried out in accordance with the method laid down in this standard procedure. It is important that each staff member involved in providing the service, or the expert themselves when it comes to a natural person, is aware of the preconditions for the objective and independent execution.

↓ There is a presumption of incompatibility for the soil remediation expert in the following cases:

- The client or the contractor of the soil remediation works, or a person exercising a managerial role at the client or the performer of the soil remediation works, is the soil remediation expert themselves or a board member, director or manager of the soil remediation expert.
- The client or the contractor of the soil remediation works, or a person exercising a managerial role at the client or the client of the soil remediation works, is a blood relative or relative by marriage of the soil remediation expert or a board member, director or manager of the soil remediation expert, in the direct line up to and including the second degree and in the collateral line up to and including the third degree.

- The client or the contractor of the soil remediation works is a shareholder or belongs to a group of shareholders of the soil remediation expert who (jointly) directly holds a participation of more than 5 % of the voting shares of the soil remediation expert.
- the total turnover for the client or associated companies is, on an annual basis, more than 50 % of the turnover of the soil remediation expert;
- The client or the contractor of the soil remediation works is a direct or indirect creditor of the soil remediation expert for more than 35 % of the total debts of the soil remediation expert.

↓ This list is non-exhaustive, and is therefore without prejudice to the intended response of the soil remediation expert to objective and independent implementation. You must verify in each specific case whether you are in a state of incompatibility. If the soil remediation expert is not in a situation from the list, this does not mean that there can be no specific case of incompatibility.

1.4.2 Management measures

Legal basis: Article 53/5(2) of the VLAREL

↑ If, in a specific case, you believe that you are in a situation of incompatibility, you can only carry out the assignment if you take proactive management measures. These management measures will ensure independent and objective performance of the contract.

Management measures

↑ In case of incompatibility, checks are carried out by another soil remediation expert. If there is incompatibility due to blood or affinity, ensure internal separation of roles.

Procedure

↑ You are required to describe the management measure in the report. You also include the report of the inspection by another soil remediation expert. The report must therefore contain an explanation and assessment of the management measure implemented.

Part 2: Implementation

2 ADMINISTRATIVE DATA

↑ You collect all data to complete the administrative part of the report (see chapter 8.2).

2.1 PROTECTION OF PERSONAL INFORMATION

↑ The report may only contain personal information for natural persons in the section with administrative data. This is after all the only part of the report that will not be freely accessible.

↑ In the administrative part of the report, you assign a unique 'letter code' to the natural persons. In the rest of the report, you refer to this letter code. In this way, the personal information remains protected.

2.2 IDENTIFICATION OF THE GROUNDS EXAMINED

↑ You will collect the following information on all the grounds examined:
- The cadastral identification of the land. Land that does not have a cadastral plot number can be described by the address. The name of the soil (examples: Stationsstraat, Leuven-Mechelen canal) is clearly mentioned. A watercourse is described by the number of the VHA segment (Flemish Hydrographic Atlas), in combination with the Lambert coordinates of the beginning and the end of the investigated trajectory.
- The data of the current user and operator, if different from the land register, that you obtain from sources other than the land register. In the case of compulsory co-ownership, state the details of the association of co-owners (VME) and, if necessary, of the property manager, who is responsible for managing the VME. The VME will always mention you as a user. If there no association of co-owners present, please provide the details of the individual owner(s), user(s), and operator(s) that you obtain from a source other than the land register. Is the contamination linked to a specific plot? Indicate the operator and user of this lot. If the water bottom is sampled, indicate the watercourse manager.
- The details of the relevant former owners, users and operators of the source plots. Indicate also the period during which that owner, user or operator was active.
- The personal data of the client and the capacity in which he commissions the exploratory soil investigation (examples: transferor, operator, notary).
- The type of destination based on the regional plan, a spatial implementation plan, etc.
- The actual use of the research site.

↑ The details of the VME, property manager, owners, users and operators must be correct and up-to-date. You verify the authenticity, accuracy and completeness of the information you received regarding this.

↘ Indicate also since when the current owner, user or operator has been present at the research site in that capacity.

2.3 ASSIGNING LABELS

↑ Each report of exploratory soil investigation receives at least one label. The OVAM uses the labels for data mining.

↑ More information on the labels and their definitions can be found in Annex 2.

3 PRELIMINARY STUDY

↑ You are conducting a preliminary study.

The purpose of the preliminary study is to:
- determine and demarcate the research site as the subject of the exploratory soil investigation;
- acquire information to determine the research strategy to be implemented.

3.1 DELIMITATION OF THE RESEARCH SITE

3.1.1 General principles

The research site is demarcated on the basis of the cadastral boundaries of one or more cadastral parcels.

You can deviate from this general principle in the following situations:

3.1.2 Deviations

3.1.2.1 Examination on land that is not cadastrally numbered

If you carry out the exploratory soil survey on land that is not cadastrally numbered, the survey location is demarcated in the following way:
- The demarcated units must have the same owner or user.
- Identify all potential sources of contamination *(including discharge points and transport areas)* in suspect areas. Suspicious zones must be in the form of a rectangle. You include the Lambert coordinates of the vertices in the exploratory soil investigation.
- Suspicious areas that are less than 50 metres from the installation for which you are conducting the investigation and that have the same owner or user are grouped into a single unit.

3.1.2.2 Investigation in the context of the periodic inspection obligation for certain risk installations or the closure of a risk installation

Do you carry out the exploratory soil investigation in the context of the periodic survey obligation for certain risk installations or the closure of a risk installation? If so, you can limit the research to a part or several non-contiguous parts of the cadastral plot if you take the following guidelines into account:

- The operation study brings together all the facilities:
  - which form an environmental technical unit [2] with the same periodicity, under a periodic examination obligation;
  - to which the closure applies, in the case of a closure of a risk installation.

  You also take into account the associated pipes *and current and former discharge points*.
- The research site may consist of one or more risk zones. In a risk zone, the installations subject to investigation will be grouped together that are less than 10 metres apart.
- Define the research location by the Lambert coordinates of the vertices. You clearly indicate the research location on a plan.
- In the decision of the exploratory soil investigation, you clearly refer to the examined part of the cadastral plot.
- You use the standard title 'Exploratory soil investigation – Operational Research: Street and Number, Municipality of the Research Site' for the report.

Within the research site, you will investigate all current and former potential contamination sources belonging to the operational zone to be investigated.

3.1.2.3 Investigation in the context of a transfer of a private lot with an undivided share in the common parts in horizontal forced co-ownership

↓ For example:
A business centre is organised into a system of horizontal forced co-ownership. Both in the private lot and in other lots or in the common parts, a risk installation may be located or potential sources of contamination may be present.

If you are conducting the exploratory soil investigation in the context of the transfer of such a lot, you can limit the investigation to your own private lot and the common parts.

Here is how to use this exception:
- You can only apply this exception in the case of forced co-ownership. You add the statutes or the basic deed of compulsory co-ownership to the exploratory soil investigation. You indicate the lot concerned and the common parts on a plan.
- Define the research location by the Lambert coordinates of the vertices. You clearly indicate the research location on a plan.
- In the decision on the soil investigation, you clearly refer to the lot(s) examined.
- Use the standard title 'Exploratory soil investigation for a property subject to forced co-ownership system – carried out on plot ... and the common parts – street and number, municipality of the research site' for the report.

2 An environmental technical unit is defined in Article 1.1.2 of VLAREM II.

3.1.2.4 Investigation in the context of a transfer by termination of the rights of use in rem or of a concession on part of a cadastral plot

↓ For example:
On a cadastral plot, there are two operators with separate concession agreements.
One of the concessions is terminated. Termination of a concession is a transfer of land.

If the rights of use in rem or the concession ate limited to part of a cadastral plot and are those rights of use or the concession terminated, you can limit the investigation to the part of the cadastral plot for which the rights of use or concession are terminated. You nevertheless examine the entire zone of the right of use or the concession, even if only part of it is transferred.

Here is how to use this exception:
- You can only apply this exception to a business or personal right of use on part of a cadastral plot. You add the (parts of the) documents that regulate the right of use on the part of the cadastral plot to the exploratory soil investigation.
- Define the research location by the Lambert coordinates of the vertices. You clearly indicate the research location on a plan.
- In the decision on the soil investigation, you clearly refer to the examined part of the cadastral plot.
- You use the standard title 'Exploratory soil Investigation for the transfer of part of a cadastral plot by termination of use rights: street and number, municipality of the research site' for the report.

3.2 ENVIRONMENTAL FEATURES

↘
- topographic height and map;
- use of the surrounding land;
- presence of surface water;
- aerial photographs;
- local relief.

3.3 HISTORICAL INVESTIGATION

The historical investigation contains information about the former land use, the current and former risk installations, the current and former permits, etc.

↑ You discuss all information relevant to the development of the sampling strategy that you received from the municipality (including the municipal inventory), the client, and the current operator. This information concerns damage cases, embankments, earthmoving, data from tanks, history of activities and information about current activities based on the recent environmental or environmental permit, *the presence of discharge*

points related to current and past risk installations, relevant complaints or reports on environmental nuisances, information on air emissions, annual integrated environmental report and EIA reports.

↑ You provide a chronological overview of the land use from the point of view of a potential source of soil contamination. You can split the overview into periods. You include the following elements (if applicable):
- a description of the production processes and substances used;
- a summary of the relevant authorisations;
- the location and a description of the potential sources of contamination, such as risk facilities, storage tanks, pipes to, from and between production or storage areas, calamities, chimneys, ducted and diffuse air emissions, *current and former discharge points, transshipment areas,* etc.
- non-compliance with usage restrictions, etc.

↑ Indicate which elements you have taken into account to determine the asbestos suspicion of the site. You use sampling strategy 8 for this.

↑ You will also consider other potential sources of pollution that lie outside the research site but are related to the operation *(e.g. discharge points)*.

↓ For example:
A pump island of a gas station is located on the public domain and therefore outside the cadastral plot where the actual gas station is located. You will investigate the pump island in an exploratory soil investigation if the gas station is still in operation. Has the operation been stopped and are you conducting the exploratory soil investigation on behalf of someone who was never the operator of the pump island on the public domain, and was a possible legal predecessor also not an operator? In that case, the exploratory soil investigation may be limited to the boundaries of the cadastral plot on which the actual filling station was located.

↘ You describe the changes in soil cover and the timing of these changes.

↘ You can consult the following sources of information (if relevant):
- previous users;
- the environmental coordinator;
- the General State Archives, including the 'war damage files';
- aerial photographs;
- the risk installations tool – RIT;
- existing ground plans;
- the location of precipitation jars the measurements of which are related to the activity (including the measurement points outside the research site but whose measurements are related to the operation);
- the data on air and water emissions from the integrated annual environmental report and EIA reports.

3.4 RESULTS OF PREVIOUS SOIL SURVEYS AND SOIL REMEDIATION

↑ You list the previously conducted *(water)*soil investigations and *(water)*soil remediation.

↑ You provide a summary of each decision (see table 21). You also state the precautions, safety measures, usage restrictions and usage recommendations that apply. You evaluate the information from previous studies for relevance, accuracy, reliability,... You screen the old results against the current standardization framework. You verify whether there is an impact on the sampling strategy and the decision of the soil investigation.

Examples of elements that can be used in the evaluation of the relevance of previously conducted soil surveys and soil remediation:
- sampling carried out under the direction of a soil remediation expert;
- analyses carried out by an approved laboratory;
- drilling descriptions;
- location of the samples;
- date of fieldwork and analytical results;
- date of the site visit.

☒↘ Were soil investigations previously conducted but never submitted to OVAM? If so, add the reports as an annex to the soil investigation.

↘ You will evaluate the previously conducted technical reports.

3.5 SITE VISIT

↑ You are conducting a field visit.

During the site visit, you will collect additional information about any damage, spillage, refurbishments, embankments, replenishment soils, pipes, air emissions, polluting substances, *current and former discharge points,* etc.

Inspect the potential sources of contamination (examples: the nature and condition of soil sealing, the volume of storage tanks, visually perceptible contamination, odour perception, the presence of large constructions or drainage works, asbestos applications, fireplaces, non-guided emission sources, etc.), *the points of discharge and the routes to the points of discharge, transshipment areas, etc.*

↑ Illustrate the report of the site visit with photos of the risk locations and the surrounding area.

↑ If usage restrictions apply, check they are complied with.

↑ During the site visit or on the basis of the preliminary investigation, do you identify anything at the risk installations that may give rise to new soil contamination? Please include these findings in the site visit report.

3.6 GEOLOGICAL AND HYDROGEOLOGICAL DATA

↑
- groundwater table depth;
- a description of the geology relevant to determining the research strategy;
- licensed and unlicensed groundwater abstractions at the research site, indicating depth, flow, location and use;
- the location of the research site within a drinking water catchment area or a protection zone.

↗ You verify the probable horizontal flow direction of the groundwater.

↘
- The vulnerability of groundwater. You derive the groundwater vulnerability from the groundwater vulnerability maps. You compare the groundwater vulnerability as indicated on the maps with the actual situation at the research site. If necessary, adjust the groundwater vulnerability index.
- The presence of brackish or salt water.
- Permitted and non-permitted groundwater abstractions within a radius of 500 metres from the boundary of the research site. Indicate the depth, aquifer, pumped flow rate and location of each extraction. Indicate whether the extraction is upstream or downstream of the research site.
- Dewatering that may affect the groundwater level at the research site.
- Drinking water abstractions, catchment areas and protection zones type I, II or III within a radius of 2 kilometres. Indicate the name used by the Environment Department of the Flemish Government. Designate the water catchment areas and protection zones on a copy of the topographic map on which the research location is also indicated.
- Swell zones.

4 SAMPLING STRATEGY BASED ON THE CONTAMINATION HYPOTHESIS

You consider the provisions and strategies in this chapter to be **guiding (↗)**, unless otherwise indicated. You can only deviate with justification if you can guarantee an equal or better quality.

4.1 ESTABLISHING THE CONTAMINATION HYPOTHESIS

You draw up a pollution hypothesis, based on the data you collected during the preliminary study:
- Demarcate the suspect zones.
- Within those suspect zones, you define the potential sources of contamination and the associated suspect substances. Multiple potential sources of pollution may be present in a suspect zone.

You also take into account the possible distribution routes of the contamination.

To determine suspect substances, follow the following procedure:
- List the sources of information about suspect substances, environmental permits, product information, etc.
- You list the substances used in the production process, including raw materials, intermediate products, waste products, etc.
- You evaluate and justify the necessity for inclusion in the soil investigation for each substance.
- You evaluate the need for analysis of each suspect substance on the solid part of the earth, the groundwater *and the sediment*.

4.2 SAMPLING STRATEGIES AND GENERAL SAMPLING GUIDELINES

4.2.1 Developing the sampling strategy

Based on the contamination hypothesis, develop a sampling strategy by selecting one or more of the following strategies:
- Sampling strategy 0: strategy without or with limited fieldwork.
- Sampling strategy 1: screening of the entire research site.
- Sampling strategy 2: suspect zone where the potential source of contamination may give rise to a homogeneously distributed contamination.
- Sampling strategy 3: suspect zone where the potential source of pollution may give rise to heterogeneously distributed pollution and where the potential source of pollution can be located.
- Sampling strategy 4: suspect zone where the potential source of pollution may give rise to heterogeneously distributed pollution and where the potential source of pollution cannot be located.
- Sampling strategy 5: research site for which a statutory exploratory soil investigation is already available.

- Sampling strategy 6: suspect area where soil contamination has been or is being removed.
- Sampling strategy 7: research site with a natural groundwater level deeper than five meters
- Sampling strategy 8: asbestos.
- Sampling strategy 9: landfills.
- Sampling strategy 10: previously undetermined substances for which there are indications of serious soil contamination.
- *Sampling strategy 11: Examination of the waterbed and banks related to discharge points.*

These sampling strategies are further clarified in the following chapters. The number of drillings and piezometers to be installed and the number of samples to be analysed are also described. The number of drills is the total number of drilling points, including the number of piezometers.

You will evaluate whether these sampling strategies are sufficient to provide a picture of the contamination situation.

Drillings, piezometers and analyses that you use for a particular sampling strategy can also be used for other sampling strategies.

Are the centres of two potential sources of pollution less than five metres apart? Then you can use the sampling points for both sources without additional justification in the report.

4.2.2 General guidelines for sampling

You perform the sampling and analysis at the **place** where the contamination is most likely to be present.

For the **depth** of the drilling, you use the following principles:
- Drilling will be carried out to a depth of at least 2 metres and at least half a metre below the suspect bottom layer.
- In the case of anthropogenic disturbances, drill down to at least half a metre below this disturbance.
- If the basis of the anthropogenic disturbance is deeper than 5 meters, perform 20 % of the total number of drillings (with a minimum of one drilling) up to half a meter below this disturbance.
- If the anthropogenic disturbance reaches at least eight meters deep, you perform 20 % of the drillings (with a minimum of one drilling) to a depth of eight meters.

You may only **use mixed samples** in the case of non-suspect samples from the same homogeneous soil layer.

If there is a **groundwater extraction** at the research location, check whether sampling of this groundwater is necessary.

Based on the activities, the history and the suspect substances, **the soil layer with the highest probability of contamination cannot be selected**? Then, when performing the drilling, apply a screening method for the selection of the samples or analyse more samples.

↗ Are **chlorinated solvents** (or other substances that form DNAPL) a suspected substance? Place at least three piezometers to determine the direction of groundwater flow if this is not yet known from a previous decree-based soil investigation. Place at least one piezometer downstream of the potential contamination source. Is the groundwater level deeper than five meters? Then use sampling strategy 7 to determine if you need to install piezometers. If you meet the conditions for implementing strategy 0, you do not need to determine the direction of groundwater flow by means of three monitoring tubes when chlorinated solvents (or other substances that form DNAPL) are considered a suspect substance.

↗ *Are you examining a waterbed at the level of a **discharge point**? Use sampling strategy 11.*

↑ To determine whether PFAS is to be considered a suspect substance and when elaborating the sampling strategy for PFAS testing, please take into account the requirements of the PFAS Testing Directive.

In urbanised areas, it is sometimes impossible to drill at the research site itself (for example, due to the presence of an underground parking garage covering the entire research site or buildings occupying the entire research site). Justify the technical impossibility of performing drilling work and taking a representative sample.

4.2.3 Sampling strategy 0: strategy without or with limited fieldwork

Apply this sampling strategy in case of a limited chance of soil contamination (Chapter 4.2.3.1), in the presence of specific risk installations (Chapter 4.2.3.2) or relevant soil information from another or previous soil investigation (Chapter 4.2.3.3).

You do not need to use this sampling strategy on all areas of the survey site. You can therefore combine sampling strategy 0 on one or more grounds with sampling strategies 1 to 11 on other grounds, except for sampling strategy 10. You can check whether this sampling strategy for PFAS research can be applied in the guideline 'PFAS research'.

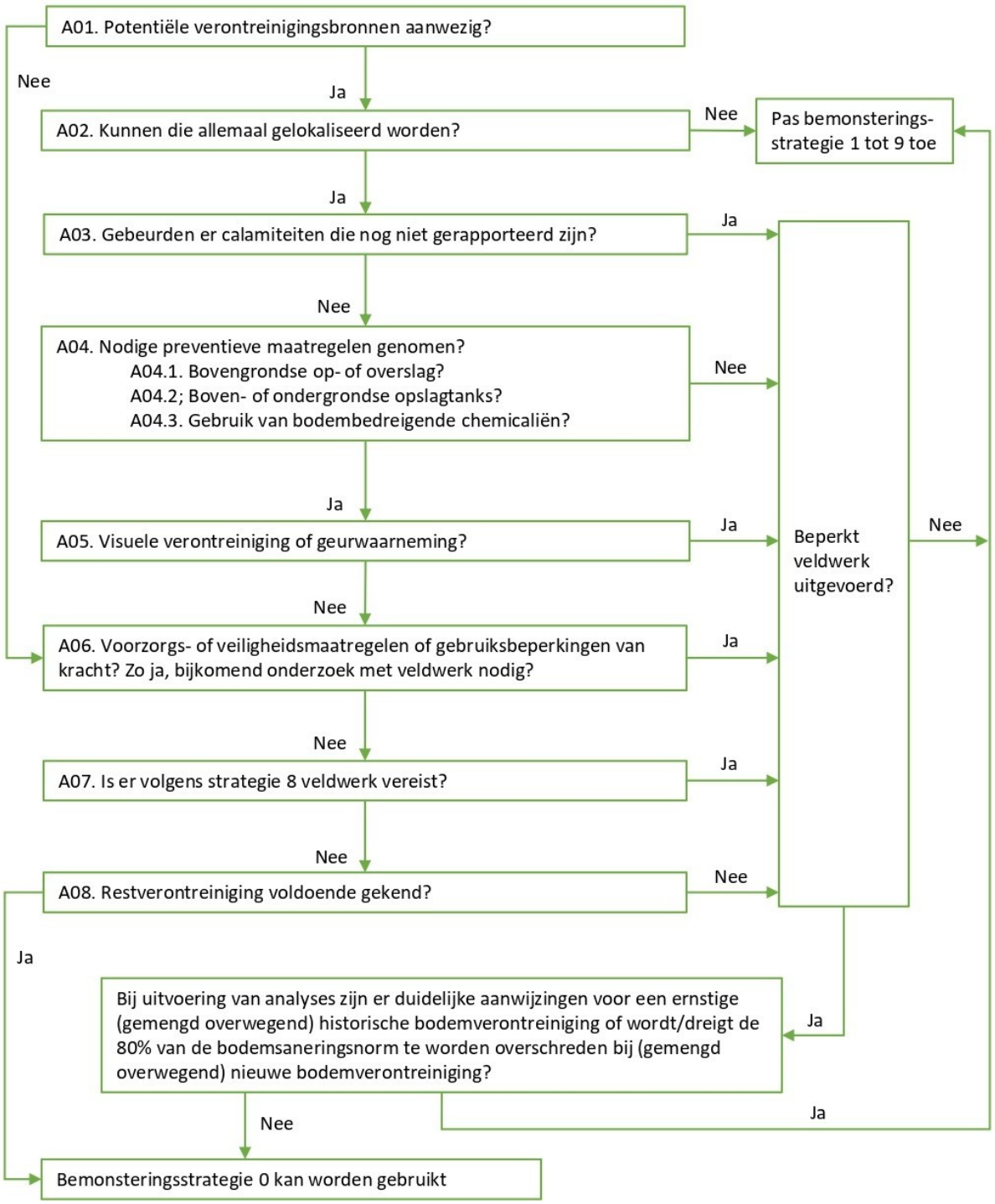
Sampling strategy 0 can never give rise to a descriptive soil investigation for contamination arising on the soil under investigation. Except when there is a homogeneous contamination (Q-phrase) or underflow (W-phrase), there may be contamination for which a descriptive soil investigation or soil remediation project is necessary.

You can also use this sampling strategy if a soil investigation with fieldwork has already been conducted in the past. If in a previous study an O-, P-, Q-, U- or W-phrase was assigned to the soil under investigation, this O-, P-, Q-, U- or W-phrase will take precedence over the G-phrase. The same reasoning applies when the guide value is exceeded in limited field work.

4.2.3.1 Justification based on the limited risk of soil contamination

Using the flowchart in Figure 2, justify your application of sampling strategy 0. Answer the questions of the flowchart. The possibility to apply this sampling strategy will cease as soon as a response gives rise to the installation of a sampling strategy with extensive fieldwork.

Go through the schedule for each soil separately on which you are considering applying sampling strategy 0.



A01. Potentiële verontreinigingsbronnen aanwezig?	A01. Potential sources of pollution present?
Nee	No
Ja	Yes
A02. Kunnen die allemaal gelokaliseerd worden?	A02. Can they all be located?
A03. Gebeurden er calamiteiten die nog niet gerapporteerd zijn?	A03. Are there any incidents that haven't been reported yet?
A04. Nodige preventieve maatregelen genomen?	A04. Have the necessary preventive measures been taken?
A04.1. Bovengrondse op-of overslag?	A04.1. Overground storage or transhipment?
A04.2; Boven- of ondergrondse opslagtanks?	A04.2; Aboveground or underground storage tanks?
A04.3. Gebruik van bodembedreigende chemicaliën?	A04.3. Use of soil-threatening chemicals?
A05. Visuele verontreiniging of geurwaarneming?	A05. Visual pollution or odour perception?
A06. Voorzorgs- of veiligheidsmaatregelen of gebruiksbeperkingen van kracht? Zo ja, bijkomend onderzoek met veldwerk nodig?	A06. Are precautionary or safety measures or restrictions on use in place? If yes, is additional research with fieldwork needed?
A07. Is er volgens strategie 8 veldwerk vereist?	A07. Does strategy 8 require fieldwork?
A08. Restverontreiniging voldoende gekend?	A08. Is residual contamination sufficiently known?
Bij uitvoering van analyses zijn er duidelijke aanwijzingen voor een ernstige (gemengd overwegend) historische bodemverontreiniging of wordt/dreigt de 80% van de bodemsaneringsnorm te worden overschreden bij (gemengd overwegend) nieuwe bodemverontreiniging?	When carrying out analyses, are there clear indications of a serious (predominantly mixed) historical soil contamination, or is there a risk of exceeding 80 % of the soil remediation standard in the case of (predominantly mixed) new soil contamination?
Nee	No
Bemonsteringsstrategie 0 kan worden gebruikt	Sampling strategy 0 can be used
Pas bemonsteringsstrategie 1 tot 9 toe	Apply sampling strategy 1 to 9
Be perkt veldwerk uitgevoerd?	Lim ited fieldwork conducted?

figure 2: flowchart of administrative enquiry without or with limited fieldwork

The questions of the flowchart are further clarified in table 1.

