D.T3.5.1.

SIMONA tool v1.0 user guide

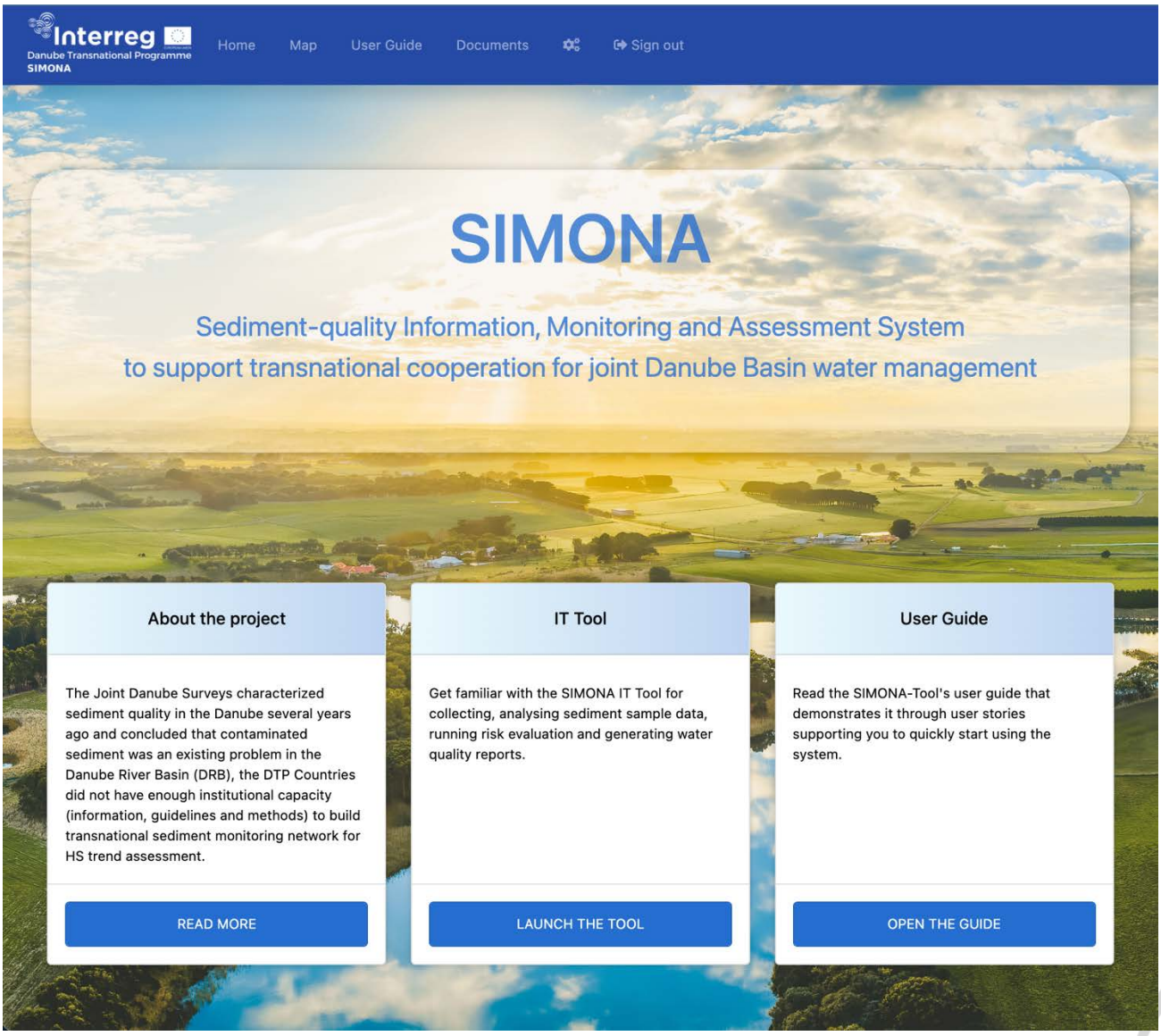

Figure 1 Welcome screen of the SIMONA IT Tool

PROJECT TITLE	Sediment-quality Information, Monitoring and Assessment System to support transnational cooperation for joint Danube Basin water management
ACRONYM	SIMONA
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For further information on the project, partnership and the Danube Transnational Programme:

www.interreg-danube.eu/simona

FIND SIMONA PROTOCOLS ON THE WEBSITE!

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1. SUMMARY

The SIMONA-Tool IT application is a web application for collecting, analysing sediment sample data, running risk evaluation and generating sediment quality reports. The software has been launched for beta testing and access has been given to a selected group of test users. This document aims to support the testing phase by describing the system's available functions.

2. INTRODUCTION

2.1. Purpose of this document

This document gives a high-level, easy-to-understand overview about the user interface and available functions of the SIMONA-Tool IT application.