A01	Are there or were there potential sources of pollution? Points of attention: – Storage and transhipment areas for (hazardous) waste, storage tanks for chemicals, fuel tanks,... Take into account category-dependent aspects such as liquid fields, heavy metals from ammunition that end up in the soil,...

	– *Are or were there discharge points related to the current or former risk installations?* – The activities were carried out at a time when soil-threatening substances were not yet used in the production process.
A02	Can you locate all former and current potential sources of pollution on a site plan?
A03	Have any emergencies occurred?
A04	Have the necessary and appropriate preventive measures been taken so as to prevent soil contamination from the start of activities? Under A04.1, A04.2 and A04.3 you will find points of attention.
A04.1	For above-ground storage and transhipment sites, you should pay attention to: – preventive measures and the completion of storage and transhipment sites (example: a liquid-tight soil sealing); – any changes in soil cover or finishing; – the nature and condition of these measures (example: an intact soil sealing); – the effectiveness of these measures; – other arguments on the basis of which fieldwork is considered necessary.
A04.2	For aboveground and underground storage tanks of chemicals, fuels, etc. pay attention to: – the age, volume and characteristics of the storage tanks; – preventive measures (example: a tank); – any changes in soil cover or finishing; – the nature and condition of these measures (example: an intact soil sealing); – leak detection tests carried out; – any tanks removed or decommissioned, tanks disposed of or soil disposed of; – the presence of leaking pipes; – the effectiveness of these measures; – other arguments on the basis of which fieldwork is considered necessary.
A04.3	When using soil-threatening chemicals, you should pay attention to: – all waste streams *and discharge points*; – preventive measures; – any changes in soil cover or finishing; – the nature and condition of these measures (example: an intact soil sealing); – regular monitoring of industrial wastewater, with monitoring measurements complying with environmental quality standards; – the effectiveness of these measures; – other arguments on the basis of which fieldwork is considered necessary.
A05	Did you visually detect any contamination during your site visit (examples: spillage, leaking pipes, etc.) or perceive any odours?
A06	Are there any precautions, safety measures or restrictions on use in place?

A07	Does sampling strategy 8 require fieldwork?
A08	If soil contamination has been removed in the past, can you demonstrate on the basis of the available information on the residual contamination that no additional fieldwork is needed? Example: the well walls and bottom were examined and all analytical results are below 80 % of the soil remediation standard.

table 1: explanation of the flowchart

4.2.3.2 Substantiation based on knowledge of risk management

You justify your choice of sampling strategy 0 based on the knowledge of current and former risk installations. In doing so, you must take into account all activities that can cause soil contamination.

Limited fieldwork can be a tool to support the conclusion. You determine how much fieldwork you conduct for this. The fieldwork can be conducted both with and without analyses. Do you carry out analyses? Then you can only apply this sampling strategy when there are no clear indications of a serious (mixed predominantly) historical soil contamination or when the soil remediation standard is not likely to be exceeded (> 80 % of the soil remediation standard) in case of new/mixed predominantly new soil contamination.

Apply this option in the following situations:
- The risk management was initiated after 1 June 2015;
  OR
- the entry from the list of risk installations is included in Annex 4 or Annex 5.

The risk management was initiated after 1 June 2015

Preventive measures have, in principle, been taken for these installations from the start to prevent soil contamination.

Determine on the spot whether these measures have been maintained. Check that the necessary procedures are in place to ensure that the preventive measures are respected.

You may not apply this sampling strategy expires if you believe that the preventive measures are insufficient to prevent soil contamination.

The heading in the list of risk installations is set out in Annex 4 or Annex 5.

For the **headings in Annex 4**, it is assumed that there is a limited chance of soil remediation with a standard implementation of this activity.

Check whether the actual activity deviates from its standard implementation and you evaluate whether the likelihood of soil remediation is greater as a result.

Examples of indications that the risk of soil contamination is higher:
- The activity has been carried out for a long time. Example: more than 20 years.
- It concerns a larger activity within the heading. Example: an activity of 180 kW if the heading covers activities between 5 and 200 kW.
- There is no soil protection.
- There are indications of incidents with a potential for soil contamination.
- Visual or organoleptic observations indicate the presence of soil contamination.
- There are gaps in the historical information about the activities.
- There is debris present.
- Limited fieldwork indicates that there is soil contamination that may necessitate soil remediation.

The possibility to apply this sampling strategy expires if you believe that the actual activity deviates from the standard implementation in such a way that the likelihood of soil remediation is more than low.

For the **headings in Annex 5**, it is assumed that there is a less than average chance of soil remediation. Based on the actual activity, the likelihood of soil contamination or remediation should be reassessed.

You will check whether there are indications of a reduced risk of soil contamination and soil remediation.

Examples of activities or soil remediation that can confirm the reduced probability:
- The activity was carried out in a limited period.
- This is a smaller activity within the category. Example: an activity of 10 kW if the heading covers activities between 5 and 200 kW.
- The activities are carried out on an upper floor of a building.
- Soil protection has been in place since the start of operations.
- There are no indications of incidents with a risk of soil contamination.
- Soil has already been excavated because underground structures are present. Example: an underground car park.
- Soil protection is in place.
- There are no indications of soil contamination.
- Limited fieldwork indicates that there is no soil contamination that would necessitate soil remediation.

4.2.3.3 Substantiation based on relevant soil information from another or previous soil investigation

The municipal inventory is still being supplemented. As a result, it may occur that one or more grounds of a risk installation or environmental technical unit were not examined in another or previously carried out soil investigation.

The relevant information from the soil investigation for that risk installation or environmental technical unit can be used to apply sampling strategy 0 to the soil(s) not yet examined. Mention the other or previous soil investigations and justify your choice of this sampling strategy for each soil separately.

Check on the spot whether the situation still corresponds to the situation as described in the soil survey carried out.

You make an assessment of the contamination status of the soil that has not yet been examined. Do this on the basis of the pollution status of the adjacent soils and your evaluation of the current situation. In doing so, take into account the statement of the grounds of the same environmental technical unit or similar risk installation.

Assign a classification by nature, O-, P-, Q- (only applicable for homogeneous contaminants), G-, U- or W-phrase, to the plot by nature based on the information from the soil investigation and your evaluation of the current situation.

4.2.4 Sampling strategy 1: screening of the entire study site

You apply this sampling strategy for soils that have not been previously investigated to verify the presence of soil contamination at the entire research site.

You divide the research location into blocks with an equivalent surface area and shape. The drillings, piezometers and analyses are spatially distributed throughout the research site. Analyse the selected samples based on the parameters of the SAP. Also analyse the sample for the suspect substances if you detect an indication of soil contamination.

Perform at least two drillings per block. You have at least one sample of the solid part of the earth analysed per block.

Complete at least one borehole per block into a piezometer. You have at least one groundwater sample analyzed per block.

4.2.4.1 Research sites up to 6 hectares

You provide the number of blocks based on the total area of the research site according to Table 2.

Total area of the survey site in ha (P)	Number of blocks
< 0.05	1
0.05 – 0.5	2
0.5 – 1	3
1 – 2	4
2 – 6	P+2
Number of drills per block: 2	

Table 2: number of blocks for research sites with an area of up to six hectares

Always round up the surface area of the research site.

You can halve the number of blocks Table 2 if the research site cumulatively meets the following conditions:
- The research site has a total area between half a hectare and six hectares.
- The total area of the suspect zones is less than five percent of the area of the investigation site. The area of the suspect zones does not have to be contiguous.

4.2.4.2 Research sites of more than six hectares

You provide the number of blocks based on the total area of the research site according to Table 3.

Total area of the survey site in ha (P)	Number of blocks – standard	Number of blocks – exception
6 – 20	8 + 0.6 (P-6)	8 + 0.25 (P-6)
20 – 100	17 + 0.2 (P-20)	12 + 0.1 (P-20)
100 – 500	Justify the strategy.	Justify the strategy.
Number of drills per block:	**2**	**2**

Table 3: number of blocks for research sites with an area of more than six hectares

Always round up the surface area of the research site.

You can apply the exception of Table 3 only if the research site meets the following conditions:
- The non-suspect zone is designated as a nature area on the regional plan or recognised as a nature reserve by the Flemish Government and actually serves that function.
- The research site is not located in a water catchment area or a protection zone.

4.2.5 Sampling strategy 2: suspect area where the potential source of contamination may give rise to a homogeneously distributed contamination

Apply this sampling strategy if, based on the preliminary study, you do not expect a concentration gradient in the horizontal plane.

Some examples:
- an increase with sludge or slag;
- a functional raising layer;
- (atmospheric) deposition.

Carry out the number of drillings, piezometers and samples to be analysed according to Table 4.

Individual area in ha	Number of drillings (including piezometers)	Number of samples of the solid part of the earth to be analysed	Number of monitoring wells and number of groundwater samples to be analysed
< 0.05	3	2	1
0.05 – 0.2	4	3	2
0.2 – 0.5	6	4	3
0.5 – 1	8	5	3
1 – 2	10	6	4
2 – 3	12	7	4
3 – 4	14	8	5
4 – 5	16	9	5
5 – 6	18	10	6

Table 4: number of boreholes, gauges and samples to be analysed in case of homogeneously distributed contamination

You always round up the surface area of the suspect zone.

Is the individual area larger than six hectares? Then divide the area into sub-areas of up to 6 hectares.

The drillings, piezometers and analyses are spatially distributed over the suspect zone.

If there is a living layer present, you also sample it. Analyse the samples on the parameters of the SAP.

Are you investigating an (atmospheric) deposition? In that case, separately sample the top 10 centimetres from ground level. You take a representative number of samples of this top layer in proportion to the total number of samples to be analyzed.

4.2.5.1 Sub-strategy 2A Atmospheric deposition

With this sub-strategy, you can limit yourself in the vicinity of the research site to sampling and analyses for the solid part of the soil. The analyses may be limited to the suspect substances.

You evaluate the necessity for research due to atmospheric deposition at least in the following cases.
- The facility reports or reported air emissions in the IMJV or available EIA reports for persistent parameters (including POPs, heavy metals, PAHs, asbestos).
- The facility is located in one of the areas of concern (https://www.gezondleven.be/themas/gezondheid-en-milieu/milieugezondheidskundige-aandachtsgebieden).
- Results of atmospheric deposition and/or air measurements are available, showing elevated values related to the activity (including the measurement points outside the study site but the measurements of which are related to the operation).
- Scrap processing industry.
- (Petro)chemical industry.
- Waste treatment and incineration.
- Metallurgy.
- Asbestos processing companies.
- Storage of potentially polluting dust-forming substances.
- Former coal-fired power stations, gasworks.

The above list is not exhaustive; you must always evaluate whether atmospheric deposition can be or was caused as a result of an activity at the research site. If, in the above cases, you do not carry out research into atmospheric deposition, you will provide detailed reasons for not doing so.

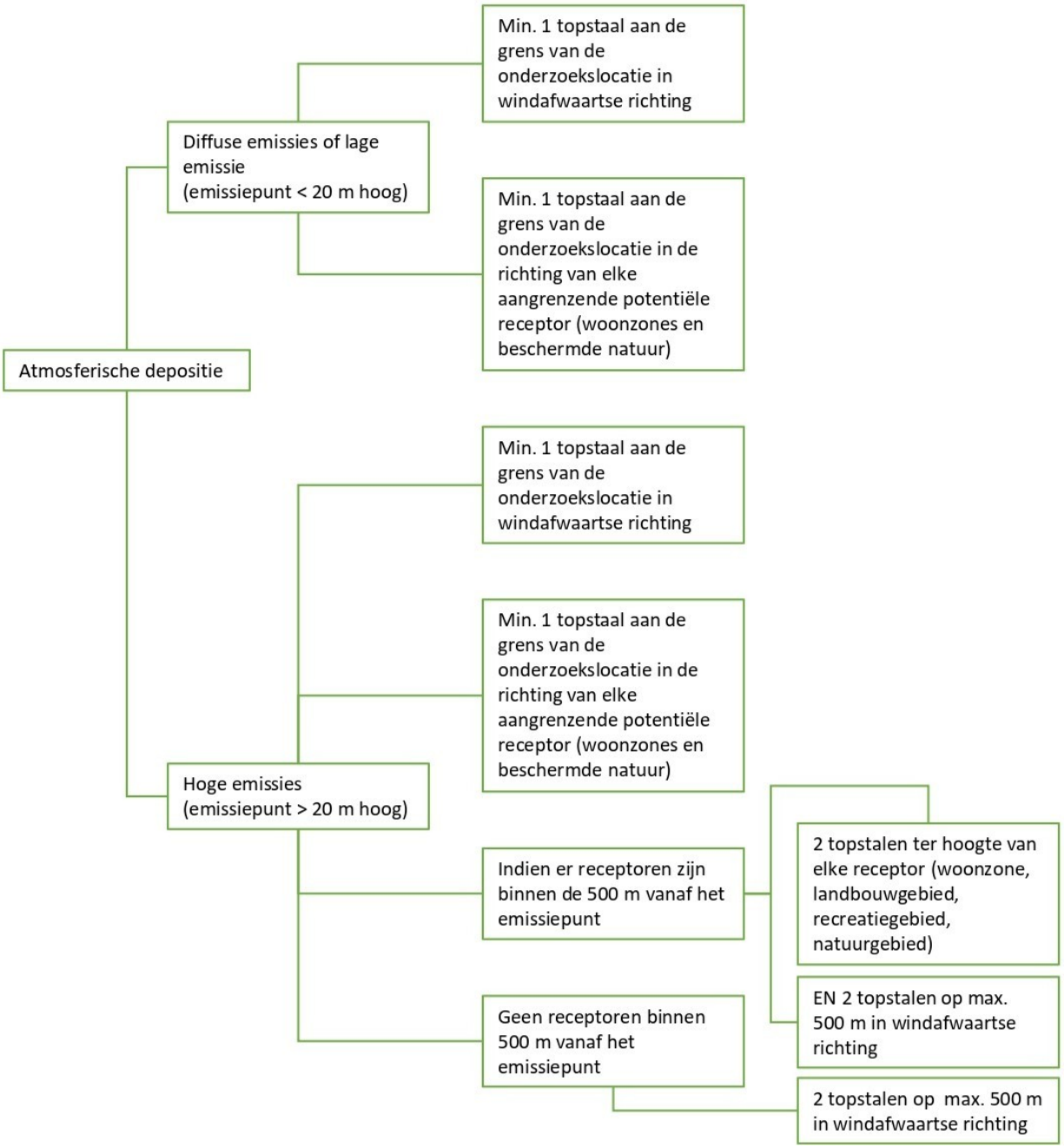
If you decide that atmospheric deposition research is appropriate, you assign the label deposition in the digital portal.

If atmospheric deposition studies are carried out, indicate the emission points (e.g. chimneys) and the dominant wind direction on the plans.

- Analyse at least the number of samples as defined in Table 4 at the research location.
- At the research site, take a representative number of samples from the top layer in proportion to the total number of samples to be analysed from the solid part of the earth (Table 4).
- Separately sample the top 10 centimetres from ground level.
- Take at least 50 % of the samples at the research site, from Table 4, downwind of the potential contamination source, taking into account the dominant wind direction.
- When selecting sampling sites, strive to sample points that are as little affected as possible by other sources of contamination that may give rise to increased concentrations of the same parameters (e.g. not within a known contamination, no roadside verges, etc.).
- Choose unpaved locations. Do not choose locations where it is known that a new surface layer has recently been applied. In cases of historical impact, possibly still conduct research under the paved layer.

- You analyse the soil samples for the parameters of the SAP package and for any additional site-specific suspicious parameters.

On top of the samples listed in Table 4, you perform additional samplings and analyses according to the following flowchart:



Atmosferische depositie	Atmospheric deposition
Diffuse emissies of lage emissie (emissiepunt < 20 m hoog)	Fugitive emissions or low emissions (emission point < 20 m high)

Hoge emissies (emissiepunt > 20 m hoog)	High emissions (emission point > 20 m high)
Min. 1 topstaal aan de grens van de onderzoekslocatie in windafwaartse richting	Min. 1 top steel at the boundary of the research site in a leeward direction
Min. 1 topstaal aan de grens van de onderzoekslocatie in de richting van elke aangrenzende potentiële receptor (woonzones en beschermde natuur)	Min. 1 top steel at the boundary of the research site in the direction of each adjacent potential receptor (residential areas and protected nature)
Min. 1 topstaal aan de grens van de onderzoekslocatie in windafwaartse richting	Min. 1 top steel at the boundary of the research site in a leeward direction
Min. 1 topstaal aan de grens van de onderzoekslocatie in de richting van elke aangrenzende potentiële receptor (woonzones en beschermde natuur)	Min. 1 top steel at the boundary of the research site in the direction of each adjacent potential receptor (residential zones and protected nature)
Indien er receptoren zijn binnen de 500 m vanaf het emissiepunt	If there are receptors within 500 m from the emission point
Geen receptoren binnen 500 m vanaf het emissiepunt	No receptors within 500 m from the emission point
2 topstalen ter hoogte van elke receptor (woonzone, landbouwgebied, recreatiegebied, natuurgebied)	2 top samples at each receptor (residential area, agricultural area, recreation area, nature area)
EN 2 topstalen op max. 500 m in windafwaartse richting	EN 2 top samples at max. 500 m in downwind direction
2 topstalen op max. 500 m in windafwaartse richting	2 top samples at max. 500 m in downwind direction

figure 3: flowchart of additional sampling and analyses.

If the emission point is higher than 20 meters and you have to take samples outside the research site, these samples may be at a maximum of 500 meters from the emission point. This distance is indicative. If an EIA or other studies are available, where the distance and/or direction where deposition can be expected is included in more detail, take these data into account for determining the sampling location.

If certain pollutants have been emitted in the past, they may already have been leached to underlying soil layers or groundwater, and appropriate sampling, including analysis of deeper layers or groundwater, may be necessary.

Interpretation

Samples at the boundary of the research site, in the direction of adjacent potential receptors, are tested against the destination type of the research site and the destination types of these adjacent receptors. Test samples outside the research location against the destination type of the sampling location.

When evaluating the results related to atmospheric deposition, please take into account the decision schedule below.

<u>New or predominantly new contamination</u>

- Scenario 1: the reference value is not exceeded either inside or outside the research site. Further research is not necessary.

- Scenario 2
  - One or more samples within the research site exceed 80% of the soil remediation standard (based on the destination type of the research site itself)
    or
  - one or more samples at the boundary of (but still at) the research site in a leeward direction or in the direction of relevant receptors exceed 80 % of the soil remediation standard based on the destination type of the adjacent receptors.

Evaluation: Descriptive soil investigation necessary. If the guide value is also exceeded outside the research site for the same parameter group, you assign the same reference number to it.

- Scenario 3
  - The samples within the research site exceed the guide value and 80% of the soil remediation standard is not exceeded and
  - Samples taken outside the study site do not exceed the guide value.

Evaluation: As always, you assign a reference number to the contamination within the research site. A descriptive soil survey is not necessary.

- Scenario 4
  - None of the samples within the research site (including samples at the border) exceed 80% of the soil remediation standard (based on the respective destination type)
    and
  - The samples taken outside the study site exceed the reference value.

Evaluation: carry out an additional evaluation. In doing so, take into account:
- In the past, the installation has exceeded the limit values for emissions to air for the annual integrated environmental report for the parameter/parameter group concerned.
- Can the increased concentration outside the site be refuted by other known contaminants, modelling, additional sampling, fingerprinting, etc.

→ If no unambiguous other cause can be defined: descriptive soil investigation is necessary.

<u>Historical, predominantly historical contamination or non-standard parameters</u>
- Scenario 1: the guide value is not exceeded, either inside or outside the study site: Further research is not necessary.

- Scenario 2:
  - one or more samples within the research site exceed 80 % of the BSN (based on the destination type of the research site itself) or
  - one or more samples at the boundary of, but still on, the research site in a downwind direction or in the direction of the relevant receptors exceed 80 % of the soil remediation standard (based on the respective destination type of the adjacent plots).

Evaluation: verify if there is an DAEB. If the guide value is also exceeded outside the research site for the same parameter group, you assign the same reference number to it.

- Scenario 3:
  - The samples within the research site exceed the guide value, and 80% of the soil remediation standard is not exceeded, and
  - Samples taken outside the study site do not exceed the guide value.

Evaluation: assign a reference number to the pollution within the investigation site. A descriptive soil survey is not necessary.

- Scenario 4:
  - There is no SGEI within the research site (including samples at the border, based on the respective destination type)
    and
  - The samples outside the research site exceed the reference value.

Evaluation: carry out an additional evaluation. In doing so, take into account:
- In the past, the installation has exceeded the limit values for emissions to air for the annual integrated environmental report for the parameter/parameter group concerned.
- Can the increased concentration outside the site be refuted by other known contaminants, additional sampling, fingerprinting, etc.?

→ If no unambiguous other cause can be defined: evaluate the existence of an DAEB. If a DAEB is granted, a descriptive soil investigation is necessary.

4.2.5.2 Sub-strategy 2B exploratory soil investigation for filled quarries and pits

Examine the solid part of the earth around and above the supplied, excavated soil, dredging or clearance spoil. The layer to be examined above the material supplied may be limited to the upper one and a half metres. If that is relevant, you also examine the solid part of the earth under the material supplied.

You also examine the groundwater.

There is no need to re-examine the material supplied if a quarry or pit is filled with uncontaminated, excavated soil, dredging or clearance spoil (section 60 of Annex 1 of VLAREM II). After all, the material supplied must then comply with the VLAREM and VLAREBO provisions (soil displacement regulations). Provided that, in the context of the preliminary study, there are no indications that this has not been conducted correctly. If the preliminary study shows that there are indications that the padding was not carried out correctly, you must examine the material supplied.

4.2.6 Sampling strategy 3: suspect zone where the potential source of pollution can give rise to heterogeneously distributed pollution and where the potential source of pollution can be located

Apply this sampling strategy if, based on the preliminary study, you expect a concentration gradient in the horizontal plane and you can locate the potential contamination source.

4.2.6.1 The potential source of contamination is fully or partially underground

Carry out the number of drillings, piezometers and samples to be analysed according to table 5.

Contiguous area in m² [3]	Number of boreholes (including piezometers)	Number of samples of the solid part of the earth to be analysed	Number of monitoring wells and number of groundwater samples to be analysed
< 5	1	1	1
5 – 20	2	1	1
20 – 50	3	2	2
50 – 100	4	3	2
100 – 500	6	4	3

table 5: number of drillings, piezometers and analyses if the potential source of contamination is fully or partially underground

Always round up the surface area of the intake.

Is the total surface area of the potential pollution source greater than 500 m²? Then divide the area into sub-areas of up to 500 m².

4.2.6.2 The potential source of contamination is an above-ground storage or an above-ground tank of liquids

Carry out the number of drillings, piezometers and samples to be analysed according to table 6.

Contiguous area in m² [4]	Number of boreholes (including piezometers)	Number of samples of the solid part of the earth to be analysed	Number of monitoring wells and number of groundwater samples to be analysed
< 10	1	1	1
10 – 50	2	1	1
50 – 100	3	2	1
100 – 500	4	2	2
500 – 2000	6	4	3

table 6: number of drillings, piezometers and analyses for above-ground storage or an above-ground tank of liquids

Always round up the surface area of the intake.

3 The individual surface area that the potential contamination source occupies contiguously at ground level.
4 The individual surface area that the potential contamination source occupies contiguously.

Is the total surface area of the potential pollution source greater than 2000 m²? Then divide the area into sub-areas of up to 2 000 m².

4.2.6.3 The potential contamination source is an above-ground source but not a storage or tank of liquids

Carry out the number of drillings, piezometers and samples to be analysed according to table 7.