2.2. References

- SIMONA IT Tool
- Eionet Data Dictionary

3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS

CAS	Chemical Abstracts Service
GDPR	General Data Protection Regulation
QS	Quality Standard
WISE	Water Information for Europe

Table 1 Definitions and abbreviations

4. USER STORIES

4.1. Overview

User story is an informal, natural language description of features of a software system. In this document the SIMONA-Tool's functions are demonstrated thought user stories, written from the perspective of the end user.

4.2. Browsing publicly available data

Several features are openly available to visitors without having a registered account. These are primarily related to browsing water quality monitoring sites and getting an overview of the latest sediment quality status. The tool can be launched from the main navigation bar or by clicking on *Launch the tool* button on the welcome screen.

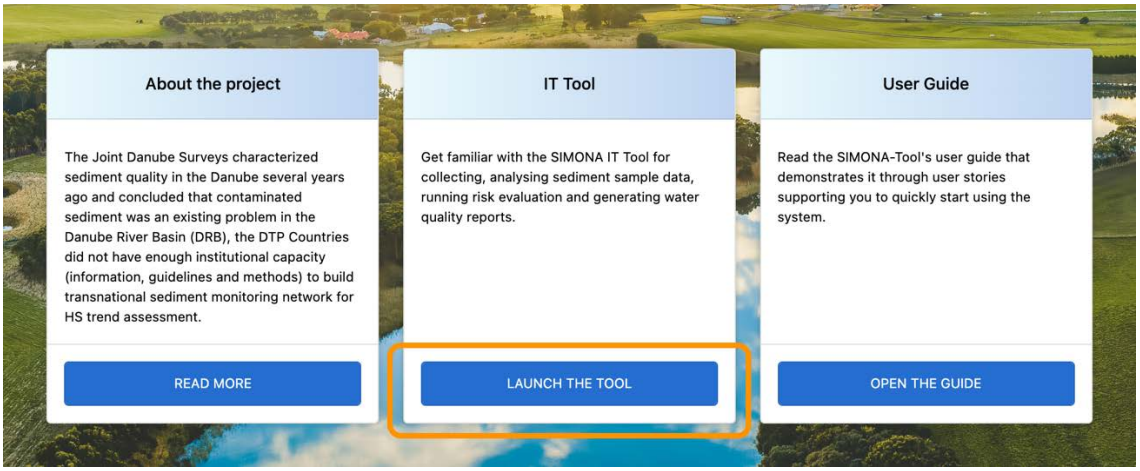

Figure 2 Launch the tool button highlighted on the welcome screen

A document repository is available under the *Documents* section where users can find useful information about the applied methodology and standards.

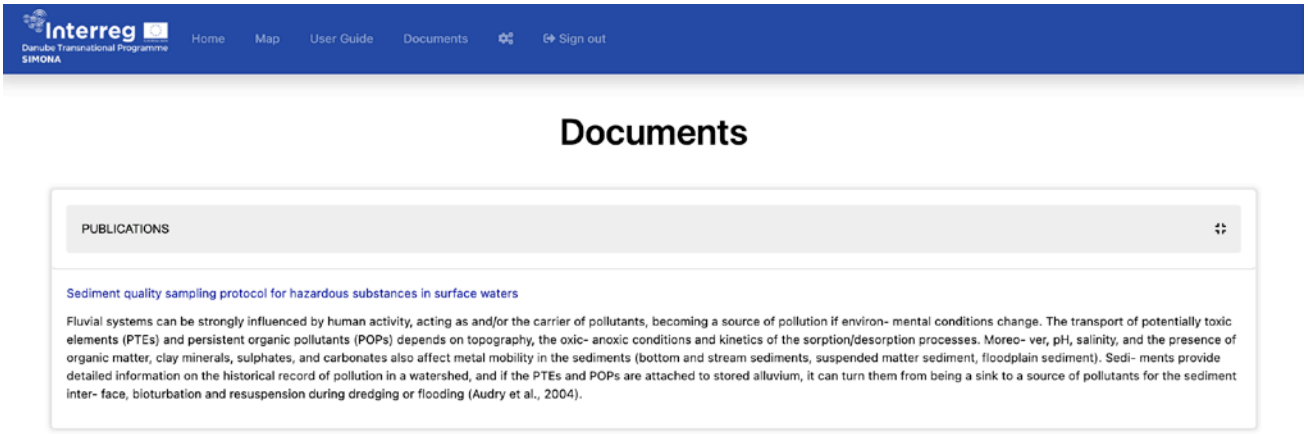

Figure 3 Documents section

4.2.1 User interface elements

The layout of the tool's screen is divided into six main panels:

1. *Main navigation bar*
   On the top of the screen the main navigation bar provides links to other parts of the web application.
2. *Map*
   The central element of the user interface is the map displaying information about monitoring sites, water bodies and water quality status evaluation results. The current scale is displayed on the bottom left corner.
3. *Search-by-address tool*
   For quicker navigation the tool provides this search tools that allows users to enter a postal address then move the centre of the map to the corresponding geolocation.
4. *Layers*
   On the aside panel, using the switches users can specify the kind of data to be displayed on the map. By default, surface waterbody monitoring sites and sediment quality status layers are selected. These layers are displayed on the map as interactive markers. By clicking those markers further details are available.
5. *Quality standard manager*
   For specific user groups the quality standard manager is available on the aside panel that allows them to set up or update quality standards by specifying concentration threshold values against specific substances.
6. Monitoring site browser
   Monitoring sites are listed at the bottom of the screen. Filtering by countries and searching by keyword is available above the list. Each record on the list provides a button that sets the centre of the map to the corresponding monitoring site's coordinates.

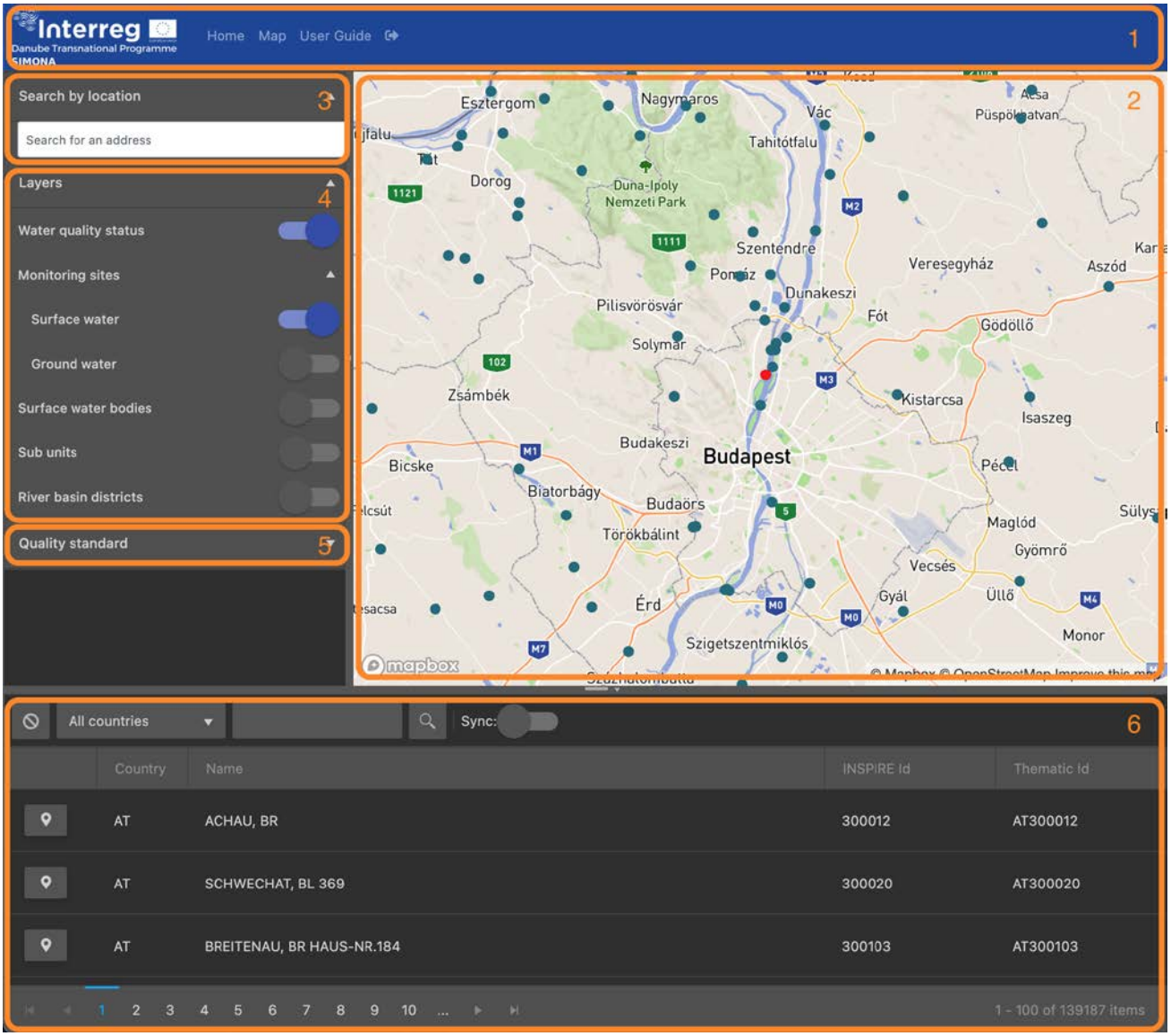

Figure 5 Main user interface elements

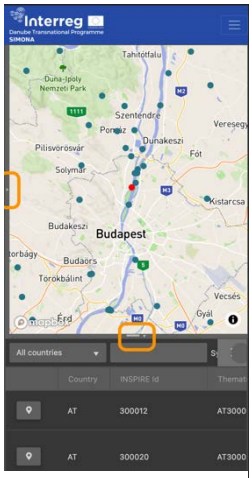

Figure 4 Mobile layout

The layout is divided by two collapsible panel: one horizontal and on vertical. In case there is not enough space on the device's screen (e.g., on mobile devices) the tool automatically hides the supporting panels that can manually be opened again.