Contiguous area in m² [5]	Number of boreholes (including piezometers)	Number of samples of the solid part of the earth to be analysed	Number of monitoring wells and number of groundwater samples to be analysed
< 100	1	1	1
100 – 500	2	1	1
500 – 2000	3	2	1

table 7: number of drillings, dip-tubes and analyses at an above-ground source, other than a storage or tank of liquids

Always round up the surface area of the intake.

Is the total surface area of the potential pollution source greater than 2000 m²? Then divide the area into sub-areas of up to 2 000 m².

4.2.6.4 The potential source of pollution is a discharge point into surface water

Examine the water bottom according to sampling strategy 11.

4.2.7 Sampling strategy 4: suspect zone where the potential source of pollution may give rise to heterogeneously distributed pollution and the potential source of pollution cannot be located

You apply this sampling strategy if, based on the preliminary study, you expect a concentration gradient in the horizontal plane but you cannot locate the potential source of contamination within a 200 m² zone.

5 The individual surface area that the potential contamination source occupies contiguously.

Carry out the number of drillings, piezometers and samples to be analysed according to Table 8.

Contiguous surface area in ha [6]	Number of drillings (incl. piezometers)	Number of samples of the solid part of the earth to be analysed	Number of monitoring wells and number of groundwater samples to be analysed
< 0.05	4	4	2
0.05 – 0.2	5	5	2
0.2 – 0.5	7	7	3
0.5 – 1	10	10	4
1 – 2	14	14	5
2 – 3	16	16	6
3 – 4	18	18	8
4 – 5	20	20	10
5 – 6	22	22	12

Table 8: number of boreholes, gauges and analyses for heterogeneously dispersed contamination where the source cannot be located

Always round up the surface area of the research site.

Is the individual area of the suspect zone larger than 6 ha? Then divide the area into sub-areas of a maximum of 6 ha.

4.2.8 Sampling strategy 5: research site for which a statutory exploratory soil investigation is already available

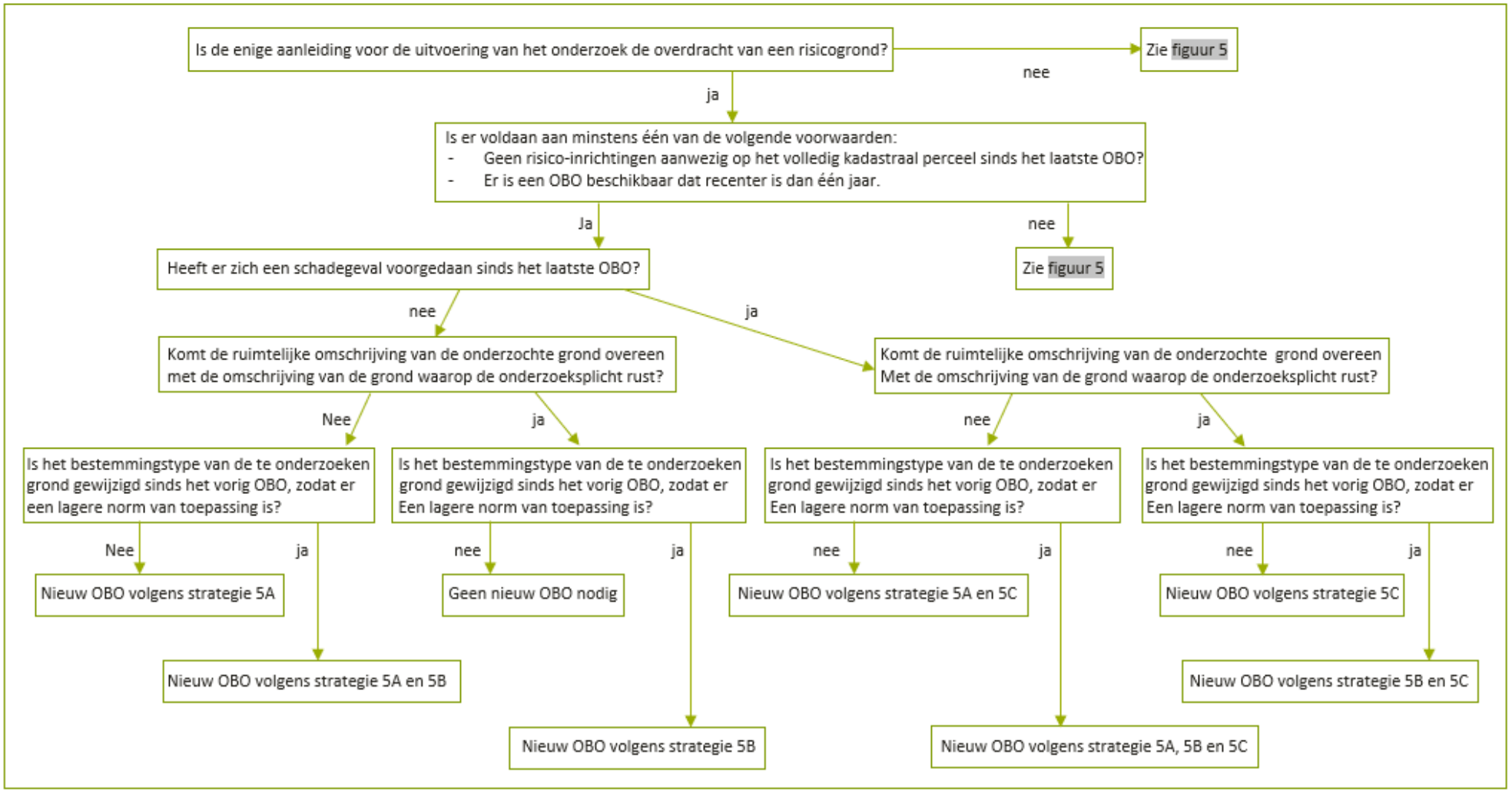
You can only apply this sampling strategy if a preliminary soil investigation has already been conducted at the research site according to a standard procedure.

The following soil studies are **not** eligible for this:
- soil investigations that were assimilated to an exploratory soil investigation in accordance with Article 5 of the VLAREBO of 5 March 1996;
- site surveys;
- exploratory soil surveys for part of the cadastral parcel;
- exploratory soil investigations drawn up with the sole application of sampling strategy 10.

and figure 5 illustrate when an exploratory soil survey must be carried out in the context of a **transfer of land**. You will also find which sampling strategy you should apply in the different scenarios.

6 The individual area occupied by the suspect zone.

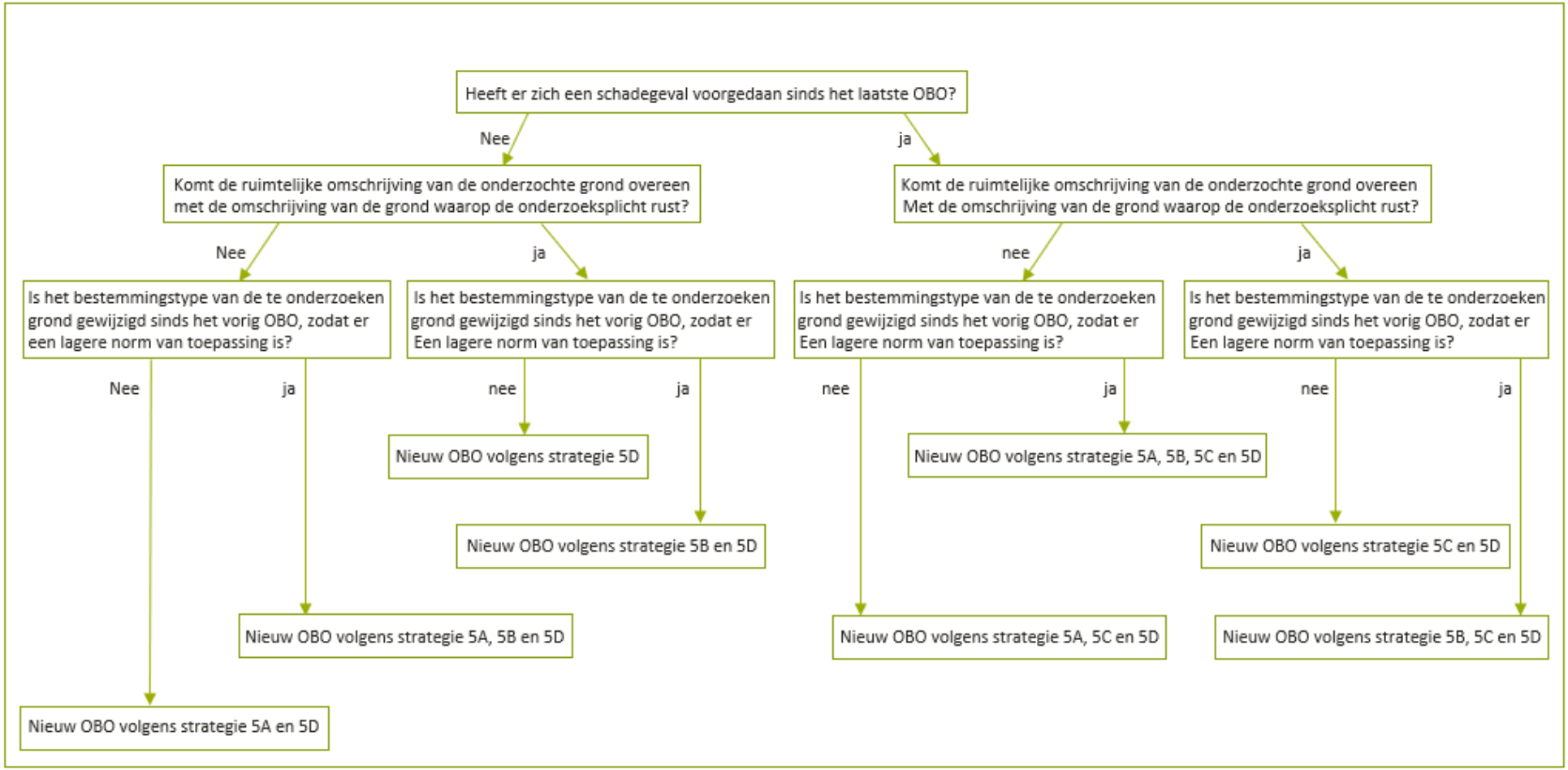
Within the framework of **all other research obligations**, for example when a risk installation is closed, an exploratory soil investigation must always be carried out, even if the previous soil investigation is less than one year old.



Is de enige aanleiding voor de uitvoering van het onderzoek de overdracht van een risicogrond?	Is the only reason for carrying out the investigation the transfer of a risk ground?
Zie figuur 5	See Figure 5
Nee	No
ja	yes
Is er voldaan aan minstens één van de volgende voorwaarden:	At least one of the following conditions is met:

- Geen risico-inrichtingen aanwezig op het volledig kadastraal perceel sinds het laatste OBO?	- No risk establishments present on the entire cadastral parcel since the last OBO?
- Er is een OBO beschikbaar dat recenter is dan één jaar.	- There is an OBO available that is more recent than one year.
Heeft er zich een schadegeval voorgedaan sinds het laatste OBO?	Has there been any damage since the last OBO?
Zie figuur 5	See Figure 5
Komt de ruimtelijke omschrijving van de onderzochte grond overeen met de omschrijving van de grond waarop de onderzoeksplicht rust?	Does the spatial description of the land under investigation correspond to the description of the land on which the obligation to investigate rests?
Komt de ruimtelijke omschrijving van de onderzochte grond overeen Met de omschrijving van de grond waarop de onderzoeksplicht rust?	Does the spatial description of the land under investigation correspond to the description of the land on which the obligation to investigate rests?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er een lagere norm van toepassing is?	Has the type of destination of the land to be examined changed since the previous OBO, so that a lower standard applies?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er Een lagere norm van toepassing is?	Has the destination type of the land to be examined changed since the previous OBO, so that a lower standard applies?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er Een lagere norm van toepassing is?	Has the destination type of the land to be examined changed since the previous OBO, so that a lower standard applies?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er Een lagere norm van toepassing is?	Has the destination type of the land to be examined changed since the previous OBO, so that a lower standard applies?
Nieuw OBO volgens strategie 5A	New OBO according to strategy 5A
Nieuw OBO volgens strategie 5A en 5B	New OBO according to strategy 5A and 5B
Geen nieuw OBO nodig	No need for a new OBO
Nieuw OBO volgens strategie 5B	New OBO according to strategy 5B
Nieuw OBO volgens strategie 5A en 5C	New OBO according to strategy 5A and 5C
Nieuw OBO volgens strategie 5A, 5B en 5C	New OBO according to strategy 5A, 5B and 5C
Nieuw OBO volgens strategie 5C	New OBO according to strategy 5C
Nieuw OBO volgens strategie 5B en 5C	New OBO according to strategy 5B and 5C

figure 4: application of sampling strategy 5 – excluding sampling strategy 5E



Heeft er zich een schadegeval voorgedaan sinds het laatste OBO?	Has there been any damage since the last OBO?
Nee	No
ja	yes
Komt de ruimtelijke omschrijving van de onderzochte grond overeen met de omschrijving van de grond waarop de onderzoeksplicht rust?	Does the spatial description of the land under investigation correspond to the description of the land on which the obligation to investigate rests?
Komt de ruimtelijke omschrijving van de onderzochte grond overeen Met de omschrijving van de grond waarop de onderzoeksplicht rust?	Does the spatial description of the land under investigation correspond to the description of the land on which the obligation to investigate rests?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds	Has the type of destination of the land to be examined changed since

het vorig OBO, zodat er een lagere norm van toepassing is?	the previous OBO, so that a lower standard applies?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er Een lagere norm van toepassing is?	Has the destination type of the land to be examined changed since the previous OBO, so that a lower standard applies?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er Een lagere norm van toepassing is?	Has the destination type of the land to be examined changed since the previous OBO, so that a lower standard applies?
Is het bestemmingstype van de te onderzoeken grond gewijzigd sinds het vorig OBO, zodat er Een lagere norm van toepassing is?	Has the destination type of the land to be examined changed since the previous OBO, so that a lower standard applies?
Nieuw OBO volgens strategie 5D	New OBO according to strategy 5D
Nieuw OBO volgens strategie 5A, 5B, 5C en 5D	New OBO according to strategy 5A, 5B, 5C and 5D
Nieuw OBO volgens strategie 5B en 5D	New OBO according to strategy 5B and 5D
Nieuw OBO volgens strategie 5C en 5D	New OBO according to strategy 5C and 5D
Nieuw OBO volgens strategie 5A en 5D	New OBO according to strategy 5A and 5D
Nieuw OBO volgens strategie 5A, 5B en 5D	New OBO according to strategy 5A, 5B and 5D
Nieuw OBO volgens strategie 5A, 5C en 5D	New OBO according to strategy 5A, 5C and 5D
Nieuw OBO volgens strategie 5B, 5C en 5D	New OBO according to strategy 5B, 5C and 5D

figure 5: application of sampling strategy 5 if risk installations were still present at the survey site since the previous exploratory soil investigation (OBO) on the entire cadastral plot – excluding sampling strategy 5E

When applying sampling strategy 5, evaluate whether new suspect substances are relevant in relation to the most recent exploratory soil investigation. If this is the case, combine sampling strategy 5 with sampling strategy 10 to investigate this suspect substance.

4.2.8.1 Strategy 5A: the spatial description has changed since the previous exploratory soil survey

Apply this strategy if the spatial description of the soil has changed since the previous exploratory soil investigation.

Verify whether the results of previously conducted exploratory soil investigations are sufficient to make a statement about the research location. If you believe you do not have sufficient data for this, carry out additional fieldwork according to the applicable sampling strategies.

You must mention the following points in the exploratory soil survey.
- The plot under investigation is part of a former (examined) plot or the plot under investigation is a combination of former (examined) plots.
- In case of aggregation of lots: which are the former plots, have they been partially or fully included in the plot under examination, have the former plots already been examined or has there never been an examination on the plot, etc.
- Indicate all examinations applicable to the former plots and to the plot under examination with ruling (classification + nature).
- Has the identified soil contamination in the past been classified as an indistinguishable mixed soil contamination? Then make a reasoned proposal on the distribution of soil contamination in a part that was established before 29 October 1995 and a part that was established after 28 October 1995.
- If a BBO, BSP, or EEO has been carried out on the former plots, it must be stated whether these examinations also apply to the plot under examination.

Exception in the event of transfer of land
If, in the context of a transfer of the land, the change in the spatial description meets the following conditions, then no new exploratory soil investigation is required:
- The soil to be examined is entirely within the spatial definition of the soil(s) examined.[7]
- The land to be examined consists of the merging of examined risk land and land on which no risk installation is or was located.[8]

The OVAM will in that case examine the available information in the worst-case scenario.

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7 Examples:
- The cadastral plot to be examined was created by a mere splitting of the original plot. In other words, the plot to be examined is entirely within the cadastral boundaries of the original plot. The entire original plot was previously examined in an exploratory soil investigation that was accepted by the OVAM.
- Cadastral plots are merged into a new cadastral plot. All original plots were previously examined in an exploratory soil investigation that was accepted by OVAM.

8 Is the reason for the soil investigation a different research obligation than the transfer of land? The merging of an examined risk site and a site on which no risk installation was or is located is deemed a change of the spatial description.

4.2.8.2 Strategy 5B: change of use

Apply this strategy if the destination type of the research site changed so that stricter soil remediation standards apply.

You create a summary of the previously conducted soil surveys and re-evaluate the available analysis results.

If you believe you do not have sufficient data for a decision, carry out additional fieldwork and analyses according to the applicable sampling strategies.

4.2.8.3 Strategy 5C: damage

Apply this strategy if damage has occurred since the previous exploratory soil investigation.

Verify how the damage case was established and what measures were taken.

Has the damage case been dealt with and has an evaluation report been drawn up showing that no further measures are needed? A discussion of the results of the evaluation report is sufficient.

Has the damage case not been evaluated yet? Or were no measures taken under the supervision of a soil remediation expert? Then check whether the damage caused soil contamination.

4.2.8.4 Strategy 5D: the previous exploratory soil survey is older than one year

Apply this strategy if the previous exploratory soil investigation is older than one year and a risk installation has been present since then.

Update the exploratory soil investigation in accordance with the applicable sampling strategies.

For zones already examined where a risk installation has been present since then, you may deviate from sampling strategies 2 and 3:
- Sampling strategy 2: You can halve the number of drillings, piezometers and samples to be analysed.
- Sampling strategy 3: You can limit the number of groundwater analyses to two-thirds. Determine whether you also need to analyse the solid part of the earth.

Zones with new risk installations or activities since the previous soil investigation should be examined in accordance with sampling strategy *2, 3, 4 or 11 (including suspect zones)*. You cannot reduce the number of drillings, piezometers and samples to be analysed in that case.

4.2.8.5 Strategy 5E: the conduct of fire-extinguishing exercises using or having used PFAS-containing fire-extinguishing foam

If fire-extinguishing exercises using PFAS-containing fire-extinguishing foams were carried out on the ground before the date of the most recent exploratory soil investigation report, an investigation into the presence of soil contamination with PFAS in soil and groundwater will be required using sampling strategy 10. However, if the most recent Soil Orientation Report is dated after 12 February 2024, no new Soil Orientation Report is required.

This investigation obligation of the 5E strategy will only take effect when the new provision in Article 64(1)(2), 4° of VLAREBO enters into force.

4.2.9 Sampling strategy 6: suspect zone where soil contamination has been or is being removed

Apply this sampling strategy if soil contamination has been removed and the result has not yet been described in a soil investigation.

For the sampling strategy, reference is made to the guidelines included in the standard procedure 'Soil remediation works, final evaluation studies and maintenance'.

You describe the works carried out, their impact on soil quality and the current contamination state.

Complete the report with the following information:
- In the PDF file with the administrative data, you mention the contractor who carried out the soil remediation works.
- In the PDF file with the non-technical summary, you describe the progress of the works.

- In the PDF file containing the report:
  - a brief description of the progress of the works;
  - the quantity of waste removed;
  - verification of the analytical results against soil remediation standards and guide values;
  - indication of the results of the control samples in tabular form in accordance with the guidelines in the standard procedures.
- In the PDF file with the maps:
  - an overview plan indicating the depth of the excavation;
  - an outline plan indicating the initial pollution contour(s);
  - an overview plan indicating the excavation contour and control samples.
- In the PDF file with attachments:
  - treatment certificates for the removed soil or other waste;
  - the soil management report of the replenishment soil or the results of the analyses carried out for this purpose.

4.2.10 Sampling strategy 7: research site with a natural groundwater level deeper than five meters

Apply this sampling strategy if the natural groundwater level is deeper than 5 meters.

This sampling strategy describes the research efforts for groundwater. For the solid part of the earth, apply the other sampling strategies.

Generalities

You should assume the natural groundwater level. This is the groundwater level if there is no groundwater drainage affecting the natural groundwater level. In the case of seasonal fluctuations, use the highest natural groundwater level.

You can use the current groundwater level if the natural groundwater level is affected by a drainage system that was already in place before the risk installation was established. The groundwater level must not have risen since the start of the drainage. If that is nevertheless the case, use the highest groundwater level over the entire drainage period.

If you have identified standing water, take into account the depth of the hanging water to determine the sampling strategy. The decision on contamination in suspended water or groundwater may vary.

Is the distance between the bottom of the pollution source and the groundwater table less than five metres? you cannot apply sampling strategy 7.

Are the suspect substances volatile (examples: chlorinated solvents, BTEX) and do you not need to install or only a reduced number of monitoring tubes according to Table 9? Apply a screening method or increase the number of samples to be analysed from the solid part of the earth by at least the number of unplaced piezometers.

If the risk location is a landfill, you should not apply sampling strategy 7.

Decision tree

Check to see whether groundwater needed to be tested, on the basis of Table 9.

Groundwater level in m-bgl	As part of sampling strategy 1	In the context of a potential source of pollution	
	Number of piezometers	Sum of indices	Number of monitoring wells
5 – 8	≥ 30 % of the number of piezometers according to sampling strategy 1	≥ 150	As indicated in sampling strategy 2, 3, or 4
5 – 8	≥ 30 % (round up to the nearest whole number) of the number of piezometers according to sampling strategy 1	< 150	Evaluation based on the characteristics of the research site, subsurface, contamination, age of the activities, and results of other studies in the area
8 – 15	No groundwater investigation	≥ 200	Half of the number of piezometers as indicated in sampling strategy 2, 3 or 4
8 – 15	No groundwater investigation	< 200	Evaluation based on the characteristics of the research site, subsurface, contamination, age of the activities, and results of other studies in the area
> 15	Evaluation based on the characteristics of the research site, subsurface, contamination, age of the activities, and results of other studies in the area		

Table 9: number of monitoring tubes if the groundwater level is deeper than five metres

Groundwater level between 5 m-bgl and 8 m-bgl

Place at least 30 % of the number of planned piezometers **according to sampling strategy 1**. You should always round the number of piezometers upwards.

You carry out a groundwater survey at the level of the **potential source of pollution** if the sum of the indices is greater than or equal to 150. Place the number of piezometers as provided for in sampling strategy 2, 3 or 4.

For a sum of less than 150, you will carry out an additional evaluation based on the specific characteristics of the research site, the subsoil, the contamination, the age of the activities, and the results of other studies in the area. On that basis, you will decide whether groundwater research is necessary.

Groundwater level between 8 m-bgl and 15 m-bgl

Groundwater testing should not be carried out in the context of **sampling strategy 1**.

You carry out a groundwater survey at the location of the **potential source of pollution** if the sum of the indices is greater than or equal to 200. Place half of the number of piezometers as provided for in sampling strategy 2, 3 or 4. Analyse one third of the groundwater samples for the parameters of the SAP. You always round up the number of monitoring pipes and the number of groundwater samples.

For a sum of less than 200, you will carry out an additional evaluation based on the specific characteristics of the research site, the subsoil, the contamination, the age of the activities, and the results of other studies in the area. On that basis, you will decide whether groundwater research is necessary.

Groundwater level deeper than 15 m-bgl

You will verify whether groundwater investigation is necessary based on the specific characteristics of the investigation site, the subsurface, the contamination, the age of the activities, and the results of other investigations in the area,...

You analyse the groundwater samples for the parameters of the GSP, the suspect substances, and the relevant degradation products.

Calculation of the sum of the indices

Index P1	Nature of the subsoil – Groundwater vulnerability (*)		Index P1
	Not very vulnerable		10
	Moderately vulnerable		30
	Vulnerable		50
	Very vulnerable		80
	Extremely vulnerable		100
	(*) You not only derive the vulnerability from the vulnerability map, but also from field data and your interpretation.		
Index P2	Potential threat to groundwater extraction (*)		
	Type of extraction	Drinking water	Other
		Index P2	Index P2
	Suspected adverse effect	100	100
	Located less than 100 m from the potential pollution source	100	50
	Located less than 200 m from the potential pollution source	75	30
	Located less than 500 m from the potential pollution source	50	20
	Located at > 500 m or not present/no threat	0	0
	(*) You take every type of extraction into account. Deeper extractions in clearly separated water layers are not included.		

Index P3	Density of suspect substances (*)	Index P3
	Density of suspect substances ≤ 1 Density of the suspect substances > 1	0 80
	(*) You take into account the current and historical situation.	
Index P4	Potential source of contamination above or below ground (*)	Index P4
	The potential source of contamination is fully or partially underground Above-ground storage or tank of liquids without sufficient soil protection Above-ground storage or tank of liquids with sufficient soil protection Above-ground activity other than storage or tank of liquids	80 50 20 10
	(*) You take into account the current and historical situation.	
Index P5	Mobility of the suspect substances as a function of solubility S (*)	Index P5
	Very mobile (S ≥ 100 000 mg/l) Mobile (S ≥ 1,000 mg/l) Medium mobility (S ≥ 10 mg/l) Low mobility (S > 0.1 mg/l) Very little mobility (S < 0.1 mg/l) Unknown	100 80 30 20 10 40
	(*) – You take into account the current and historical situation. – Set the mobility standard to medium mobile for heavy metals, metalloids, cyanides and mineral oil. – You consider heavy metals used for metallisation as mobile. For different contaminants, use the highest S-value. – Consider cations and anions to be highly mobile.	
Index P6	Category of risk installations involved in the use or storage of liquids (*)	Index P6
	B A O /	50 30 10 0
	(*) – You take into account the current and historical situation. – For different categories, use the highest value (B > A > O).	
Index P7	Other criteria giving rise to groundwater investigation	Index P7
	No Yes – arguments for decision on groundwater investigation No – arguments for decision no groundwater investigation	0 +50 -50

table 10: calculation of the sum of indices

4.2.11 Sampling strategy 8: asbestos

You apply this sampling strategy to determine the asbestos-suspect nature of the research site and to confirm or refute the presence of soil contamination with asbestos.

This sampling strategy consists of three steps:
- historical research and preliminary study
- field observations and fieldwork
- decision on the need for a descriptive soil investigation

4.2.11.1 Step 1: historical research and preliminary study

Check whether asbestos applications occur or have occurred that can or could give rise to soil contamination with asbestos. Consult previously conducted soil investigations, the asbestos inventory, the demolition follow-up plan, etc. You conduct a visual inspection of the research site before the fieldwork. You will inquire with the client about possible activities or events that can be considered asbestos-related.

The following asbestos applications can lead to soil contamination with asbestos:
- former asbestos processing companies.
- homogeneous or heterogeneous layers with asbestos production waste in the Kapelle-op-den-Bos and Willebroek asbestos region (Aartselaar, Bonheiden, Boom, Boortmeerbeek, Bornem, Buggenhout, Grimbergen, Kontich, Londerzeel, Mechelen, Meise, Merchtem, Opwijk, Puurs-Sint-Amands, Sint-Katelijne-Waver and Zemst)
- asbestos-suspect debris and demolition waste in the soil[9]:
  - Pu-containing asbestos-suspect (soil) layer – not under a pavement;
  - Asbestos-containing debris suspect (soil) layer – under soil sealing;
- storage of asbestos-containing construction materials and demolition waste on the ground[10];
- industrial activities with known asbestos applications.

Asbestos applications in the form of asbestos-containing roof and façade cladding are further monitored through the asbestos removal policy. You must therefore still report the presence of asbestos-containing roof and façade cladding (drip zones) in the report. In schools, a risk-based approach is followed, as clarified in the mandate for conducting the exploratory soil investigation. Use recommendations are mentioned in the Guide to the standard procedure for exploratory soil investigation, which you must include in the report in specific cases in the presence of asbestos drainage zones.

Are or were one or more of these asbestos applications present at the research site? If so, consider the research location to be suspect of containing asbestos. Move on to step two.

9 Debris and demolition waste is not suspect of containing asbestos if you can justify administratively that the presence of asbestos is unlikely. Examples: the debris or demolition waste is present under soil sealing applied in the 1950s, or the debris layer was applied in accordance with the legislation in force and a certificate or document thereof is available.

10 See footnote 9.

4.2.11.2 Step 2: field observations and fieldwork

Your findings during the field visit or during the execution of the fieldwork should complement or support the historical investigation.

Perform a visual inspection of the ground level. At the borders of the research site, also check for the presence of asbestos-suspect material in the adjacent areas.

If you conduct a field visit at the time the fieldwork is conducted, consider whether the originally proposed sampling strategy should be revised.

Ensure that the employee responsible for the field observations and fieldwork is trained in the recognition of asbestos, and the various asbestos applications.

Determine in what form the asbestos (bonded or non-bonded) may be present.

You may have mixed samples of suspect samples analysed if you expect the same degree of contamination in the different partial samples. A weighted average concentration of asbestos can be determined if sampling is carried out according to the CMA/1/A.7, and representative composite samples are used.

Use holes of 30 by 30 cm, in accordance with the CMA. **You must respect the number of holes and the field weights in order to be able to test the asbestos value for free use of soil materials (=100 mg/kg ds).** If you limit the number of holes or if you do not provide the laboratory with correct field weights, the laboratory will not be able to calculate a weighted average asbestos concentration. You cannot then assess the value for free use of soil materials.

At least the following research efforts are expected for the identified zones:

A. Former asbestos processing plants
In areas where asbestos processing and handling have taken place and at the level of the soil sealing, replenishment or top-up layers, you must always thoroughly screen the drilled material and check for asbestos-suspect materials.

Do you have any indications of soil contamination with asbestos? If so, conduct an investigation for the top layer and possibly for the deeper bottom layer.

B. Asbestos Region Kapelle-op-den-Bos and Willebroek
In the wider region around Kapelle-op-den-Bos and Willebroek, asbestos production waste from the former asbestos processing companies was often used as infill, elevation or soil-sealing material. Asbestos production waste is therefore widely found in homogeneous layers.
In the asbestos region of Kapelle-op-den-Bos and Willebroek, OVAM acts on its own initiative for homogeneous layers with asbestos production waste if that waste originates from this asbestos region. If you identify such a homogeneous layer of asbestos production waste, please inform OVAM using the ‘Asbestos

Production Waste Notification Form'. You will find this form on www.ovam.vlaanderen.be. You report the presence of asbestos production waste as a soil contamination to be remediated with ex officio intervention (Q-phrase).

Careless earthworks at the level of these homogeneous layers can mix the asbestos production waste with the soil, thus causing a diffuse distribution of asbestos material. There is then a heterogeneous, asbestos-containing debris or soil layer. Examine this layer in accordance with the guidelines for asbestos-suspect debris and demolition waste in the soil.

C. Asbestos-suspect debris and demolition waste in the soil
If buildings or structures from the period 1945-2001 were carelessly demolished or thoroughly renovated or if roads and soil sealing were carelessly broken up, asbestos-suspect debris may have ended up on or in the soil. Asbestos-containing debris can also be supplied as filling, raising or soil-sealing material.

The debris may be mixed with the soil to a greater or lesser extent. Debris layers with more than 75% of debris are not considered as soil. As a result, for debris layers with more than 75 % debris, the impact on the adjacent soil layer is assessed (in accordance with strategy 9 for landfills). For the examination of the adjacent soil layer, the strategy for a debris-containing asbestos-suspect soil layer is followed.

For debris-containing soil layers with less than 75 % debris, a distinction is made based on whether or not soil sealing is present.

C.1. Debris-containing asbestos-suspect (soil) layer – not under a pavement
With a daylight-exposed debris layer, perform a thorough visual inspection of the surface or ground level to visually delineate the asbestos-suspect zone.

For a surface layer of debris and a debris-containing soil layer at a depth – smaller than the applicable living layer thickness – conduct a field study in accordance with CMA/1/A.7.

The following layer thicknesses are used:
- 30 cm for industrial areas, recreational zones, and nature areas;
- 50 cm for agricultural areas and for residential purposes in situations where there is no or little contact with the soil or where digging in the soil is virtually excluded (such as in highly urbanised areas);
- 70 cm for residential purposes with fairly intensive use of the open areas adjacent to the house.

For each asbestos-suspect layer of up to 1 000 m², provide at least two holes. For an asbestos-suspect zone with an area of more than 1 000 m², provide one extra hole per 500 m².

The depth of the holes to be dug for determining the asbestos content is primarily limited by the thickness of the asbestos-suspect layer, up to a maximum of the living layer thickness increased by 30 cm, and is a maximum of 70 cm.

For a debris-containing soil layer found at a depth – deeper than the applicable layer thickness – the coarse fraction is only inspected for the presence of asbestos-suspect debris fragments.

Asbestos-suspected soil layers at a depth – deeper than the applicable living layer thickness – are not further investigated in the exploratory soil investigation (i.e. no determination of the asbestos levels). This is because there is no human risk, and no risk of spreading from this deeper asbestos-suspect soil layer.

For further demarcation of debris-containing soil layers (horizontal and vertical), use boreholes or test holes.

C.2. Debris-containing asbestos-suspect (soil) layer under a pavement
The demarcation of debris-containing soil layers (horizontal and vertical) under a permanent, complete, and designed soil sealing is carried out on the basis of existing drillings.

The coarse fraction of the drilled material is inspected for the occurrence of asbestos-suspect fragments. As there is no human risk and no risk of spreading from such a soil layer suspect of containing asbestos under soil sealing, such layers are not further investigated in the context of an exploratory soil investigation (i.e. no determination of asbestos levels).

D. Storage of asbestos-containing construction material and demolition waste on the ground
Storage of asbestos-containing materials can cause degraded fragments to mix with the soil.

Do you have any indications that such storage could or could have led to soil contamination with asbestos? If so, conduct an investigation for the top layer and possibly for the deeper bottom layer.

E. Industrial activities with known asbestos applications
Asbestos-suspect soil layers can occur in landfills, crushers or businesses where asbestos-containing materials were cut to size, petrochemical companies, gas factories, metallurgy companies (for protection against high temperatures), automotive industry (for brake linings, clutches, seals), insulation companies (for trainsets, shipbuilding, buildings, fire-resistant clothing), chemical industry (for protection against chemical aggression), etc.

In areas where industrial activities with known asbestos applications have taken place and at the level of the soil sealing, replenishment, or top-up layers, you should always thoroughly screen and check the drilled material.

Do you have any indications of soil contamination with asbestos? If so, conduct an investigation for the top layer and possibly for the deeper bottom layer.

At landfill sites, you need to distinguish between the cover layer and the landfill material itself. If there is a suspicion of an asbestos-containing coating at the level of the landfill or if, as a result of careless landfill activities, asbestos contamination has arisen in the surrounding soil (top layer), these layers will be examined.

4.2.11.3 Step 3: decision on the need for a descriptive soil investigation

You use the findings during your site visit, the results of the fieldwork, and any analysis results to make a statement about the asbestos-suspect nature of the research site and the need for a descriptive soil investigation.

Do the field observations not indicate the presence of asbestos and do the analytical results show asbestos concentrations below the weighted test value (≤ 100 mg/kg ds)? If so, you decide that no descriptive soil investigation is needed (O-phrase).

Do the field observations indicate the presence of asbestos and are asbestos concentrations above the weighted test value (> 100 mg/kg ds) established? Then check whether there is a clear indication of serious soil contamination. For this purpose, use the methodology of chapter 5.6. Based on this, you decide that a descriptive soil investigation (Q-phrase) or none (P-phrase) is required.

For the deeper debris layers or debris layers under pavements (D.2), you could also decide in step 2 not to take samples. You consider this area to be suspect of containing asbestos. You provide the necessary usage advice to prevent exposure and spread in the future. In the e-desk, you tick 'asbestos debris layer yes' as an asbestos declaration at ground level. There is neither a human toxicological risk, nor a risk of spread.

4.2.12 Sampling strategy 9: landfills

Apply this sampling strategy to investigate a landfill.

4.2.12.1 Preliminary study for landfills

Collect, as far as possible, the following information. Draw up the conceptual site model of the landfill, and determine the sampling strategy and the parameters to be analysed.

When examining landfills, assess the afforestation potential if it is relevant based on site-specific properties. If the afforestation potential is relevant, go through the 'Flow diagram for afforestation of landfills/nature development'.

↓ In order to determine the redevelopment potential of landfills, it is advisable to start from the landfill opportunities explorer. This tool can be found on www.stortplaatsen.be.

General information about the landfill:

- History:
  - On-site activities.
  - What was deposited, where and when?
  - Overview and characteristics of the landfilled waste (such as the leaching behaviour).
  - Way of depositing: homogeneous or heterogeneous.
  - Relevant aerial photographs.

- Information on the construction of the landfill: depth and boundaries of the landfill, drainage, finishing with a bottom or top cover, living layer, control system, gas formation, venting, *discharge points,* ...
- Current and former soil sealing or covering and the time at which it was applied or removed.
- Indications of soil contamination based on fauna and flora.
- Existing plans: geological map, geological cross-section through the landfill, etc.
- Description of existing boreholes, piezometers or monitoring wells and their measurement results.
- Data on the presence of surface water in and around the landfill.
- Interpretation of local (hydro)geology:
    - General geological situation: geological structure, granulometric and lithological characteristics of the different layers.
    - General hydrogeological situation:
        - Description of the main hydrological characteristics of the aquifers: permeability, porosity, gradient, effective flow rate,...
        - Direction of flow of groundwater per aquifer.
        - Description of the impermeable layers.
    - Indicate whether you determined the various hydrological characteristics based on field measurements (such as level measurements or pump tests) or literature data.
    - If the landfill is authorised, adding a summary of the hydrogeological study of the permit application is sufficient.
    - Specify the location of water abstractions present in the area and their possible influence.
- Soil surveys in the area.

Additional information for licensed landfills:
- Date of authorisation(s). Please attach a copy of the licence(s) to the report.
- The phase: operation or maintenance?
- Documents proving that the deposited waste meets the acceptance criteria for landfills:
    - Origin and provenance of the waste.
    - Composition and properties of the waste.
    - Leaching behaviour of the waste.
- Waste documentation and the waste identification form as described in VLAREMA, documents required by Council Regulation (EEC) No 29/93 of 1 February 1993.
- Analysis data of inspected waste for imported waste.
- The general work plan for the operation of the landfill approved by the supervisory authority.
- Landfill installation plans drawn up and approved:
    - Complementary, levelling and profile plan.
    - Construction and execution of drainage systems with protective layers: sizing and materials used.
    - For landfills in embankment: construction of the disposal embankments: dimensions and materials used.
    - Construction and execution of the sealing layer with protective layers: materials used.
- The preparatory infrastructure works carried out at the time, the leak detection systems installed, the sizing and materials used for the leachate drainage system installed.
- Information on the operation of the landfill:

- The constructed seepage ditch or a drainage system to prevent intrusion of groundwater or runoff water.
- The predicted volume of cover material.
- The designation of the landfill area.
- The number and height of the deposit layers and the number of deposit sections per deposit layer.
- The intermediate cover layers applied to Category 1 and 2 landfills: thickness, waste used or soil materials.
- The waste that is sorted or screened on the spot.
- The way in which excess, uncontaminated rainwater or runoff is collected and disposed of.
- The way in which the leachate formed is pumped off: collection pits, impermeable collection basin, wastewater treatment plant with stored products.
- Controlled evacuation of the generated landfill gas (gas drainage system).
- A summary of the data included in the annual landfill reports on the nature and quantity of the waste deposited.

- Details of landfill completion:
  - The official notification of the cessation of landfill activities in the individual landfill cells.
  - The covering layer.
  - End cover.
  - The official report on the final completion of the landfill issued by the supervisory authority.
- Data on groundwater monitoring carried out during the operation of the landfill: number of piezometers, depth of piezometers, filter path, location on plan, etc.
- *Data on discharge points to surface water.*

4.2.12.2 Analytical determination of suspect substances (optional)

Is it difficult to deduce the suspect substances on the basis of the preliminary study? Determine the suspect substances analytically using the following methods:

- Conduct at least two **leaching tests** (shaking tests) on the landfill material across the entire landfill, and one per landfill area or hotspot.
- Sample the **leachate**. Perform a screening for volatile, semi-volatile, and non-volatile parameters.

Analyse the eluate and leachate for the parameters of SAP, BOD, COD and sulphides.

4.2.12.3 Sampling of the top layer

Sample the top layer to obtain at least an image of the top 25 cm. The number of samples to be taken is determined by the surface area of the landfill and by the number of hotspots.

Depending on the total surface area of the landfill, provide the number of samples according to table 11.

Landfill area in ha (P)	Number of samples of the solid part of the earth
< 0.25	2
> 0.25	P+2

table 11: sampling strategy for the top layer of a landfill

Always round the number of samples upwards.

For each hotspot, take an additional sample.

If the top layer an undisturbed living layer is of at least 70 cm, or is the landfill completed in accordance with the environmental permit, you may deviate from the sampling strategy for the top layer.

4.2.12.4 Sampling by the landfill

Drill through the landfill if it is environmentally feasible and responsible.

Place one borehole at a representative location and complete it as a piezometer with a filter beneath the landfill. Install an additional borehole/piezometer for each hotspot.

4.2.12.5 Sampling of groundwater around the landfill

Provide the number of piezometers and samples to be analysed according to Table 12.

Landfill area in ha (P)	Number of monitoring wells and number of groundwater samples to be analysed
< 0.25	3
> 0.25	P+2

Table 12: sampling strategy for groundwater around the landfill

Always round the number of samples upwards.

Is the area of the landfill larger than six hectares? Then divide the area into sub-areas of up to 6 hectares.

For each relevant aquifer that may be affected by the landfill, install at least three piezometers, one upstream and two downstream. Place the filters in the relevant aquifer up to the base of the landfill, i.e. up to the lower cover or the boundary between the landfill material and the original soil.

Decide whether additional investigation is needed (such as soil air measurements, leachate analysis, research into landfill gases, sludge analysis in ditches, etc.).

4.2.12.6 Exception procedure

You can apply this abbreviated research strategy if an owner or user of land has to carry out an exploratory soil survey on a cadastral plot that is part of a former landfill. The landfill activity must have been stopped before 29 October 1995.

Sampling strategy 1 is not applicable.

Examine the **top layer** as described above.

You investigate the **groundwater** if groundwater is extracted at the research site or if a groundwater well is present.

This exceptional procedure will always give rise to a descriptive soil investigation.

The main purpose of the exception procedure is to assess the need for precautionary measures.

If there is or was there another risk facility in addition to the landfill? develop a sampling strategy in accordance with chapter 4.2.

4.2.13 Sampling strategy 10: previously undetermined substances for which there is evidence of serious soil contamination

This sampling strategy will apply where:
- An owner/operator/user of a plot of land has been required to carry out an exploratory soil investigation within the framework of Article 35 of the Soil Decree; or
- A contracting authority voluntarily wishes to carry out an exploratory soil investigation to examine certain new pollutants, such as substances of concern such as PFAS, and any other suspect substances associated with them.

The preliminary study, the sampling strategy, the interpretation and evaluation, such as the DAEB methodology and the assessment, may be limited to the examination of the relevant new pollutants and any other suspect substances linked to them. The research location is always the entire cadastral plot.

In addition, for the preliminary study the sampling strategies must take into account the additional guidelines published by OVAM via, for example, codes of good practice, guidelines or research protocols.

You should consider whether there may be an impact on descriptive soil investigations, soil remediation projects and/or ongoing soil remediation works.

An exploratory soil investigation drawn up with the sole application of this strategy 10 cannot be used for the transfer of the research site if it concerns a risk soil.

Sampling strategy 8: Asbestos should not be applied by default in the application of strategy 10, unlike when other sampling strategies are applied. If the new pollutant concerns asbestos, asbestos must of course be examined.

4.2.14 Sampling strategy 11: Examination of water bottom and banks related to discharge points

1.1.1.1 Need for investigation of the water bottom and banks

You will determine whether an investigation of the waterbed is necessary based on the following data that you collect during the preliminary study:

- *the **discharge points and sewers** related to the (former) production process that is the subject of the exploratory soil investigation, both at the research site and outside it;*
- *the **discharge permits**;*
- *the locations of the discharge lines/pipes;*
- *the locations of the waste water treatment plants;*
- ***studies previously conducted** of the water bottom and/or banks and details of any dredging and clearance operations in the vicinity of the discharge;*
- *the current and former activities that are the subject of the exploratory soil investigation and are included in the 'List of risk installations for water bottoms'. The most up-to-date list of risk installations with a high risk of causing water bottom contamination can be found in the study 'Water bottom – Spearheads for Water Bottom Research' (the hotspot study).*

Is or was there a 'risk installation for water bottoms' at the research site with a direct discharge into a watercourse? Is the research site adjacent to a watercourse, and are there other indications of sediment contamination, such as an incident on the bank (related to activities at the research site) or other risk facilities that could cause sediment contamination? In that case, you conduct an investigation of the water bottom in the exploratory soil investigation.*

**In the case of a direct discharge, the operator discharges the industrial waste water directly, using a discharge line or discharge pipe, to the watercourse. In the case of discharges of industrial waste water into the public sewage system, no examination of the water bottom at the point of discharge of the sewage system into the surface water will be carried out.*

1.1.1.2 Additional preliminary study and site visit

If you decide that examination of the water bottom related to discharge points is necessary, perform at least a visual inspection of the discharge point and, if relevant, also the trajectory to the discharge point.

Carry out the administrative and historical research and the site visit as described in the code of good practice 'Investigation of the water bottom and banks' – part exploratory phase. According to the same code of good practice, you also describe the environmental characteristics, geology and hydrogeology of the location where you conduct the research of the water bottom.

If you use analysis results from other studies, make sure that these data are still representative. If the analysis results are not or no longer representative of the actual situation on the ground, you will only consider these analysis results as indicative. If they are, you will then include them in the investigation.

1.1.1.3 Sampling strategy, sampling and analysis

Based on the contamination hypothesis, draw up a strategy for the field and laboratory research. You sample the watercourse and the bank and analyse the water bottom and bank samples. You use the code of good practice 'Investigation of water bottom and banks' – exploratory phase part as a guide.

↑ *Provide at least these samples:*
- *one cluster sample of the water bottom on the downstream side of each discharge point;*
- *one cluster sample of the water bottom downstream of each discharge point at the most relevant location (including where sediment accumulation is expected).*

Use the appropriate sampling strategy according to the location of the discharge point(s) if known.

4.3 SITUATION REPORT

A baseline report must be drawn up for all IED installations [11] which use, produce or emit relevant hazardous substances. These activities are indicated in the list of risk installations [12]. These installations are further referred to as the '**S-installation**'.

A situation report takes the form of an exploratory soil survey.

4.3.1 Obligation to carry out soil surveys

4.3.1.1 At the start of operating an S-installation, on land without an S-installation: investigation for the authorisation application

The obligation to investigate applies to the operator who wishes to put an S-installation into service.

Time of the preliminary soil investigation

The operator must provide the exploratory soil investigation to the OVAM before submitting the environmental permit application for the operation of the S-installation to the licensing authority.

The exploratory soil survey shall be carried out on the land on which the S installation is to be operated. You can use results from previous soil surveys. You must always draw up a new report.

11 IPPC: integrated pollution prevention and control
12 Letter S in column 8

4.3.1.2 S-installations in operation: one-time study by 7 January 2014 or 7 July 2015

The one-off survey obligation applies to the operator who, at the time of the enforceability of the new soil investigation obligation (i.e. 20 September 2013), operated an S-installation on the land in question.

Time of the exploratory soil investigation

The operator will carry out the one-time exploratory soil investigation before:

- **7 January 2014** if the S-installation was already designated as an S-installation at the time of the enforceability of the new soil investigation obligation in the list of risk installations[13].
- **7 July 2015** if the S-installation is qualified as an S-installation by the transposition of the Industrial Emissions Directive from the applicability of the new soil investigation obligation.

13 Letter X in column 4

Has an exploratory soil survey already been carried out during the operation of the S facility? the operator can then use this soil investigation as a one-time exploratory soil investigation. This is because this exploratory soil investigation is closest to the description of the baseline situation of the site. Operating studies are not eligible for this.

4.3.2 Sampling strategy

A baseline report should also examine future potential sources of contamination.

In the preliminary study, you examine the future potential sources of contamination and the suspect substances (including the degradation products or the indicator substances) on the basis of the permit application.

When drawing up the contamination hypothesis, you assess whether the contamination would spread homogeneously or heterogeneously and identify which soil layers and which groundwater could be affected. More information can be found at http://echa.europa.eu/information-on-chemicals.

At the potential risk locations, examine the solid part of the earth and the groundwater for the suspect substances that will be used during operation.

Area without suspect location

If the operator is applying for an environmental permit for a new S-installation on a site where no risk activities have yet taken place, apply sampling strategy 1, possibly combined with sampling strategies 2 and 7.

Area with suspect location

If the operator is applying for an environmental permit for a new S-installation on a site where risk activities have already taken place or are still taking place, apply sampling strategy 1 if the site has never been investigated.

Have soil investigations been conducted at the entire research site previously? Then you can include these results in the exploratory soil investigation. The locations of the former and current risk activities are examined according to sampling strategy 3, 4 or 5, possibly combined with sampling strategy 2 and 8 to 11 (except 10).

A good knowledge of the history of these activities and of the products used is very important.

4.3.3 Reporting

Prepare the situation report in accordance with the guidelines for an exploratory soil investigation.

The report is entitled ‘Situation Survey – Exploratory soil investigation under Article 33bis of the Soil Decree – Street and Number, Municipality of the Research Site, OVAM File: NUMBER’.

The situational survey can serve as an exploratory soil investigation, for example in the context of periodic research obligations.

4.3.4 Closure of an S-installation

What is the closure of an S-installation?
Under several main headings: one of the main headings has been discontinued.
OR
Within one main heading: the S-installation evolves into a risk-installation without an S-category.

The Industrial Emissions Directive requires that, upon the closure of an S-installation, it must be determined whether the installation caused 'significant contamination of the solid part of the earth or groundwater' compared to the baseline situation at the start-up of the installation. That zero situation is recorded in the situational report.

At the closure of the S-installation, you conduct an exploratory soil investigation (or an exploitation study) to determine whether the S-installation caused soil contamination compared to the baseline situation.

What is Significant Pollution?
In the case of standardised parameters, significant contamination occurs if the concentration exceeds 80 % of the soil remediation standard for that soil. For non-standard parameters, significant contamination occurs when there is clear evidence of serious soil contamination.

The baseline report did not identify any soil contamination

You determine the contamination resulting from the installation by comparing the concentrations from the soil investigation at closure with 80 % of the soil remediation standard or with the concentration where there is a clear indication of serious soil contamination.

Was no significant new contamination identified in the baseline report, and is significant contamination found in the soil investigation at closure? There are two possibilities:
- The new contamination arose in the period between the execution of the two soil surveys.
- The contamination originated before the implementation of the baseline report but was not detected during its implementation. Clarify this with additional research.

Significant contamination was identified in the situation report

You compare the results of the soil investigation at closure with the previous results. You examine the suspect substances, the contours of the contamination, the sources of the contamination,...

If a **new contamination** was already identified in the situation report, and do you detect an increase in concentration in the same zone, Check whether this increase is the result of additional pollution or an increase in pollution detected in the past (e.g. due to measurement uncertainty, seasonal variations, change in the risk of spreading, change in terrain characteristics, etc.) You can also use the results of the descriptive soil investigation, soil remediation project, or final evaluation study.

Was a **new contamination with non-standard parameters** already established in the situation report? First, compare the results of the soil investigation at closure with the previous results and with the results of the descriptive soil investigation, soil remediation project or final evaluation study. You will answer four questions:
- Is there an increase in the level of pollution?
- Is there a change in terrain characteristics?
- Has the dispersal behaviour of the contamination changed?
- Do the assumptions from previous soil surveys need to be adjusted?

Did you answer 'yes' at least once? Then check whether there is a clear indication of serious soil contamination. For this purpose, use the methodology of chapter 5.6. If you answered 'no' to all the questions, the decisions and obligations from the previous soil investigations will be retained.

5 INTERPRETATION AND EVALUATION

↑ You will assess all the data that you collected during the exploratory soil investigation. You take into account the historical data, the results of previous soil surveys, the type of destination, the soil structure, the sensory observations and the analysis results.

5.1 TESTING FRAMEWORK

You test the analysis results against the relevant assessment framework. For standardised parameters, it is the VLAREBO; for non-standardised parameters, it is the test values.

If the research site is located in multiple destination types, divide the site into zones per destination type.

Do you establish different values for conductivity or acidity? Then determine which parameters caused these abnormal values. Analyse the groundwater or the solid part of the earth for these suspect substances additionally.

5.1.1 Non-standard parameters

↑ Is there no test value available for the identified contamination in the VLAREBO? Then you must deduce the different test values. To do so, follow the methodology set out in 'Basic Information for Risk Assessments Part 1: Procedure for drawing up soil remediation standards and assessment values, guide values and target values'. This document can be found at www.ovam.vlaanderen.be.

↑ If design soil remediation standards are available, you assess against these standards.

↑ You will develop the following test values:
- A reference value 'guideline value': The content of contaminants or organisms on or in the soil that allows the soil to perform all its functions without the need to impose a restriction.
- A test value 'soil remediation': The level of soil contamination at which if exceeded, serious adverse effects may occur to humans or the environment, having regard to the characteristics and functions of the soil.

↓ The assessment values have the same functionality as the guideline value and the soil remediation standard of standardised parameters.

↑ *If trigger values for the water bottom are available, these values will be tested. If the trigger value is exceeded, perform a Clear Indication for Severe Water Soil Contamination (DAEW) test.*
The trigger values can be found as an annex to the Code of Good Practice 'Investigation of the water bottom and banks'.

↑ *If there are no trigger values available for the suspect substances you are investigating, you shall develop test values yourself in accordance with the guidelines described above.*

5.2 SOURCE AND NATURE OF POLLUTION

For each parameter exceeding the guide value:
- identify the most likely source of the contamination;
- Please substantiate the nature of the contamination (new/mixed/historical).

For mixed contamination, you make a statement for each type of contamination and each medium regarding the distribution between new and historical soil contamination. Express that distribution as a percentage of the estimated waste load. Indicate the nature of the predominant part of the mixed contamination. Can the contaminants not be treated separately? If so, treat the contamination according to the predominant type: a mixed predominantly new contamination as new contamination and a mixed predominantly historical contamination as historical contamination.

For non-standard parameters, determine the nature of the contamination from when the assessment value is exceeded.

5.3 NEED FOR A DESCRIPTIVE SOIL INVESTIGATION

↑ The need for a descriptive soil survey depends on the nature of the contamination and is evaluated per parameter or per parameter group. A descriptive soil survey is required if there is a clear indication of serious soil contamination:

- **Historical contamination** and mixed predominantly historical contamination: use the methodology to determine a clear indication of serious soil contamination (see chapter 5.6).
- **New contamination** and mixed predominantly new contamination: there is a clear indication of serious soil contamination if the concentrations exceed or are likely to exceed the soil remediation standard. There are clear indications that the soil remediation standard is likely to be exceeded if the 80 % threshold of the soil remediation standard is exceeded. Point contaminants are an exception.
- For a **contamination with non-standard parameters**, use the methodology for determining a clear indication of serious soil contamination (see chapter 5.6).

5.4 POINT SOURCE POLLUTION

For new and mixed predominantly new contamination, a descriptive soil investigation is not necessary if the contamination is limited in size and concentration. In that case, we refer to point source pollution.

↑ You can consider a contamination as a point contamination if the following criteria are cumulatively met:

- The contamination is only present in the solid part of the earth or in the groundwater, but not in both.
- There are no clear indications of serious soil contamination (see Chapter 5.6 for the methodology).
- Pollution in the solid part of the earth has no impact on groundwater.
- The extent of pollution is limited both horizontally and vertically. This will show you as follows:
    - You demonstrate the horizontal delineation with three bores or gauges around the bore or gauge where the 80% value of the soil remediation standard is exceeded.
    - These delineating boreholes or piezometers will be placed at a maximum distance of 2 or 5 metres respectively.
    - Analyse each of the delineating boreholes or piezometers for the relevant parameters.
    - Concentrations in the intercepting boreholes or gauges are less than 80% of the soil remediation standard, both horizontally and vertically.

- In the central borehole or piezometer, the soil remediation standard is exceeded up to six times.

5.5 EVALUATION OF THE ANALYSIS RESULTS

5.5.1 Validity of the data

↑ You are using recent data. The situation you describe in the report must be representative of the date on which the report is signed.

5.5.2 Re-analysis in case of doubt

Check whether the measured values correspond to the sensory observations and the expected contamination based on the preliminary study.

If you have doubts about the correctness of an analysis result, investigate the cause.

For the solid part of the earth, a reanalysis can confirm or refute the first measurement. This re-analysis is carried out on a sample of the same base material within the shelf life of the material according to the CMA. The evaluation of the analysis results for this drilling is conducted on the basis of at least two analysis results that lead to the same decision. If the analysis results of the reanalysis are inconclusive, a third analysis is carried out. If the initial sample is no longer usable, the correctness of the analysis is checked by analysis of at least two samples in the immediate vicinity of the initial sample.

For groundwater, the piezometer can be re-sampled. The evaluation of the analytical results for this piezometer shall be based on at least two analytical results giving rise to the same decision. If the results of the re-analysis are not conclusive, a third sampling and analysis will be conducted. There should be sufficient time (minimum one week) between the different re-sampling operations.

5.5.3 Soil layer applied according to the earthmoving regulation

If a soil layer was applied according to the earthmoving regulation, but do you nevertheless find concentrations above the soil remediation standard, you may decide that no descriptive soil investigation is necessary if you demonstrate that the increased concentrations, as included in the soil management report, are related to the applied soil layer (and therefore not to the activities on the site). Justify this on the basis of the necessary documentation.

5.5.4 Naturally elevated concentrations

Substances naturally present in increased concentrations are not considered soil contamination. For these substances, you do not have to decide on the need for further measures.

You may consider elevated concentrations to be naturally elevated if the following criteria are cumulatively met:
- Based on the geology or natural soil composition, increased concentrations can be expected.
- The increased concentrations are not related to potential pollution sources at the study site.

In all other cases, soil contamination occurs when the guide value is exceeded.

If a study has already been carried out on these regionally increased concentrations that shows that further research is not useful, you can refer to this study.

5.5.5 Dissemination plot

Did the identified contamination not occur at the research site? Then you can designate the examined soil as a distribution plot.

Examples: undercurrent, runoff, deposition, drift.

Demonstrate that the source of the contamination is present on another plot and that the contamination detected has therefore arisen on another plot. You need to demonstrate this analytically using a concentration gradient.

You designate the source plot or the source of the contamination.

If, on the basis of the concentrations established, you decide that further measures are necessary for the distribution plot, state this in the decision (W-phrase). You should not assess whether further measures are necessary for the source parcel.

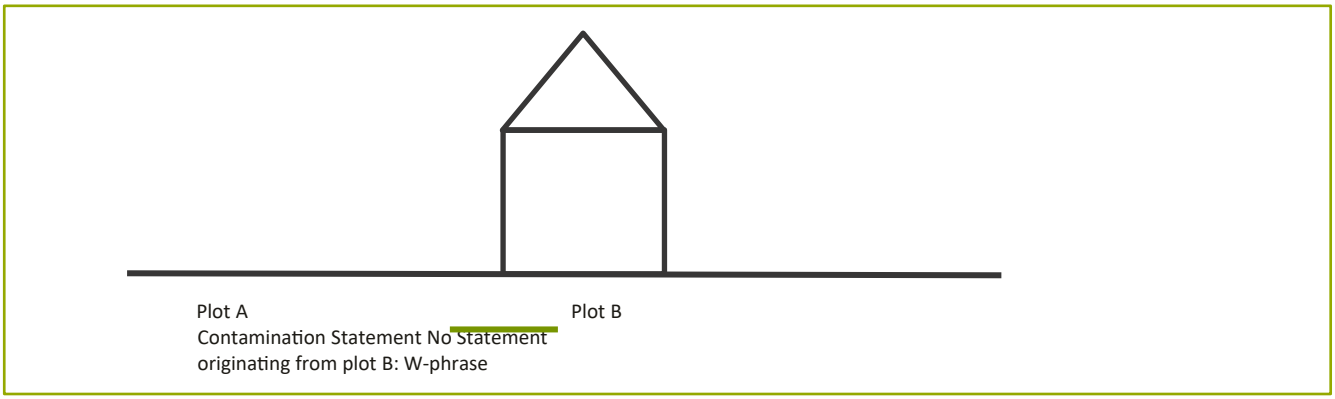

figure 6: example of distribution from plot B (neighbouring plot = source plot) to plot A (research site = distribution plot)

If you identify contamination spreading from the research site to another plot, you do not have to decide on further measures for that distribution plot (so no W-phrase). The research location will provide you with a P or Q-phrases.

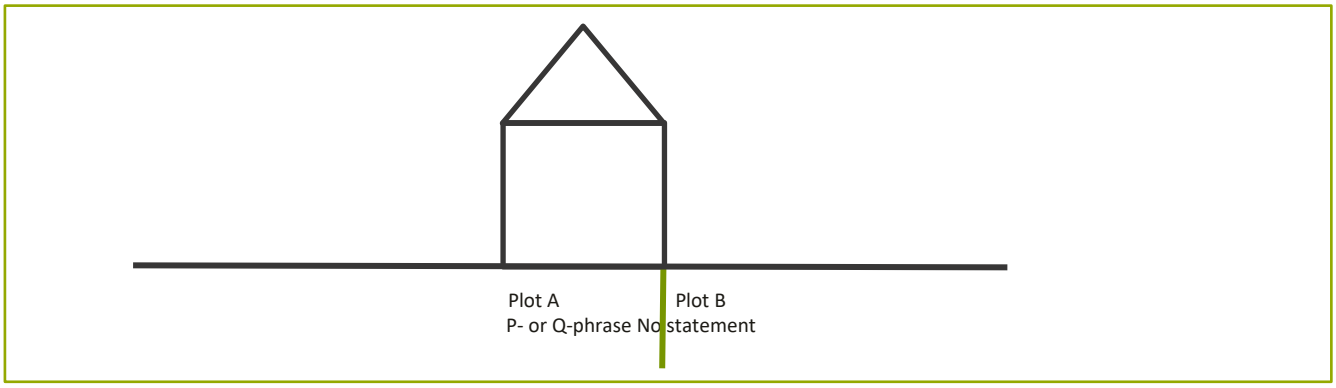

figure 7: example of distribution from plot A (research site = source plot) to plot B (neighbouring plot = distribution plot)

5.5.6 Excavation during the exploratory soil investigation

What is an excavation during the exploratory soil investigation?
The contamination is excavated during the execution of the exploratory soil investigation and under the supervision of a soil remediation expert.

↑ Pollution can be excavated during the exploratory soil investigation under the following **conditions**:
- The excavation takes place under the supervision of a soil remediation expert.
- The client discusses the planned works with the owner(s) and the user(s) of the land(s) concerned. Prior to the start of the works, the parties involved must agree on the works to be carried out. The agreement must be in writing. The agreement also describes the relevant information about the works per cadastral plot and contains the signature of the parties involved.
- The works are carried out in accordance with the rules of good workmanship and all legal provisions.
- The standard procedure 'Soil Remediation Works, Final Evaluation Studies and Maintenance' applies. The philosophy of the Achilles care system is applied but a certificate is not required.
- Pollution in the solid part of the earth and in groundwater must be delineated both horizontally and vertically. For a (mixed predominantly) historical contamination with asbestos, performing the conditions for the depth of the holes to be dug as provided for in section D.1 of strategy 8 of this standard procedure is sufficient.
- The excavation takes place without dewatering. The use of a vacuum truck is allowed.
- The control samples are taken in accordance with the guidelines from the standard procedure 'Soil remediation works, final evaluation study and maintenance'.
- The excavation area is filled according to the earthmoving regulation.
- The general objective of the excavation is always the complete removal of soil contamination, i.e. to below the guide value. If this objective is not achieved, you must base the assessment on the soil contamination initially established.

Before and after the excavation, a site description is carried out, if relevant. The site description must be made at the place where the works take place, and also on the grounds where a negative impact can be expected.

If you excavate a (mixed predominantly) historical asbestos contamination in an exploratory soil investigation, it is sufficient that you meet the conditions and objectives set out in the Code of Good Practice – Asbestos – provision for remediation variant. In doing so, take into account the recommendations for use provided for in the Code of Good Practice.

5.6 METHODOLOGY CLEAR INDICATION FOR SERIOUS SOIL CONTAMINATION

When do you use this methodology?
- In the case of historical or mixed predominantly historical pollution: for parameters exceeding 80% of the soil remediation standard.
- For non-standard parameters.

The criteria for determining whether there is a clear indication of a serious soil contamination (DAEB) are described in the 'Code of Good Practice for DAEB – Risk Assessments'.

5.6.1.1 Research sites on which no soil survey accepted by OVAM has been carried out yet

The flowchart consists of two blocks of decision criteria:
- Block 1: DAEB fixed part of the earth (level of dust group);
- Block 2: DAEB groundwater (substance group level).

The flowchart should allow you to state unequivocally whether there is a clear indication of serious soil contamination.

5.6.1.2 Research sites on which an exploratory or descriptive soil survey accepted by OVAM has already been conducted or on which soil remediation has already been performed and OVAM has issued a final declaration

You will answer four questions:
- Is there an increase in the level of pollution?
- Is there a change in terrain characteristics?
- Has the dispersal behaviour of the contamination changed?
- Do the assumptions from previous soil surveys need to be adjusted?

Did you answer 'yes' at least once? Then go through the flowchart for locations that have not yet been investigated.

If you answered 'no' to all the questions, the decisions from the previous soil investigations will be retained.

5.6.2 Clear indication of serious waterbed contamination (DAEW)

The criteria for determining whether there is a clear indication of a serious water bottom contamination (DAEW) are described in the code of good practice 'Research of water bottoms and banks'.

5.7 SAFETY MEASURES AND PRECAUTIONS

5.7.1 Generalities

↑ Based on field observations, analysis results, risk assessment, etc., do you find that safety or precautionary measures are needed to temporarily protect humans or the environment against the dangers of contamination? Send these findings to OVAM. Justify your position and indicate whether the measures should be carried out immediately and in anticipation of the soil remediation works.

↑ Evaluate the need for precautionary or safety measures during the entire process of conducting the soil investigation and immediately after each receipt of new analysis results or new observations. In case of immediate danger (e.g. an explosion hazard), **safety measures** are needed. Report this immediately to OVAM. If the measures are temporary and pending further investigation or soil remediation works, propose **precautions**.

↗ Report the need for precautions to the OVAM within a period of 30 days after the adoption. The operators, users or owners of the contaminated land can propose precautionary measures to the OVAM under your direction.

↗ Use the methodology in section 6.3.2 to determine whether there is evidence of an actual risk due to direct human exposure. You should not report this evaluation if there is no need for action, precautionary or safety measures.

↗ Pollution for which, according to this methodology, there is no evidence of a risk due to direct human exposure:
- may still pose a risk of spread or an ecotoxicological risk.
- It may therefore still be necessary to take rapid measures to, for instance, prevent spread, protect vulnerable nature, prevent deterioration of surface water, reduce nuisance and inconvenience, etc.
- In addition, there may be other elements by which you consider it possible that a human risk may be present, for which precautions are necessary, such as:
  - a contamination present at ground level in concentrations where there may be harmful effects on human health due to direct contact
  - the presence of contamination that prevents the site from performing its current function.

5.7.2 Methodology for precautionary measures due to possible human exposure

↓ This methodology has a **signal function** and is a **tool** for checking for indications of risk due to human exposure to soil contamination, but **does not replace the global assessment of the situation by a soil remediation expert**. This methodology is therefore not a fully-fledged risk assessment, as referred to in Chapter 5.4 Risk assessment. The methodology is a tool to easily and quickly identify a potential risk due to human exposure that requires precautions. The thresholds and distances used are indicative. The final assessment is your responsibility.

5.7.2.1 Step 1: receptors and exposure

↗Check whether at least one of the following receptors or exposures is present:
- Direct human contact is possible with chemical products (such as oil, chemical products, cyanide-containing soil, etc.).
- There is an indoor space at a short distance (indicative distance: within 20 m).
- There is a drinking water extraction area, a protection zone, a well for drinking water, or a well for watering vegetable gardens at a short distance (indicative distance: within 20 m).

- There is a playground, a vegetable garden, or a chicken coop at a short distance (indicative distance: within 20 m)

Check this at every fieldwork phase. For example, in the case of the containment of contamination, due to the expansion of the research area, a vegetable garden may be present in the vicinity at a later stage, whereas this was not the case at an earlier stage.

Are none of these receptors or exposures present? Then you can decide that no precautions are necessary due to possible human exposure and continue to work on the (decretal) soil investigation.

5.7.2.2 Step 2: Clear indication of serious soil contamination (DAEB)

↗ If at least one of the above receptors or exposures is present, check whether there is an DAEB for the contamination near the relevant receptors. The SGEI methodology allows you to make a rapid risk assessment and to take into account additional situation-specific arguments. This SGEI methodology can also be applied to new pollution. The DAEB methodology is described in the Code of Good Practice 'DAEB methodology, risk assessment and risk-based remediation values'.

In the absence of an DAEB, you may decide that no precautions are necessary due to potential human exposure.

5.7.2.3 Step 3: indications of a risk due to human exposure

↗ If there is an SGEI, go through the schedule below for the receptor(s) or exposure(s) and contaminants relevant to your situation.

↗ Make a distinction here between

- **Direct actions**: simple actions that can be taken to limit direct contact with the contamination, such as communication to residents regarding the use of vegetable gardens, groundwater, etc., or restricting entry into the contaminated zone by closing it. Do not report these direct actions as a precautionary measure. Do report the direct actions taken to limit exposure in the report.
- **Precautions**: measures necessary to limit exposure if:
  - Direct actions are not sufficient to limit direct contact.
  - the operator, user or owner does not take any direct action
  - no access is obtained to carry out the necessary actions
  - a specific authorisation is required in order to be able to take measures

  Report the precautionary measures to the OVAM.

Receptor concerned		Measurement	Review	Measurement	Review	Decision
1 Permanent direct human contact possible with chemical product/ferrous earth (cyanide-containing soil)		n/a	n/a	n/a	n/a	Immediate actions/precautionary measures needed.
2 Volatile product in the soil, below or less than 20 m from indoor spaces		carry out air measurements in indoor air	> TCA[14] or Limit value/safety factor			Immediate actions/precautionary measures needed.
			< TCA[15] or Limit value/safety factor			No precautions necessary due to human exposure.
3 Drinking water abstractions, protection zones, wells for drinking water or wells for watering vegetable gardens at relevant depths. (not applicable for non/very poorly soluble parameters such as asbestos, PAH,...)	within the contaminated area	Analyse the drinking water/well water	> drinking-water standard			Precautions needed.
			< drinking-water standard			No precautions needed due to human exposure.
	< 20 m from the contaminated measuring point	Check whether there is already an investigation at the level of the extraction, protection zone or well. If not: analyse the groundwater at the level of the identified contamination and implement the DAEB groundwater methodology	SGEI	Analyse the drinking water/well water	> drinking-water standard	Direct actions: Communicate to stakeholders to limit exposure pending further investigation or soil remediation works. Precautions: Evaluate whether other measures are indicated.
					< drinking-water standard	No precautions needed due to human exposure.
			No DAEB			No precautions needed due to human exposure.
4 Unpaved chicken coop, playground, vegetable garden	within the contaminated area	Analyse the solid part of the earth at the level of the chicken coop, playground, vegetable garden	> (reference value) BSN type III			Direct actions: Communicate to stakeholders to limit exposure pending further investigation or soil remediation works. Precautions: Evaluate whether other measures are indicated.
			< (test value) BSN type III			No precautions needed due to human exposure.
	< 20 m from contaminated area	Check whether there is already an investigation at the level of the chicken coop, playground or vegetable garden. If not: test the concentration and analyse the solid part of the earth in the contaminated zone against 15 x BSN type III.	> 15X (limit value) BSN type III	Analyse soil at the level of the chicken coop, vegetable garden, playground	> (reference value) BSN type III	Direct actions: Communicate to stakeholders to limit exposure pending further investigation or soil remediation works. Precautions: Evaluate whether other measures are indicated.
					< (test value) BSN type III	No precautions necessary due to human exposure.
			< 15X (test value) BSN type III			No precautions necessary due to human exposure.

table 13: indications of risk due to human exposure

14 Definition/rules of thumb for recognising a volatile product: see code of good practice DAEB, risk assessment and risk-based remediation values.

15 Nuances are possible, see paragraphs under the table.

Permanent direct contact with chemical product
If people can come into direct contact with chemical products (such as oil, pools of chemical products, etc.) then you advise the operator, user or owner of the contaminated land under your direction to take immediate actions to prevent this contact. This can be done for example by:
- cordoning off the area and installing warning signs or barriers to prevent unauthorised access;
- covering the soil;
- excavating the top layer;
- removing pure product with a suction vehicle;
- informing and involving the relevant parties (such as the owner, the user, the government, the local residents) about the situation and the actions taken;
- …

If after these direct actions, direct contact with the chemical product is still possible, evaluate precautions. Report this to OVAM.

Volatile product in the solid part of the earth or groundwater below or at less than approximately 20 m from an indoor area
If it is an unknown or a volatile product and is there an interior space in the vicinity (indicative distance: within 20 m), conduct an air measurement in this indoor space. Check the results of this measurement against:
- The allowable concentration in air (TCL), if available.
- If TCA is not available, you can indicatively test against the limit value from the codex on well-being at work divided by a safety factor.

The safety factor depends on the H-statements for the component concerned. You can find the H-statements on the safety data sheet of the component. Indicatively, you should use the following safety factors (VF):
- Safety factor (VF) = 100, if none of the H-phrases in Table 14 apply.
- Safety factor (VF) = 500, if one or more H-statements from Table 14 apply.

H-sense	Meaning	Note
H330	Fatal if inhaled	/
H331	Toxic if inhaled	/
H332	Harmful if inhaled	/
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled	/
H335	May cause respiratory irritation	/
H340	May cause genetic damage <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>.	
H341	Suspected of causing genetic damage <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>	
H350	May cause cancer <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>	
H351	'Suspected of causing cancer <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>	
H360	May impair fertility or the unborn child <state specific effect if known> <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>	
H361	May potentially harm fertility or the unborn child <state specific effect if known> <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>	If inhalation is a relevant route of exposure
H370	'Causes damage to organs <or state all organs affected if known> <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>.'	
H371	'May cause damage to organs <or state specific all organs affected if known> <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>.'	
H372	'Causes damage to organs in case of prolonged or repeated exposure <or state all organs affected if known> <report exposure route if it has been sufficiently proven that the hazard is not present in the case of other exposure routes>.'	
H373	May cause damage to organs through prolonged or repeated exposure	

table 14: H-phrases

The TCA and the safety factors for limit values from the Codex were chosen based on a conservative approach to enable a rapid indicative assessment. Is this value exceeded? You can always refine and determine more specific test values based on situation-specific elements or additional measurements. The TCA is derived from lifetime exposure.

If you conclude that there is evidence of a risk as a result of to human exposure, you advise the operator, user or owner of the contaminated land to take immediate action under your direction. This can be done for example by:
- Evacuate the room in case of risk of inhalation;
- Additionally ventilating the interior;
- carrying out additional reference measurements in indoor and outdoor air;
- extracting soil air;
- monitoring concentrations in indoor air or groundwater;
- …

You always evaluate whether additional precautions or safety measures are necessary.

Drinking water abstractions, protection zones, wells (at relevant depth) for use as drinking water or for watering vegetable gardens

Unless the contamination consists of insoluble to very poorly soluble parameters, conduct additional research:
- If the extraction of drinking water, the protection zone, or the well is located less than approximately 20 m from the contamination? and based on an analysis of the solid part of the earth, you have decided that there is an DAEB, analyse a sample of the groundwater.
- If there is an DAEB for groundwater, sample the drinking water or well water concerned.
- If the drinking water extraction or well is located within the known contaminated zone, immediately sample the drinking water or well water.

You test the result of the drinking water analysis against the drinking water standard. If no drinking water standard is available, calculate a standard according to the 'basic information for risk assessment Methodology for drawing up soil remediation standards and assessment values, guide values and target values'.

If you conclude that there is evidence of a risk as a result of to human exposure, you advise the operator, user or owner of the contaminated land to take immediate action under your direction. This can be done for example by:
- to inform and involve the relevant parties (such as the owner, user, government, and local residents) about the situation and the actions taken;
- discourage or stop the use of groundwater as drinking water or for the vegetable garden pending further research.

You always assess whether additional precautionary or safety measures are necessary.

Unpaved chicken coop, playground, vegetable garden
Is there a chicken coop, vegetable garden or playground less than approximately 20 m away? In that case, check whether the contamination has already been investigated.
Has an investigation not been conducted yet?
Check whether 15 times the soil remediation standard for a destination type III (15 x BSN type III) is exceeded.

Is 15 x BSN type III exceeded in the vicinity of the chicken coop, the vegetable garden or the playground? Sample the solid part of the earth from the chicken coop, the vegetable garden or the playground.

If the soil remediation standard for a destination type III is exceeded in the chicken coop, vegetable garden, or playground? you advise the operator, user or owner of the contaminated land to undertake immediate actions under your supervision. This can be done for example by:
- informing the parties concerned to limit exposure pending further investigation, recommendations for use or soil remediation;
- discouraging or ceasing the use of vegetables and eggs from the garden pending further investigation;
- covering or cordoning off the area concerned;
- excavating the (top layer of the) affected zone;
- remove the source of the contamination;
- …

You always evaluate whether additional precautions or safety measures are necessary.

5.7.2.4 Decision

Are there any indications of the presence of a risk due to direct human exposure? In that case, advise the operator, user or owner to take direct actions to mitigate the potential risk.

If the direct actions are not sufficient to limit exposure or if the operator, user, or owner does not take direct actions, report the precautions to the OVAM. Even if a specific permit is required to take measures, you must report precautions to the OVAM.

6 ASSESSMENT

You evaluate the research results per contamination.

You will assess the following elements per contamination:
- Has the reference value been exceeded?
- Is the 80% value of the soil remediation standard exceeded?
- What is the nature of the contamination (new/mixed/historical)?
- Are there clear indications that the contamination gives rise to a descriptive soil survey?
- Are any precautionary or safety measures necessary?
- Do you have sufficient data to make a ruling under the Soil Decree?
- Do the findings in previous studies still apply?

You interpret and evaluate the research results per cadastral parcel. If you have examined a part of the cadastral plot, the ruling relates to this part of the cadastral plot.

The evaluation of the analysis results of the waterbed shall be linked to the research site.

Assessment framework

- **O-phrase:**
  - The guide value for the solid part of the earth and for groundwater has not been exceeded for any standardized parameter.
  - The reference value 'guideline value' has not been exceeded for any non-standard parameter.
- **P-phrase:**
  - The guide value is exceeded for one or more standardized parameters, but no descriptive soil investigation is required for the solid part of the earth.
  - No descriptive soil analysis is required for any non-standard parameter.
  - Based on the groundwater analyses, there are clear indications that the guideline values for the solid part of the earth are exceeded, but no descriptive soil investigation is needed.
- **Q-phrase:**
  - (New soil contamination) A descriptive soil survey is required if there are clear indications that the soil contamination exceeds or is likely to exceed the soil remediation standard.
  - (Historical soil contamination) A descriptive soil survey is required if there are clear indications of serious soil contamination.
  - If soil contamination cannot be assessed against soil remediation standards because of its special nature, a descriptive soil investigation is required if there are clear indications of serious soil contamination.
- **G-phrase:**
  - GGV: No field work was carried out on this plot.
  - GBV: Limited fieldwork was carried out on this plot.
- **W-phrase:**
  - The identified soil contamination did not occur on this soil. The remediation obligation rests with the owner or user of the land where the soil contamination occurred.
- **U-phrase:**
  - The identified soil contamination did not occur on this soil. No soil remediation is required.

If it was decided in a previous soil investigation that a descriptive soil investigation is necessary, and that descriptive soil investigation showed that no soil remediation is needed, you adopt the conclusion of the descriptive soil investigation.

Part 3: Reporting and data transfer

7 REPORTING AND DATA TRANSFER – GENERAL

The report of the exploratory soil investigation will consist of:
- The digital report in a PDF file.
- The alphanumeric data in an XML file.

You provide this information to OVAM via the e-desk for soil remediation experts. More information on the operation of the e-loket can be found at www.ovam.vlaanderen.be.

The report of the exploratory soil investigation has only been submitted to the OVAM when the report appears in the list of 'Assignments forwarded'.

The e-desk is made available by OVAM for the provision of digital data. The OVAM is under no circumstances responsible for the loss of data due to the use of the e-desk or for the temporary non-functioning of the e-desk.

8 THE DIGITAL REPORT

8.1 GENERALITIES

8.1.1 The title of the digital report

↑ The title of the report is determined, inter alia, by the sampling strategy. You are using one of the following titles:
- Preliminary soil investigation: street, number and municipality of the investigation site.
- Preliminary Soil Investigation – Operational Investigation: street, number and municipality of the investigation site.
- Exploratory soil investigation for real estate under the system of compulsory co-ownership – conducted on lot reference and the common parts: street, number, and municipality of the research site.
- Exploratory soil investigation for the transfer of part of a cadastral plot due to the termination of usage rights: street, number, and municipality of the research site.
- Soil Orientation Survey – Situation Survey under Article 33bis of the Soil Decree: street, number and municipality of the research site.
- Preliminary soil investigation in the context of strategy 5A: street, number, and municipality of the investigation site.

- Preliminary soil investigation in the context of strategy 5B: street, number, and municipality of the investigation site.
- Preliminary soil investigation in the framework of strategy 5C: street, number and municipality of the research site.
- Modified Preliminary Soil Survey: street, number, and municipality of the research location (only applicable if OVAM has requested additions).
- Exploratory soil investigation in the context of sampling strategy 10 previously undetermined substances for which there is evidence of serious soil contamination: name(s) of the substance(s) – street, number and municipality of the research site.

8.1.2 The structure of the digital report

↑ You divide the digital report into several PDF files:
- one PDF – administrative data;
- one PDF – non-technical summary;
- one PDF – report (you can split the file if it is too large to upload);
- one or more PDFs – maps;
- one or more PDFs – attachment;
- one or more PDFs – summary per ground.

↓ You can supplement the digital report with a PDF – important information.

↑ Technical requirements for the PDF files:
- Each file must be a text PDF. This means that the PDF file can be printed and the content can be selected and copied. It must not be possible to select and copy the contents of the map material and the attachments.
- The "PDF report" file has an interactive table of contents with hyperlinks, allowing the reader to quickly navigate through the file.

8.2 PDF – ADMINISTRATIVE DATA

↑ You compile the personal information in a table in the PDF file 'PDF – administrative data'.

8.2.1 Table of administrative data of the report

You summarise the administrative data of the report according to table 15.

Report details Title: Report reference: Report date:	
Research site Street and number (or description):	

Postal code: Municipality:	
Background	☐ transfer of land ☐ closure of a risk installation ☐ transfer of land + closure of a risk installation ☐ periodic obligation ☐ obligation by decree ☐ voluntary by decree ☐ voluntarily by third parties ☐ ex officio [16] ☐ spreading ☐ unknown
Client Name: Address: Telephone No.: Email: Capacity: **Contact person** Name: Telephone No.: Email: **Contact person on site** Name: Telephone No.: Email:	 ☐ owner ☐ user ☐ operator ☐ acting on behalf of the owner/user/operator ☐ other: .....
Soil remediation expert Contact name: Telephone No.: Email: **Quality manager** Name: Telephone No.:	

16 You have been commissioned by OVAM to draw up the exploratory soil investigation.

Email	
OVAM file number	
Label(s):	□ asbestos ☐ atmospheric deposition ☐ brownfield ☐ dry cleaning/laundry ☐ drug-related ☐ garage and bodywork ☐ gasworks ☐ agriculture and horticulture ☐ forced co-ownership ☐ owned by local authorities ☐ owned by the Flemish Government ☐ IED (Industrial Emissions Directive) ☐ private ☐ PFAS ☐ school ☐ Fuel oil tank for heating ☐ landfill ☐ petrol station ☐ university ☐ transport – goods and people ☐ water bottom ☐ water catchment area ☐ not applicable
Environmental damage	☐ Environmental damage has been identified. ☐ No environmental damage has been identified.

table 15: administrative data of the report

In the case of compulsory co-ownership, summarise the details of that co-ownership according to table 16.

Compulsory co-ownership data Form of compulsory co-ownership: Since when has the co-ownership been present?	☐ apartment building ☐ business centre ☐ other: ……
Administrator of the compulsory co-ownership Name: Address: Telephone No.: Email: Capacity:	☐ trustee ☐ association of co-owners

table 16: administrative data of the compulsory co-ownership

8.2.2 Table identifying the land concerned

You describe the administrative data of the grounds according to table 17.

Municipality.	Section	Lot number	Address	Municipality	Person (owner, user, operator)					
					Period		Type [17]	Name	Address	Letter code
					From	To				

table 17: identification of the grounds concerned

Points of attention:

- You describe land that does not have a cadastral plot number by the address. You clearly indicate the name of the soil (for example: Stationsstraat, Leuven-Mechelen canal). For these lands, you must also mention the owner (province, municipality, region, etc.).
- For multi-apartment buildings/forced co-ownership, please provide the details of the association of co-owners (VME) and, if applicable, of the trustee responsible for the management of the VME. If there is no

17 You indicate whether the person concerned is the owner (E), user (G), or operator (EX). The current owner and the current user or operator are marked in bold.

association of co-owners present, enter the details of all users and operators that you learn from a source other than the land register.
- All data must be accurate and up-to-date. It is your responsibility to verify the authenticity, accuracy, and completeness of the data received.
- *If the water bottom was examined, indicate in the table the VHA segment of the watercourse in which the water bottom sample was taken. Enter the details of the manager of the watercourse.*

8.3 PDF – NON-TECHNICAL SUMMARY

↑ You concisely summarise the soil investigation in the PDF file 'PDF – Non-Technical Summary'.

The non-technical summary should enable people who are not familiar with soil matters to gain an understanding of the contamination situation. Avoid using technical terms. Abbreviations should be avoided, or explained in the non-technical summary. In the non-technical summary, you only mention information that is also covered in the report.

The following information is relevant to mention:
- The contamination detected and its nature.
- The need for a descriptive soil investigation.
- The need for precautionary or safety measures.
- The recommendations for use, if they have already been granted in a descriptive soil investigation or final evaluation study.

Provide this information **for each cadastral plot**. You may combine plots with the same ruling.

8.4 PDF – REPORT

↑ You must include at least the following chapters in the PDF file 'PDF – report':

8.4.1 Chapter 'Introduction'

You must include at least the following information:
- the grounds examined and their address;
- the reason for the investigation;
- the version of the standard procedure used;
- for a revised soil survey: an overview of the requested additions.

8.4.2 Chapter 'Preliminary study'

You provide a complete overview of the information you collected during the preliminary study. In Chapter 3, the data that you must include in the report are described.

For the description of the **geology and hydrogeology** you are using Table 18 or equivalent.

Depth (m-mv)	Texture	Heterogeneity and stratification	Stratigraphy [18]	Permeability		OM (%)	Clay (%)	Remarks
				Decimal (m/d)	Description			
0 – 0.5	Sand	Heterogeneous debris present		-	Good	-	-	
0.5 – 5	Loamy sand	Homogeneous		0.001	Moderate	2.5	15.5	Glauconite-containing
5 – 9	Loamy sand	Heterogeneous layering: clay lenses and peat layers		-	Moderate-poor	-	-	Local up to 3 cm peat
9+	Clay	Homogeneous		-	Impermeable	-	-	Closing, lower boundary of the aquifer
The permeability was determined by ……								

Table 18: Geological structure (example)

For the description of the **history**, use table 19 or equivalent. You mention both current and former potential sources of contamination.

Period	Cadastral plot	Letter code [19]	VLAREM/VLAREBO category	Potential source	Suspect substances

table 19: summary of historical research

For the description of **the current and former storage tanks**, use table 20 or equivalent.

Tank number	Zone	Contents (l)	Product	Type (B/O)	Base depth (m)	Installation year	Wall (E/D)	Leak detection (Yes/No)	Overfill protection (Yes/No)	Year of last leak test	Boiled (Yes/No)	Paving	Year officially out of use

table 20: overview of storage tanks

18 Stratigraphic name as used on the most recent geological maps.
19 You provide the person's letter code as included in table 17.

Key table 20:

- Zone: description of the suspect zone
- Product: liquid that is or was stored in the tank. You also mention amended content.
- B/O: above ground or underground
- Base depth: the depth of the bottom of the underground tank relative to ground level
- E/D: single-walled or double-walled
- Paving: type of hardening present (concrete, not hardened, liquid-tight,...)

The **results of previous soil investigations, soil remediation and earthmoving** summarise table 21 or equivalent.

Report date	Report type [20]	Report title	Client	Soil remediation expert	Contamination	Further measures (Yes/No)

table 21: summary results of previous soil investigations, soil remediation and earthmoving

8.4.3 Chapter 'Sampling strategy'

The contamination hypothesis and sampling strategy can be summarised in table or equivalent. This table provides an overview of the investigation efforts per suspicious zone and in the context of the screening of the investigation site.

20 Orientation soil research (OBO), descriptive soil research (BBO), soil remediation project (BSP), soil remediation works (BSW), aftercare, site research,...

Total surface area of survey site: 1.9ha										
General screening according to strategy 1:	Number of blocks	Number of drillings (including gauges)	Number of gauges	Number of analyses SAP Solid part of the soil			Number of analyses SAP groundwater			
	4	8	4	4			4			
Cadastral plot + surface area	Suspicious zones + surface area	Potential sources of pollution + surface area	Sampling strategy	Soil protection	Suspect solids	Suspect soil layer	Number of drillings	Number of gauges	Number of solid part earth analyses	Number of groundwater analyses
Plot 205K (0.7ha)	Suspect zone 1 Petrol station (0.3ha)	Pump Island (50 m²)	3	Impermeable;	Mineral oil, BTEX, MTBE	0-3 m-bgl	1	1	1	1
		Underground tanks (75 m²)		None	idem	2-5 m-bgl	5	2	3	2
Plot 205L	Suspect zone 2 Garage workshop (0.5ha)	Lubrication pit (4m²)	3	Concrete	Mineral oil	1-3 m-bgl	1	1	1	1
Plot 205M (1.0ha)		Waste oil tank (9m²)		Boiled	Mineral oil (PAH)	0-1 m-bgl	2	1	1	1
Summary:	Total drillings	Total gauges								
	12	8								

table : summary of the contamination hypothesis and sampling strategies (example)22

8.4.4 Chapter 'Results of field and laboratory research'

↑ You make a report of the samples and give an overview of the analysis results.

You take the following data from the **sampling** Please indicate in the report whether you refer to the annex:
- the unique name of the measurement site;
- the location of the measurement (for boreholes and piezometers this is the X and Y coordinate according to the Lambert72 coordination system with a maximum deviation of one meter and the Z coordinate read from the topographic map);
- the type of measurement: drilling, level pipe, asbestos sample, air measurement, sounding, control sample, etc.;
- the operator of the measurement;
- the date of implementation;
- the technique used;
- the (suspect) area;
- the plot;
- the field observations (such as sensory contamination and the depth at which it occurs, the presence of a floating layer and its thickness, etc.)
- the field measurements (for groundwater sampling, this is at least the groundwater level, acidity, conductivity and temperature).

Take the following data from the **analyses** Please indicate in the report whether you refer to the annex:
- depth interval analysed;
- date of sampling;
- medium analysed;
- name of the laboratory;
- results of the analysis;
- comments from the laboratory, with a discussion.

↑ You test the analysis results against the target values, the guide values and the soil remediation standards. You use for this table and table or equivalent. The test values have always been converted to the clay and organic matter content and pH-KCl. You explain which level and which pH-KCl you use.

↑ For non-standard parameters, briefly discuss the corresponding test values (guide value and soil remediation standard). You explain how you calculated these test values.

↑ *You test the analysis results for water bottom samples against the trigger values if they are available.*

Cadastral plot	390B				Test values according to Destination Type III		
Zone suspect/non-suspect	Site 1 Underground tanks			Non-suspect			
Measurement location name	B1	PB2	PB2	PB4	Target value	Soil remediation standard (BSN)	Highest exceedance factor BSN
Sampling date	31.03.2018	31.03.2018	31.03.2018	31.03.2018			
Sensory pollution + depth (m-mv)	/	0-1 m-bgl: fuel oil odour	3-4 m-bgl: fuel oil odour	/			
Depth of sample for analysis (m-bgl)	0-0.5	0-0.5	3.5-4.0	0.5-1.0			
Total solids (%)	76.8	82.7	80.2	77.4			
Organic material	2						
Clay (%)	10						
Acidity (pH)	7						
Metals (mg/kg d.s.)							
Arsenic (As)	< 10			< 10	35	103	
Cadmium (Cd)	< 0.4			< 0.4	1.2	6	
Chromium (Cr)	5.6			19	91	240	
Copper (Cu)	< 5.0			11	72	197	
Mercury (Hg)	< 0.1			< 0.1	1.7	4.8	
Lead (Pb)	< 10			90	120	560	
Nickel (Ni)	< 5.0			8.0	48	95	
Zinc (Zn)	5.3			120	200	333	
Mineral oil (mg/kg d.s.)	< 50	**3400**	**14000**	< 50	300	1000	x 14
PAH (mg/kg d.s.)							
Naphthalene	0.68			0.24	0.3	5	
Phenanthrene	0.63			0.09	0.3	3.6	
Fluoranthene	0.21			1.35	15	65	
Benzo(a)anthracene	0.33			0.85	2.0	30	
Chrysene	0.31			4.2	3.9	10.5	
Benzo(b)fluoranthene	0.31			0.63	2.5	180	
Benzo(k)fluoranthene	0.12			2.1	1.1	7	
Benzo(a)pyrene	0.26			0.31	0.6	11.5	
Benzo(ghi)perylene	0.22			0.42	0.3	3920	
Indeno(123-CD)pyrene	0.2			6.4	0.7	20	
Anthracene	0.1			0.1	2.4	70	
Fluorene	0.1			0.1	9.5	3950	
Dibenz(a,h)anthracene	0.1			0.1	0.3	2.9	
Acenaphthene	0.1			0.1	3.1	14	
Acenaphthylene	0.1			0.1	0.6	1	
Pyrene	0.1			0.1	21	395	
PAH Total	0.1			17.2	35	103	
Clay content used					10 %		
Organic matter used					2 %		

table : summary of the analysis results for the solid part of the earth (example)23

Cadastral plot	523C			Test values		
Zone suspect/non-suspect	Site 2 Underground tanks		Non-suspect			
Measurement location name	PB2	PB3	PB4	Target value	Soil remediation standard (BSN)	Highest exceedance factor BSN
Sampling date	17.06.2018	17.06.2018	17.06.2018			
Filter depth (m-mv)	2-4	2-4	2-4			
Groundwater depth (m-mv)	2.5	2.2	2.6			
Sensory perception	Petrol odour	fuel oil odour	/			
Presence pure product + thickness	Floating layer 2.5 cm					
Acidity (pH)	6.7	6.4	6.1			
Temperature (°C)	12.9	11.7	12.1			
Conductivity (µS/cm)	369	1260	765			
Metals (µg/l)						
Arsenic (As)	< 0.4		**32**	12	20	x 1.6
Cadmium (Cd)	< 1.0		< 1.0	3	5	
Chromium (Cr)	< 5.0		< 5.0	30	50	
Copper (Cu)	5.9		12	60	100	
Mercury (Hg)	< 0.05		< 0.05	0.6	1	
Lead (Pb)	< 5.0		< 5.0	12	20	
Nickel (Ni)	5.9		**42**	24	40	x 1.1
Zinc (Zn)	430		120	300	500	
Mineral oil (µg/l)	**15000**	**2800**	< 50	300	500	x 30
Volatile aromatics (µg/l)						
Petrol	**780**	6	< 0.2	2	10	x 78
Toluene	**1200**	12	< 0.2	20	700	x 1.7
Ethylbenzene	**850**	5	< 0.2	20	300	x 2.8
Xylene	230	360	< 0.2	20	500	
MTBE µg/l	**880**			20	300	x 2.9
VOCl (µg/l)						
1,2-dichloroethane			16	5	30	
Dichloromethane			2.4	5	20	
Tetrachloromethane			0.8	1.2	2	
Tetrachloroethene			< 0.5	5	40	
Trichloromethane			< 0.5	5	200	
Trichloroethylene			2.1	5	70	
1,1,1-trichloroethane			5.8	5	500	
1,1,2-trichloroethane			< 1	5	12	
1,1-dichloroethane			25	5	330	
Cis+trans 1.2-dichloroethylene				5	50	
Vinyl chloride (µg/l)			8	2	5	

Underlined = exceeds the guide value
Bold font = exceeds the soil remediation standard

table : Summary of groundwater field and analysis results (example)24

8.4.5 Chapter 'Evaluation of the results'

You use the assessment framework of chapter 6.

Evaluation of the collected data per contamination

You provide a summary and interpretation of the data you collected during the fieldwork and analyses. If a study has been conducted on the ground before, compare the current results with results from previous reports.

↑ You fill in table . All concentrations above the guide value *or trigger value (for waterbed)* are considered as soil contamination.

A landfill can ensure that contamination with different parameters occurs. You may conclude that there is a clear indication of serious soil contamination, due to the presence of the landfill. In the table, you refer to the landfill in the name of the contamination.

Pollution reference number	Definition	Source/location	Justification earth	Parameters
Pollution requiring descriptive soil testing				
Mixed predominantly historical soil contamination				
3	mineral oil in the solid part of the earth near tank T1	overhead diesel tank T1	Tank T1 was in use between 1980 and 2000	mineral oil
Pollution that does not require descriptive soil testing				
Historical soil contamination				
5	PAH in the top layer at the production hall	top layer	The top layer was applied in 1990	benzo(a)yrene phenanthrene

table : summary of the contamination (example)25

Evaluation of the data collected per cadastral plot

↑ Link the contaminants to a cadastral plot according to table .

Take all the information available for each of the grounds into account. You should take at least the following contaminants into account:

- The soil contamination that has been identified during the execution of the current soil investigation or that has been described in the current soil investigation.
- Soil contamination – identified during the implementation of other soil surveys – which may or may not require further action.

Plot				Pollution data				Assessment						Additional measures and usage advice	
Soil	Current and future destination type	Destination type used for evaluation	Source or Dissemination	Reference number	Medium	Name	Nature + predominant part	Damage or notification of soil contamination	(part) OBO	(part) BBO	(b)BSP	EEO	Remediation priority	Need for additional measures	Instructions for use
523 P	III	II	B	11	VDA	Mineral oil	N		Q	Q	Q	See 111.			
			B	12	GW	Mineral oil	N		Q	Q	Q	See 121.			
			B	111	VDA	Mineral oil	N					P			
			B	121	GW	Mineral oil	/					O			
			B	2	GW	VOCl	H		Q	Q				No	GA2, GA4
			B	**3**	**VDA**	**Mineral oil**	**GOH (75 %)**		**Q**						
			V	4	GW	Heavy metals	GON (80 %)		Q						
			Summary decision lot by earth				N	P							
							H	Q							
							GOH	P							
							GON	W							
523	II	II	V	2	GW	VOCl	H			Q				No	GA2, GA4

X			**B**	**5**	**VDA**	**PAH**	**H**		**P**						
			Summary decision plot				H	W							

table : summary of the pollution status per soil (example)26

Key table :

- **Medium**:
  You choose from solid part of the earth (VDA), groundwater (GW), Floating layer (LNAPL), bag layer (DNAPL), surface water (OppW), water bottom (WB), air, pure product (NAPL).
- **Nature**:
  You choose from new (N), historical (H), mixed predominantly new (GON), mixed predominantly historical (GOH), mixed-new (GN). For mixed predominantly new and mixed predominantly historical contamination, you also give the percentage of the predominant part.

↑ Place the contamination that is the subject of the exploratory soil investigation in bold.

Need for safety or precautions

↑ You describe the need for safety or precautions or the direct actions already taken to limit exposure.

↑ Justify what danger must be prevented, what the concrete measures are and under what circumstances and under what cross-compliance conditions these measures apply.

↑ Include at least the following elements:

- A list of any (safety) measures already taken.
- A list of direct actions already taken in the context of the duty of care.
- A justification and description of the precautions or safety measures to be taken, including:
  - The relevant DAEB review and the methodology followed in case of precautionary measures due to possible human exposure.
  - the nature of the contamination;
  - A table listing the proposed precautionary or safety measures. Please also indicate whether the measures are subject to notification or authorisation, including VLAREM headings and class).
  - The materials that are used in this.
  - The estimated duration of the measures.
  - In the case of groundwater abstraction: the discharge standards, the intended abstraction rate, ...
  - The cadastral data of the grounds on which the precautionary or security measures must be carried out. Please also indicate whether it is a source or distribution plot.
  - The cadastral data of the source plot. If the source plot is not known, indicate this as well.

8.4.6 Chapter 'Summary decision'

↑ You mention the following elements in the decision:

- General:
  - The reason for the exploratory soil investigation.
  - the purpose type of the research site;
  - The current use of the research site, with a brief history of the activities and the suspect substances.
  - Indicate whether it is a file with environmental damage.
- Decision per cadastral plot:
  - The classification of the plot according to the assessment framework of chapter 6.
  - The contamination detected, indicating:
    - parameters;
    - location;
    - source;
    - nature;
    - recommendations for use, precautions and safety measures, restrictions on use (including a description and evaluation).
  - You indicate whether or not the cadastral plot is suspect of asbestos. You give a brief explanation of why.
  - For a landfill surveyed according to sampling strategy 9, add the following paragraph: 'The contamination detected is due to the presence of a landfill. As a result, various contamination parameters may occur. It may be concluded that, on the basis of the exploratory soil investigation, there are clear indications that there is serious soil contamination due to the presence of the landfill site.'

You indicate whether there has been or is being discharged to the surface water. If discharges have been or are being made to surface water, indicate whether the discharge point has been investigated.

If you detect waterbed contamination, indicate whether it is related to the exploitation at the research site. If the waterbed contamination is related to the exploitation at the research site, please also indicate whether it is fully related to this exploitation.

For an exploitation study or a study for a part of a cadastral plot, you only have to formulate the decision for the part examined.

8.4.7 Chapter 'Declaration and signature'

↑ In each report, the following **statement** included:

The soil remediation expert declares:
- whereas this report has been carried out in accordance with the standard procedure for exploratory soil investigation;
- that the binding, guiding and relevant advisory elements are included in the report and that it considers that the elements not mentioned in the report do not apply either;
- that they are not incompatible for the performance of this contract or that he or she has taken management measures in the event of a situation of incompatibility;
- that this report is representative of the contamination status of the study site;
- that the content of the report corresponds to the digital data;
- that the following information – submitted to OVAM in the XML file – is the legally binding one:
  - administrative data;
  - nature and severity at the level of the cadastral parcel;
  - users and operators if different from the land register;
  - if the present soil investigation concerns an initial soil investigation on the cadastral plot: nature and severity at contamination level.

↑ Each report mentions above table 25 the names of the persons who cooperated in the report.

↑ Each report is signed according to table 27. These persons bear the final responsibility for the report.

↑ Signing can only be done by the persons who have given permission to use their digital signature. Commission signature is not permitted.

Capacity	Name and signature [21]	Date
The person who has the individual signature authority (Article 53/4(1) of the VLAREL)		
The quality manager at the soil remediation expert for this soil research		
The person who can legally represent the soil remediation expert vis-à-vis third parties[22]		

table 27: table for signature

If you suspect that you are in a situation of **incompatibility** If so, please describe the management measure taken.

21 The signature can always be done by one or more people.
22 Included for self-employed persons (VLAREL, Article 4(2)).

8.5 PDF – ANNEX

Bundle the annexes of the report in the PDF file 'PDF – annex'.

↑ Drilling descriptions
For measurements of the type of bore or dip tube, give a description of the subsurface. Include the available drilling descriptions of the current soil investigation and, if relevant, of previous soil investigations.

The drilling description will contain at least the following information:
- the unique name of the measurement site;
- the type of measurement: drilling or dip tube;
- depth of the bore or dip tube;
- groundwater level:
- gauge construction, in a graphical diagram;
- lithology (both descriptive and graphic): main and secondary components and colour;
- drilling method;
- sensory perceptions, including depth.

↑ Analysis reports;
Add the original analysis reports from the accredited laboratory.

↑ Photos
Take photos of the potential sources of contamination, relevant things in the area, etc. Clarify where the photos were taken.

↑ Elaboration of the methodology clear indication of a serious soil contamination (if applicable)
Add the fill-in list and a brief discussion of how you determined the different indices.

↑ Elaboration of the methodology clear indication of a serious contamination of the water bottom (if applicable)
Add the fill-in list and a brief discussion of how you determined the different indices.

↑ Sampling strategy 7 (if applicable)
Add the calculation of the indices based on table 10.

↑ Alternative investigation techniques (if applicable)
Add the results of the alternative research techniques. You will also provide a concise description of the technique used and explain how you evaluated the results.

↑ Former and recent environmental and environmental permit of the landfill (if applicable)
Add the permits of the landfill.

↑ Sampling strategy 6: certificates and attestations (if applicable)
Add the processing certificates of drained storage tanks. You also include the processing certificates of the drained soil or the VLAREMA usage certificates.

Other annexes (if applicable)
If relevant or applicable, include the following annexes:
- for non-standard parameters: elaboration of the test values;
- for incompatibility: a report of the inspection carried out by another soil remediation expert;
- *discharge permits.*

8.6 PDF – MAP

Bundle the map material of the report in the PDF file 'PDF – map'.
Provide all maps with a scale/scale bar and a north arrow.

↘ Topographic map
You add a fragment of the topographic map showing the following:
- the research site;
- category C groundwater abstractions;
- water catchment areas and protection areas within two kilometres of the research site;
- surface waters.

↑ Detailed plan of the research site
You add a detailed plan of the research site indicating the following, if relevant and/or applicable:
- the research site;
- if the entire cadastral plot has not been examined: the X and Y coordinates of the vertices of the study site;
- the cadastral plot boundaries and cadastral numbers;
- current and former (if relevant) buildings;
- current and former (if relevant) soil sealing;
- suspect areas;
- current and former potential sources of pollution;
- *the current and former discharge points related to the (former) production process;*
- *sewers into which discharges are made;*
- *discharge lines;*
- *water treatment plants;*
- groundwater abstractions (if applicable);
- the relevant mark-ups (if any);
- drinking water pipes (if relevant and applicable);
- for sampling strategy 1: the categorisation of the research site into blocks;
- the location and numbers of the previously placed (if relevant) and new drillings and gauges (if applicable);
- the location of the abandoned boreholes (if applicable);

- the probable direction of groundwater flow.

Provide the plan with a legend.

↑ **Presentation of the research results**
Display the research results that exceed the guideline value graphically. You make a separate map for the fixed part of the earth and the groundwater.
Graphically display the research results for water bottoms that exceed the trigger value.
At least the following items are indicated on the plans:
- sampling date;
- route;
- parameters;
- concentration determined, reflecting the exceedance of the test values;
- floating or zinc layers (if applicable).

Provide the plans with a key.

Include a plan with the results of previous soil investigations and remediation (if relevant). You can copy this plan in its entirety from the previous soil investigation. For soil remediation, show the residual concentrations.

8.7 PDF – SUMMARY BY LAND

↑ Take table and table in the PDF file 'PDF – summary per ground'.

8.7.1 Explanatory notes to the tables

8.7.1.1 Plots and soil contamination data

↑ Discuss the general contamination situation for **each soil examined**. Take into account all soil information available for each of these soils.

↑ Mention all the grounds examined. Always use the most recent cadastral data of the land(s). Optionally, you can make an additional division per zone or sub-location.

↑ The **reference number** of the contamination is the existing reference number from previous soil investigations. If there is no reference number available for a contamination, assign a number.

↑ The **nature** is the nature of the soil contamination as recorded in the respective survey.

↑ Mention in the **name** of the contaminant only the substance group (such as heavy metals, PAHs) or the individual parameters (example: zinc and copper). You may only include the source in the name of the contamination if this is necessary to maintain an overview.

Some practical tips:

- A soil may already have been extensively examined, resulting in a comprehensive description of the contamination situation. The information on the soil available at the OVAM will be included in the soil certificate of the soil. You can also look up this information in the e-desk for soil remediation experts.
- A land can be included in several files available at the OVAM. Therefore, consult the e-desk not only via the file number but also search via the cadastral data (kadasterID according to the notation '00000 X 0000 / 00 X 000') or via the address of the land.

↑ For: **already known soil contamination** fill in the classification for each assignment (damage case or report of soil contamination, soil or final evaluation study, soil remediation project) in which the Soil contamination has been described.

↑ Decisions cannot be reviewed unless they are the subject of the exploratory soil investigation.

8.7.1.2 Assessment

↑ Assign a classification (O-, P-, Q-, G-, U- or W-phrase) to each soil by type.

8.7.2 Table 'Summary of contamination status by land'

↑ Compile the data from the soil, together with a concise summary of the contamination state, into table .

↓ The OVAM is aware that such a tabular representation can be a simplification of the actual situation, but calls for this table to be filled in as completely and correctly as possible.

8.7.3 Table 'Summary of contamination'

↑ The contamination that is the subject of the exploratory soil research can be summarised in table .

8.8 PDF – IMPORTANT INFORMATION

Bundle other important information in the PDF file 'PDF – important information', if you find that information relevant.

Would you like to clarify something administratively? Were you not able to correctly or fully transmit the digital alphanumeric data due to (known) technical limitations of the e-window? Were there any indications of problems with the descriptive soil investigation (e.g. timing) during the conduct of the exploratory soil investigation? If so, explain. Make sure your comments or concerns are have been sufficiently argued.

Examples of comments:

- No further work can be done on the existing contamination, because ...
- There are no recommendations for use for contamination x, because ...

- Application for exemption from the obligation to reorganise follows or was submitted together with an investigation.

9 THE ALPHANUMERIC DATA

You bundle the digital alphanumeric data into an XML file.

The xml file can only be supplied in the Mistral2 format. This format has been adapted to the e-desk.

9.1 STRUCTURE OF THE DIGITAL ALPHANUMERIC DATA

There are three types of digital alphanumeric data:
- administrative details of the report;
- results of the analysis;
- drilling descriptions.

The XML file bundles these three types into one file. The XML file must contain at least the administrative data in order to be uploaded to the e-desk.

The analysis results and drilling descriptions can be stored in separate files. In the e-desk, you can integrate these files into the Mistral2-xml via the profile name. The files must therefore contain the correct profile name.

9.2 LEGALLY BINDING INFORMATION

The following information in the XML file is legally binding:

Administrative data (*)	
Assignment type	
Title	
Report date	
Assignment address:	Street and number (or description)
	Postal code, municipality, sub-municipality
Additional info research:	Background
Capacity of 'Client':	Name
	Street and number
	Postal code, municipality, sub-municipality
Capacity of 'Author':	Name
	Street and number

Labels	Postal code, municipality, sub-municipality
Nature and severity at cadastral plot level – Locations tab (*)	
Users/operators Asbestos: Pronunciation:	Current users and operators that you learn from a source other than the land register Asbestos debris layer Historicity Classification
If the present soil investigation concerns an initial soil investigation on the cadastral plot: nature and severity at contamination level – Contaminants tab (*)	
List of contaminants Detail – General: Detail – Award for this contract: Detail – Description: Parameters:	 Reference Name Medium Nature % Classification Source/Location Parameters
(*) Based on the field names in the e-desk.	

9.3 TECHNICAL AND SUBSTANTIVE REQUIREMENTS

9.3.1 Technical requirements

The xml file must be 'valid'. This means that the file must comply with the XSD schemas. An XSD schema is a template that the xml file must technically comply with.

The XML file must meet a number of criteria to be 'valid'. The main criteria:
- All the elements are in the right place.
- All mandatory elements have a value.
- Each value meets the definition for that element (text, number, date, or a value from a list).

The XSD schema for the xml file containing the administrative data has been published in the e-desk.

The technical specifications for the XML file containing the analysis results can be found at www.ovam.vlaanderen.be.

Database Ondergrond Vlaanderen (DOV) and the OVAM published a joint format for the XML file. The XSD diagram for the exchange of drilling descriptions can be found at www.ovam.vlaanderen.be. General drilling data and coded lithology are mandatory. Environmental data are mandatory if these measurements have been carried out. Other data are optional.

9.3.2 Substantive requirements

Mandatory fields are always filled in. Non-mandatory fields will be filled in if information is available for the specific assignment for which the report is being prepared.

In a field, a reference such as ‘see report/PDF’ is not correct.

Part 4: Annexes

9.4 ANNEX 1: GLOSSARY

Achilles care system	The care system for on-site soil remediation works or risk management measures drawn up by the OVAM. It covers the aspects of safety, health and the environment within the framework of the Soil Decree.
Anthropogenic disturbance of soil	Human intervention that alters the natural composition of the soil. This specifically refers to: - supplementing natural depressions or excavation pits - applying waste to or in the natural soil - applying soil
BATNEEC principle	(Best Available Technology Not Entailing Excessive Costs) The best available technical solutions that have been successfully applied in practice and whose cost is not unreasonable in relation to the result to be achieved in terms of protecting people and the environment. This is independent of the financial capacity of the person on whom the reorganisation obligation rests.
BAT (see also BATNEEC)	Most effective and state-of-the-art stage in the development of activities and methods of operation, demonstrating the practical use of special techniques to form, in principle, the basis for emission limit values, with the aim of preventing emissions and impacts on the environment as a whole or, where that is not possible, of generally reducing them: - 'techniques': both the techniques used and the way in which the installation is designed, constructed, maintained, operated and decommissioned; - 'available': developed on such a scale that the techniques, costs and benefits, taken into account, can be applied economically and technically feasible in the industrial context, irrespective of whether or not those techniques are applied or produced in the territory of the Flemish Region, provided that they are accessible to the operator on reasonable terms; - 'best': most effective in achieving a high overall level of protection of the environment as a whole.
Sampling strategy/research strategy	Methodology that records the locations and depth of the samples to be taken in the context of a soil survey.
Source	A soil volume (including underground containers or waste) characterised by greatly increased concentrations or pure product, from which the contamination spreads.
Source plot	Land where soil contamination occurred: Land where an emission occurs or has occurred that has directly or indirectly contaminated the soil.
DABM	Decree of 5 April 1995 laying down general provisions on environmental policy.
DIW	*Decree on Integrated Water Policy*

floating layer	Pure product that occurs at the groundwater level (at the level of the groundwater table and the water capillary zone) and gives rise to a pure product level.
E-desk	The internet application that the OVAM wishes to use to exchange information with the soil remediation expert.
Operator	Operator as referred to in the Environmental Permit Decree. The natural or legal person operating a classified installation or on whose behalf it is operated.
Freatic groundwater	Water below the groundwater level in a relatively well-permeable layer and above a first poorly permeable or impermeable layer.
User	Natural or legal person who holds a right in rem or a right in person on land, with the exception of the owner. Association of co-owners within the framework of property covered by the compulsory co-ownership system referred to in Article 3.84 of the Civil Code.
Instructions for use	A set of information on the use of a soil if contamination is present that exceeds the guide value (in the case of contamination in the solid part of the earth) or the soil remediation standard (in the case of groundwater contamination). The purpose of user advice is to inform the parties concerned about the points of attention, consequences, risks and any measures to be taken as a result of the presence of (residual) contamination on the ground.
Mixed predominantly new	Mixed soil contamination, most of which occurred after 28 October 1995.
Mixed predominantly historical	Mixed soil contamination, most of which occurred before 29 October 1995.
Guide material	Substance that best describes the contamination, taking into account its toxicity and dispersion.
Earthmoving	Rules for the use of excavated soil, as set out in Chapter XIII of the VLAREBO.
Hotspot	Term used in the context of the sampling strategy for landfills: zone where visual inspection or the preliminary study shows that there is a high probability of contamination, such as dying vegetation, overflow of leachate water, cracks in the covering film, etc.
Cadastral plot	Land for which the FPS Finance assigned a plot number.
Core	The zone with the highest concentrations of pollution (in the solid part of the earth, groundwater or as a pure product)

Methodology for clear identification of serious soil contamination	Methodology for determining when a descriptive soil survey is required for a historical contamination.
Methodology for clear identification of serious soil contamination	*Methodology for determining when a descriptive soil survey or a limiting phase in a waterbed survey is required for a waterbed contamination.*
Environmental damage	Environmental damage is damage as referred to in Article 15.1.1, 1° of Title XV of the Decree General Provisions of Environmental Policy (DABM) of 5 April 1995, being damage which: 1. caused by an emission, event or incident that occurred after 30 April 2007; 2. by an installation or installation listed in Annex IV of the DABM; 3. and which exceeds the soil remediation standard.
Nature Decree	Decree of 21 October 1997 on nature conservation and the natural environment.
Non-standard parameter	Parameter for which no soil remediation standard is included in the VLAREBO.
Bank	*Strip from the top of the verge and further inland over an arbitrarily defined width.*
Non-navigable watercourses	*Watercourses not included in the Royal Decree of 5 October 1992, from their point of origin or classification. This means:* *These watercourses are not classified as navigable watercourses (Royal Decree of 5 October 1992).* *The point of origin or classification is the point at which they have a sub-basin of more than 100 ha (Non-navigable Watercourses Act).* *One distinguishes unnavigable watercourses from 1st, 2nd and 3rd category and unclassified non-navigable watercourses.*
Research site	Location to which the soil investigation relates. The research location is a spatially connected whole.
Research strategy	See 'sampling strategy'.
Surface water (DIW)	*Inland waterways other than groundwater*
Surface water body (DIW)	*Distinct surface water, such as a lake, waiting basin, tank, stream, river, canal, transitional water, or a part of a stream, river, canal or transitional water.*
Origin	Event or activity that is the basis of a soil contamination, such as spillage, a leaking tank, dumping, ...
Potential pollution source	Any activity or storage that may cause or have caused soil contamination, in accordance with the Soil Decree: - risk installations or activities included in the list referred to in Article 6 of the Soil Decree; - activities or installations from the VLAREM I classification list which relate to

	the storage, transport or tanks of liquid products (including pipes and sewers) and which may cause soil contamination; - the use of waste for a functional soil sealing on top of an existing soil and where the waste is clearly distinguishable from the soil material; - places where a claim has occurred; - *operationally linked discharge points (including discharge points outside the research site)* - locations where contamination is detected during the site visit - …
Pure product	A liquid, hydrophobic contaminant, mobile or not, that occurs in soil as a separate (non-aqueous) phase (NAPL). The pure product is mobile (under the influence of gravity or capillary forces) if the retention capacity of the soil is exceeded. Another name for this is free product. Pure product that is present in the soil pores in levels below the soil retention capacity and is therefore immobile is called residual pure product. A synonym for pure product with a specific gravity less than 1 is also called LNAPL (Light Non-Aqueous Phase Liquid). If the specific gravity is greater than 1, it is called a DNAPL (Dense Non-Aqueous Phase Liquid).
Residual pollution	Content of contaminants or organisms on or in the soil or buildings, which is recovered in the soil or buildings after a soil investigation or after the completion of remediation works and which exceeds the guide value for the solid part of the earth or the soil remediation standard for groundwater, but for which no further research or action is necessary in the current circumstances.
Target value	Soil quality guideline: Value below which the soil can perform all its functions without any restriction being imposed. This protects the soil quality for future generations.
SAP	Standard analysis package for the solid part of the earth and groundwater.
Sediment	*A mixture of fine inorganic and organic particles that has settled from the water column and forms a layer on the bottom.*

Site research	Soil surveys carried out on a site to identify the soil contamination or potential soil contamination arising from the soil-polluting activity for which the site has been identified and to determine its severity. The site survey meets the objectives of an exploratory and descriptive soil survey for the soil-polluting activity for which the site has been established.
Special Protection Area	The areas designated by the Flemish Government in accordance with Chapter V, Section 3bis of the Nature Decree.
Closure of a (risk) installation	Cessation of all activities or all substantial activities of a (risk) installation.
Stable end state	Stable soil quality in accordance with the intended remediation objectives achieved after the active soil remediation works.
Landfill	Deliberately dispose of waste on or in the soil (with the exception of buildings) irrespective of the nature, duration and size of the deposited material and where the waste is not intended to be disposed of or treated in the short term. Short term means 1 year for the disposal of waste and 3 years for the treatment of waste (source: emis website, VITO).
Dump	Place where landfilling is or has been carried out, with an area greater than 2.5 ares.
Target value	Soil quality target: Content of contaminants or organisms on or in the soil, which is found as a normal background in uncontaminated soils with similar soil characteristics.
Remediation value	Content of contaminants or organisms on or in the soil or building, which is to be achieved by the soil remediation works.
Trigger value	*The trigger value for further research aims to make an initial distinction between water soils where there are very unlikely to be ecological risks caused by the contamination present and the water soils where ecological risks may be caused.*
Solid part of the water bed	*This is the naturally occurring consolidated part of the bed of a body of surface water, specific to the region where the body of surface water is located.*
VCOR	Codified Decrees of the Flemish Code of Spatial Planning
Safety coordinator:	Coordinator for health and safety as referred to in the Royal Decree of 25 January 2001 on temporary or mobile construction sites. The Royal Decree distinguishes between a co-ordinator design (for the design phase of a project) and a co-ordinator realisation (for the execution of the works).
VEN areas	Areas belonging to the Flemish Ecological Network demarcated pursuant to Chapter V, Section 1 Nature Decree.
Suspicious soil layer	Soil layer in which the highest concentrations of pollutants are expected on the basis of sensory observations, the soil structure, the location and depth of the

	possible source of contamination, the properties of the suspect substance(s),...
Suspicious substance	Substance for which, on the basis of the preliminary study, it can be deduced that it may cause soil contamination at the site under investigation. A suspected substance is related to a potential source of contamination that may or could give rise to soil contamination at a research site. Substance for which concentrations were found in a previous soil investigation that give rise to further measures and which can be related to the activities that are being or have been carried out on the site (including topsoils).
Suspect zone	Place with potential sources of contamination or place where contamination has already been detected.
Pollution source	Cause of the pollution resulting from the load on the soil.
Dissemination plot	Soil to which pollutants or organisms have spread or where soil contamination has harmful effects.
Voluntary soil remediation	Soil remediation carried out by a remediation volunteer.
Waterbed (DIW)	*The soil of a surface water body that is always or for a large part of the year under water.*

9.5 ANNEX 2: LABELS

Each soil investigation receives at least one label (see chapter 2.3). You can choose from the following labels:

- **Asbestos**: Soil contamination with asbestos.
- **Atmospheric deposition**: If you decide that atmospheric deposition testing is appropriate, assign the atmospheric deposition label.
- **Brownfield**: A brownfield is a set of neglected or underutilised land that has been so degraded that it appears that it can only be used or reused through structural measures.
- **Dry cleaning/laundry**: All active and former companies that dry-clean textiles, as well as all industrial or commercial activities using VOCs in an installation for cleaning clothes, upholstery and similar consumer goods, with the exception of manual stain removal in the textile and clothing industry.
- **Drug-related**: On site there are indications of the abandonment of drug waste or associated chemicals, or there are indications of (illegal) production of drugs, such as a drug lab.
- **Garage and bodywork**: All active and former garage and coachwork companies and related companies that carry out construction, repair and maintenance work on motor vehicles in the broadest sense on cars, motorcycles, trucks, vans, agricultural machinery, buses and respective trailers.
- **Gas plant**: The label is awarded to all former 'gas sites'. The gas sites can be divided into three categories: genuine gas works (heading 16.1), gas receptacles (storage of gas) and sites where gas production or storage was carried out as a secondary activity (example: a textile factory with gas production).
- **Agriculture and horticulture:** All active and former farms that are part of agriculture (arable, livestock and mixed farms) and horticulture (vegetable, ornamental and fruit cultivation).
- **Forced co-ownership**: Properties with more than one owner and which fall under Article 3.84 of the Civil Code. In the properties there are common and private sections.
  - Example: classic apartment buildings.
  - Possible example: shopping centres, business centres, residential care centres, garage complexes, etc. with multiple owners, where it is clearly defined who owns which part (example: unit 5 of the business centre belongs to owner X, the parking is common).
  - There is no co-ownership if, for example, three children have inherited a home and thus become co-owners or a residential care centre with one owner.
- **Owned by local authorities**: The source plot is owned by a municipality, intermunicipal, autonomous municipal company, intermunicipal partnership, CPAS, province or provincial development company (POM). Sections of a public domain as a distribution plot are not included.
- **Owned by the Flemish Government**: The source plot is the property of the Flemish government as included in the guide to the standard procedure for exploratory soil research.
- **Private**: (Client and/or) owner is private.
- **PFAS**: The label is assigned to all studies in which PFAS is considered a suspicious parameter.
- **Promaz CSC**: the contractor has remediated and has a final declaration.
- **Promaz CSO**: contractor remediates and soil research is still to be started.
- **Promaz CSW**: contractor remediates and the works have already started.
- **Promaz PSO**: Promaz remediates up and is still fully up and running.

- **Promaz PSW**: Promaz remediates. The remediation works were started by the contractor, but Promaz takes over.
- **Industrial Emissions Directive (IED)**): An S-installation is located on the site.
- **School**: Institution providing education: nursery education, primary and secondary schools, music schools, boarding schools and the Student Guidance Centres (CLB).
- **Fuel oil tank for heating**: Current or former tank for **heating** with fuel oil (regardless of tank volume) which is the cause of the damage case or notification of soil contamination.
  For this fossil fuel there are popularly different names: fuel oil or heating oil. There are different types of salt on the Belgian market:
  - Fuel oil with the official name Gas oil heating. 'Type B domestic fuel oil', with low sulphur content.
  - Fuel oil with the official name Gas Oil-Diesel (heating purposes). 'Type A domestic fuel oil', with very low sulphur content.
  - Fuel oil with additives.

  (source: Informazout).
  Assign this label to the assignment types Notification of damage, Identification of damage, Notification of soil contamination, Other screening, Source determination, Screening Premaz and to the subsequent assignments (Descriptive soil research, Soil Remediation project and Final evaluation research or Evaluation report after damage). In an exploratory soil investigation, only assign the label if you identified a contamination at the level of the tank that requires further action. In an exploratory and descriptive soil investigation, you know the label if you identified a contamination at the level of the tank in the exploratory soil investigation phase that requires further measures.
- **Dump**: Locations where authorised or not authorised or landfilled: inter alia, headings 2.3.6, 2.3.7, 2.3.11, 2.3.8.d1, 2.3.10 and sub-headings.
- **Petrol station**: All active and former public fuel distribution installations for motor vehicles, being an installation for the filling of fuel tanks of motor vehicles with liquid fuels intended for the supply of their engines.
- **University**: All higher education institutions: universities, colleges and evening schools (not linked to schools).
- **Transport – goods and people**: All active and former companies that are responsible for providing passenger and freight transport on their own account (or on behalf of third parties), using their own facilities for repairing and supplying their own means of transport.
- **Water bottom**: Soil of a surface water body that is always or for a large part of the year under water.
- **Water catchment area**: Located in a water catchment area or protection zone.
- **Not applicable**: None of the above labels apply to this assignment.

9.6 ANNEX 3: STANDARD ANALYSIS PACKAGE (SAP)

Parameters to be examined	Fixed part analysis package of the earth	Analysis package for groundwater
pH	-	+
pH (KCl)	+ (1)	-
Conductivity and temperature	-	+
Total solids	+	-
Organic matter content	+ (1)	-
Clay content	+ (1)	-
Heavy metals	+	+ (2)
BTEX	-	+
Mineral oil	+	+
PAH (16 PAH)	+ (2)	-
VOCl + vinyl chloride	-	+ (2)

table 28: Standard Analysis Package (SAP)

Key table 28:

- Heavy metals: lead, zinc, cadmium, copper, nickel, arsenic, mercury, chromium (Cr^{3+})
- BTEX: Benzene, toluene, ethylbenzene, xylene
  PAH: polycyclic aromatic hydrocarbons (naphthalene, benzo(a)pyrene, phenanthrene, fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene. benzo(ghi)perylene, indeno(1,2,3-cd)pyrene, anthracene, fluorene, dibenz(a,h)anthracene, acenaftene, acenaftylene and pyrene)
- VOCl: volatile organic chlorinated hydrocarbons
  (1,2-dichloroethane, dichloromethane, tetrachloromethane, tetrachloroethene, trichloromethane, trichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene)
- + or - : to carry out (+) or not carry out (-) analysis

(1) Recalculate the soil remediation standards according to the actual content of clay and organic material. You therefore determine the content of clay and organic material on representative samples for the subsurface. The following guidelines apply:

- If the substrate is strongly heterogeneous, you determine the content of clay and organic matter on an unsuspected sample of the soil layer or soil layers in which the contamination is located. If this cannot be determined unequivocally, then one analysis per distinguishable soil layer is required. Can't soil layers be distinguished? Then a non-suspect sample from the top layer and a non-suspect sample from the deeper layers are analysed for the content of clay and organic material.
- The clay content should not be determined for soil layers which are only examined for organic pollutants.

- You should never determine the organic matter content on a sample of which you already detect sensory contamination with mineral oil, asbestos or other organic pollutants.

(2) An analysis of half of the SAP samples prescribed in the sampling strategies is sufficient. Round up the number of analyses.

9.7 ANNEX 4: LIST OF HEADINGS 1: NO OR LIMITED FIELDWORK

Please refer to Annex 1 of the VLAREBO for the correct description of the sections.

2.1.1	waste storage and transhipment	waste storage, no treatment
2.1.3.1	waste storage and transhipment	interim storage contaminated soil < 10 000 m³
2.1.3.2	waste storage and transhipment	interim storage contaminated soil > 10 000 m³
2.2.1.b	waste storage and transhipment	storage and sorting of household waste (sorted)
2.2.2.a.1	waste treatment	waste treatment, inert substances max 1000 m3
2.2.2.c.1	waste treatment	waste treatment, non-hazardous scrap up to 10 tonnes
2.2.2.f.1	waste treatment	waste treatment non-hazardous substances <100 tonnes
2.3.2.c	waste storage and treatment	storage and physical chemical treatment of waste oils
2.3.2.e	waste storage and treatment	storage and physical chemical treatment of non-hazardous substances
2.3.4.1.b	waste incineration plant	waste incinerator, treated wood
2.3.4.2.b	waste incineration plant	storage and co-incineration of contaminated treated wood
3.6.4.3	waste water treatment	waste water treatment plant public sewers 500 - 100 000 inw
4.3.c.1.i	spraying device/coating materials	application of coating agents, 5 - 25 kW, industrial area
4.3.c.1.ii	spraying device/coating materials	application of coating agents, 5 - 10 kW, non-industrial areas
6.1.1.a	coal trade, working and processing	mechanical treatment of coal (breaking, sifting): 5 -200 kW, industrial area
6.1.1.b	coal trade, working and processing	mechanical treatment of coal (breaking, sifting): 5 -100 kW, non-industrial area

6.2.1.a	coal trade, working and processing	storage of solid fuels, max 2.5 ha
6.2.2.a	coal trade, working and processing	storage of solid fuels, max 10 ha
15.6.1	car repair company	stowage of crashed vehicles, < 25 Cars
19.1.2.a	veneer, sheet and wood fibre industry	veneer, plywood, wood fibre, chipboard factory 200 - 1000 kW, industrial area
19.1.2.b	veneer, sheet and wood fibre industry	veneer, plywood, wood fibre, chipboard factory 100 -500 kW, non-industrial area
19.1.3.a	veneer, sheet and wood fibre industry	veneer, plywood, wood fibre, chipboard factory > 1 000kW, industrial area
19.1.3.b	veneer, sheet and wood fibre industry	veneer, plywood, wood fibre, chipboard factory > 500kW, non-industrial area
19.2.2.a	veneer, sheet and wood fibre industry	wood fibre plant, wet process, 200 - 1 000kW, industrial area
19.2.2.b	veneer, sheet and wood fibre industry	wood fibre plant, wet process, 100 - 500 kW, non-industrial area
19.2.3.a	veneer, sheet and wood fibre industry	wood fibre mill, wet process, >1,000 kW, industrial area
19.2.3.b	veneer, sheet and wood fibre industry	wood fibre mill, wet process, >500 kW, non-industrial area
20.3.1.1.c.1	cement industry	cement industry, >1000 kW, entirely in industrial area
20.3.1.1.c.2	cement industry	cement industry, > 500 kW, not entirely in industrial area
20.3.1.2	cement industry	cement plant or plant > 150,000 tonnes per year
20.3.1.1.b.1	cement industry	cement industry, 200 - 1 000kW, full industrial area
20.3.1.1.b.2	cement industry	cement industry, 100 - 500 kW, not in industrial area
20.2.2.1	primary metal industry	plants for the production of iron or steel < 2.5 tonnes per hour
20.3.4.1.a	glass industry	glass factory 4 - 20 tonnes per day (flat, hollow and special)
20.3.5.a.2.a	ceramic products industry	ceramic products factory 200 - 1 000 kW, in industrial area

20.3.5.a.2.b	ceramic products industry	ceramic products factory 100 - 500 kW, not in industrial area
20.3.5.a.3.b	ceramic products industry	ceramic products factory max 500 kW, not in industrial area
21.1.1.a	dyes and pigments (n)	production of natural dyes and pigments 5 - 200 kW, industrial area
21.1.1.b	dyes and pigments (n)	production of natural dyes and pigments 5 - 100 kW not in industrial area
23.2.2.a	plastic products industry	plastic products industry 200 - 1000 kW, industrial area
23.2.2.b	plastic products industry	plastic products industry 100 - 500 kW, non-industrial area
23.2.3.b	plastic products industry	plastic products industry >500 kW, not in industrial area
28.1.d.1	fertilizer industry	fertiliser products factories other 5 200 kW
29.5.2.1.a	forges	forge 5 - 200 kW, industrial area
29.5.2.1.b	forges	forge 5 - 100 kW, non-industrial area
29.5.3.1.a	Thermal treatment of metals	installation heat treatment metals 5 - 200 kW, industry
29.5.3.1.b	Thermal treatment of metals	installation heat treat metals 5 - 100 kW, no industry
29.5.4.1.b	sand, grit blasting	equipment for physical treatment of metals 5 - 100 kW, no industry
30.2.1.b	ceramic products industry	production objects from clay, plaster,... or ceramics, concrete,... 10 - 200 kW
30.2.1.c	ceramic products industry	production of clay, plaster,... or ceramics, concrete,... >200 kW
30.9	brick plants:	brick plants:
32.7.3	shooting ranges for firearms	shooting range for firearms (excluding clay pigeon shooting)
34.2.1.a	cleaning products industry	prepare detergents, 5 - 200 kW, industrial area
34.2.1.b	cleaning products industry	prepare cleaners, 5 - 100 kW, non-industrial area
34.3	cleaning products industry	depots for cleaning agents and polishes > 10 tonnes,

		excluding headings 17 and 48.
40.1.2.a	tobacco industry	treatment of tobacco or manufacture of tobacco products: 200 - 1 000 kW, industrial area
40.1.2.b	tobacco industry	treatment of tobacco or manufacture of tobacco products: 100 - 500 kW, non-industrial
40.1.3.a	tobacco industry	treatment of tobacco or manufacture of tobacco products: > 1 000 kW industrial area
40.1.3.b	tobacco industry	treatment of tobacco or manufacture of tobacco products: > 500 kW, non-industrial area
41.3.1.a	wool treatment	wool degreasing plants, wool laundries, combing and/or carbonising 5 - 200 kW, industry
41.3.1.b	wool treatment	wool degreasing plants, wool laundries, combing and/or carbonising 5 - 100 kW, non-industry
44.1.2	oils and fats industry	fat smelter > 200 kW
44.2.2.a	oils and fats industry	vegetable and/or animal oils and fats industry: 200-1 000 kW, industry
44.2.2.b	oils and fats industry	vegetable and/or animal oils and fat production: 100-500 kW, non-industrial area
44.2.3.a	oils and fats industry	vegetable and/or animal oils and fats industry: > 1 000 kW, industrial area
44.2.3.b	oils and fats industry	vegetable and/or animal oils and fats: > 500kW, non-industrial area
45.1.a.2	slaughterhouses	slaughterhouse production capacity > 5 tonnes up to and including 50 tonnes per day of animals slaughtered
45.1.b.2	slaughterhouses	slaughterhouse poultry and rabbits > 1 000 animals per day
45.2.2.a	oils and fats industry (food)	food fat smelters 200 - 1 000 kW, industrial area
45.2.2.b	oils and fats industry (food)	food fat smelters100 - 500 kW, non-industrial area
45.2.3.a	oils and fats industry (food)	food fat smelters > 1 000 kW, industrial area
45.2.3.b	oils and fats industry (food)	food fat smelters >500 kW, non-industrial area

45.3.2.a	oils and fats industry (food)	preparation of food fats of vegetable or animal origin 200 - 1 000 kW, industry
45.3.2.b	oils and fats industry (food)	preparation of food fats of vegetable or animal origin 100 - 500kW, non-industrial
45.3.3.a	oils and fats industry (food)	preparation of food fats of vegetable or animal origin > 1 000 kW, industry
45.3.3.b	oils and fats industry (food)	preparation of food fats of vegetable or animal origin > 500 kW, non-industrial
45.7	other food industry	manufacture of starch and its derivatives
45.9.2.a	other food industry	sugar factory 200 - 1 000 kW, industrial area
45.9.2.b	other food industry	sugar factory 100 - 500 kW, non-industrial area
45.9.3	other food industry	sugar factory > 200 kW
45.9.3.a	other food industry	sugar factory > 1 000 kW, industrial area
45.9.3.b	other food industry	sugar factory > 500 kW, non-industrial area
45.17.3	other food industry	dairies with a production capacity > 100,000 tonnes per year
45.17.4	other food industry	Confectionery factories with a production capacity >90,000 tonnes per year
45.17.5	other food industry	Syrup or soft drink factories with a production capacity > 75 million litres per year
45.17.6	other food industry	fishmeal and fish oil mills with a production capacity > 10 000 tonnes per year
45.17.7	other food industry	sugar factories with a production capacity > 500 tonnes per day

9.8 ANNEX 5: LIST OF HEADINGS 2: NO OR LIMITED FIELDWORK

Please refer to Annex 1 of the VLAREBO for the correct description of the sections.

2.2.1.a	waste storage and transhipment	storage and sorting of inert waste
2.2.1.c.1	waste storage and transhipment	storage and sorting of non-hazardous waste up to 100 tonnes

2.2.1.c.2	waste storage and transhipment	storage and sorting of non-hazardous waste > 100 tonnes
2.2.1.d.1	waste storage and transhipment	storage and sorting of non-hazardous waste up to 100 tonnes
2.2.2.b.1	waste treatment	waste treatment, non-hazardous substances max 100 tonnes
2.2.2.b.2	waste treatment	waste treatment, non-hazardous substances > 100 tonnes
2.2.2.c.2	waste treatment	waste treatment, non-hazardous scrap 10-100 tonnes
2.2.5.a.1	sludge storage and processing	storage and processing of non-hazardous sludge < 10 tonnes
2.3.1.a	waste storage and treatment	storage and treatment of non-hazardous waste
2.3.2.a	sludge storage and processing	storage and physical chemical treatment of non-hazardous sludge
2.2.5.b.1	sludge storage and processing	storage and processing of hazardous sludge < 1 tonne
2.2.2.d.1	scrap yard and end-of-life vehicle site	breakers' yard < 25 vehicles
2.2.4.a	rendering plant	storage plant for animal waste
2.2.4.b	rendering plant	storage and treatment of animal waste, low risk (intermediate)
2.2.4.c	rendering plant	storage and treatment of animal waste high risk (intermediate)
2.2.4.d	rendering plant	rendering plant > 10 tonnes per day, processing plant Category-3 material
2.2.4.e	rendering plant	rendering plant > 10 tonnes per day, processing plant Category-2 material
2.2.4.f	rendering plant	rendering plant > 10 tonnes per day, processing plant Category-1 material
2.2.4.g	rendering plant	processing more than 10 tonnes per day
3.6.4.4	waste water treatment	waste water treatment plant public sewers > 100 000 int.
3.6.6	waste water treatment	independently operated industrial waste water treatment plants
4.3.a.1.i	spraying device/coating materials	application of coatings, including vehicles, 5-60 kW, industrial area
4.3.a.1.ii	spraying device/coating materials	application of coatings, including vehicles, 5-25 kW, non-industrial area
4.3.b.1.i	spraying device/coating materials	application of coating agents with mainly organic substances 5-60 kW, industrial area
4.3.b.1.ii	spraying device/coating materials	application of coating agents with mainly organic substances 5-25 kW, non-industrial area
4.4	spraying device/coating materials	thermal treatment of articles coated with coating agents, furnaces > 0.25 m^3
5.3.1.b	pesticides industry	installation for the storage of biocidal products 1-2 tonnes
5.3.2	pesticides industry	Biocidal product storage facility > 2 tonnes
6.2.1.b	coal trade, working and processing	solid fuel storage > 2.5 ha

12.4.2.a	electrical machinery industry	electrical appliances and parts factory 200-1 000kW industrial area
12.4.2.b	electrical machinery industry	electrical appliances and parts factory 100 - 500 kW, non-industrial area
15.2	car repair company	motor vehicle repair, including body repair
15.3.1	car repair company	motor vehicle repair, including body repair, with 10 manholes
15.3.2	car repair company	motor vehicle repair, including body repair, with 4 manholes
15.5	car repair company	standard garages/body shops (as of 21.1.2011)
17.3.2.2	storage of hazardous substances	storage of toxic, flammable and explosive substances 100 kg-1 tonne
17.3.8.2	Chemical storage	storage of environmentally hazardous substances 1-10 tonnes
17.3.3.2.a	storage of hazardous substances	storage oxidising, harmful corrosive and irritating substances 10-50 tonnes
17.3.3.2.b	storage of hazardous substances	storage oxidising, harmful corrosive and irritating substances 1-50 tonnes
17.3.4.2.b.1	storage of hazardous substances	< 30 000 litres
17.3.4.2.b.2	storage of hazardous substances	< 30 000 litres
20.2.4.a.1	primary metal industry	Lead and cadmium production and smelting plants 20 kg-1 tonne
20.2.3.2	primary metal industry	ferrous metal smelting plants 5-20 tonnes per day
20.2.4.b.2	primary metal industry	plants for production and melting non-ferrous 0.5-20 tonnes
21.2.1.a		production of artificial dyes and pigments 10-200 kW
21.2.1.b		production of artificial dyes and pigments 10-200 kW
23.1.1.b	plastic products industry	plastics industry 10-200 kW
23.2.3.a	plastic products industry	plastic products industry > 1000 kW, in industrial area
24.1.2	Laboratories	laboratory > 1 kg
25.2.1.a	processing of hides and skins	Other hide processing installations, 5-200 kW, industrial area
25.2.1.b	processing of hides and skins	other hide-and-dressing installations, 5-100 kW, non-industrial
26.1.1.a	glue, gelatine and ossein industries	glues and adhesives factory 5-200 kW, industrial area
26.1.1.b	glue, gelatine and ossein industries	glues and adhesives factory 5-100 kW, non-industrial area
26.2	glue, gelatine and ossein industries	storages glue, gelatine
26.3.1.a	glue, gelatine and ossein industries	gelatine and ossein production 5-200 kW, industrial area
26.3.1.b	glue, gelatine and ossein industries	gelatine and ossein production 5-100 kW, non-industrial area
28.1.a.1	fertilizer industry	phosphate and superphosphate plants 5-200 kW
28.1.b.1	fertilizer industry	nitrogen fertiliser plants 5-200 kW
28.1.c.1	fertilizer industry	production of compound fertilisers 5-200 kW
28.3.b	livestock manure storage	Manure processing plant

		1000 - 25 000 tonnes
29.1.1.1.a	ore processing, storage/handling	ore processing plant 5-200 kW, industrial area
29.1.1.1.b	ore processing, storage/handling	ore processing plant 5-100 kW, non-industrial area
29.4.1.a	primary metal industry	metal foundries 1 dm^3-1 m^3
29.5.2.2.b	forges	forge 100-500 kW, non industrial area
29.5.4.1.a	sand, grit blasting	equipment for physical treatment of metals 5-200 kW, industry
29.5.4.2.a	sand, grit blasting	equipment for physical treatment of metals 200-1000 kW, industry
29.5.4.2.b	sand, grit blasting	installation for physical treatment of metals 100-500 kW, non-industrial
34.2.2.a	cleaning products industry	prepare cleaners, 200-1 000 kW, industrial area
34.2.2.b	cleaning products industry	prepare cleaners, 100-500 kW, non industrial area
36.3.1.b.1	Rubber Products Industry	manufacture and treatment of products based on elastomers 200-1 000 kW, industry
36.3.1.b.2	Rubber Products Industry	manufacture and treatment of products based on elastomers 100-500 kW, non-industry
41.3.2.a	wool treatment	wool degreasing plants, wool laundries, combing and/or carbonising 200-1 000 kW, industry
41.3.2.b	wool treatment	wool degreasing plants, wool laundries, combing and/or carbonising 100-500 kW, non-industry
41.3.3.a	wool treatment	Wool degreasing, washing, combing and/or carbonising plants > 1 000 kW, industry
41.3.3.b	wool treatment	wool degreasing, washing, combing and/or carbonising plants > 500 kW, non-industrial
42.4.2.a	bicycle/motorcycle industry	assembling bicycles and motorcycles: 200-1 000 kW, industrial area
42.4.2.b	bicycle/motorcycle industry	assembling bicycles and motorcycles: 100-500 kW, non-industrial area
48.1.1.1.a	seaport	IMDG seaport goods warehouse
48.1.1.1.b	seaport	IMDG seaport goods warehouse
48.1.1.2	seaport	IMDG seaport goods warehouse
50	road salt storage	de-icing salt storage
57.1.1	airports	Airport < 800 meters

To be annexed to the Ministerial Decree of (date of MD) laying down the standard procedure for the exploratory soil investigation under the Soil Decree of 27 October 2006.

Brussels, (date of MD)

The Flemish Minister for Environment and Agriculture,

Jo BROUNS