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4.2.2 Searching for monitoring site

Information provided by the tool is primarily available linked to specific monitoring sites. Hence a key action is to find the monitoring site of interest. The tools support this action in the following three ways.

Geolocation	The map is centred to the device's current location, if available.
Geocoding service	Using the search-by-address tool sites can be found by address.
Search by keyword	Monitoring sites can be found by their name using the free text search method provided by the list view on the bottom panel.

Table 2 Supporting methods for finding monitoring sites

Geocoding service allows the user to enter parts of the monitoring site's address then select the specific address from the suggestion list.

Figure 6 Geocoding service displaying suggestions

Monitoring site list can also be used for search for a monitoring site. By entering a keyword, the list gets filtered and shows buttons that moves the map to the specific monitoring site.

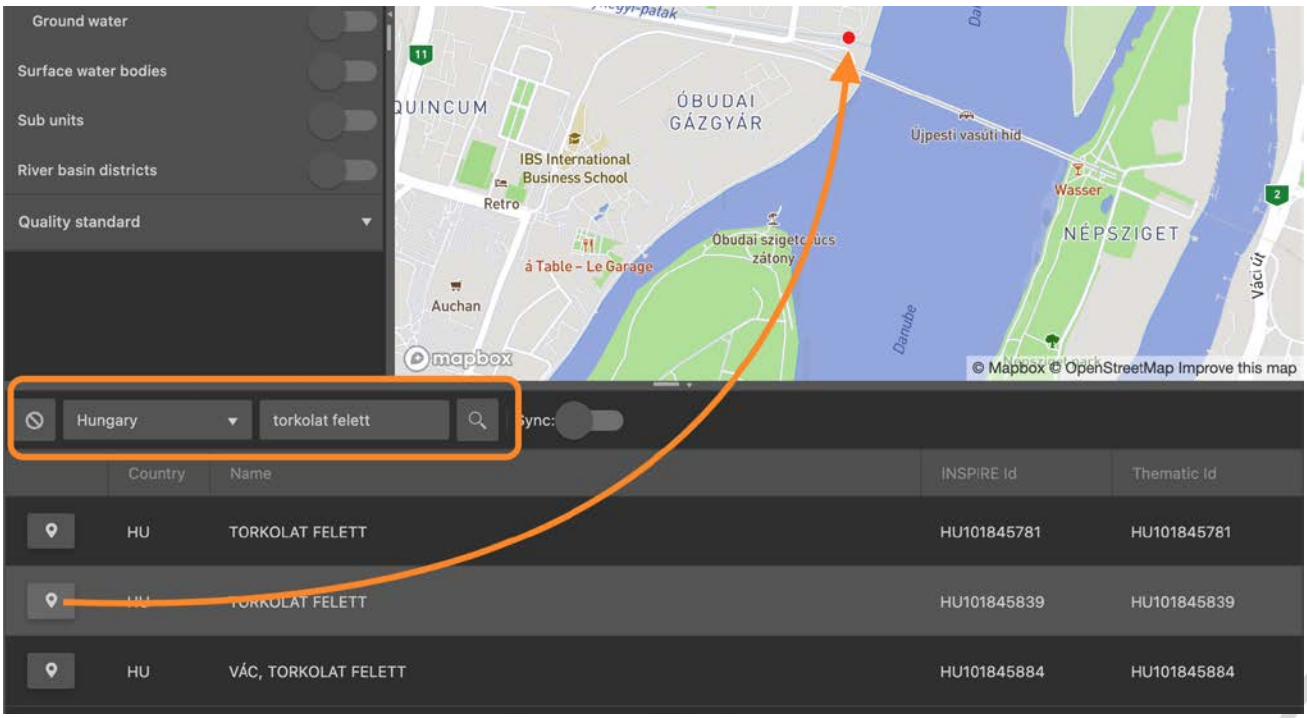

Figure 7 Filtered monitoring site list

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4.2.3 Monitoring site details

Basic monitoring site details are openly available to visitors that can be accessed by clicking on the marker of the site. Markers are linked to summary popups listing basic details about the site and the current sediment quality evaluation results.

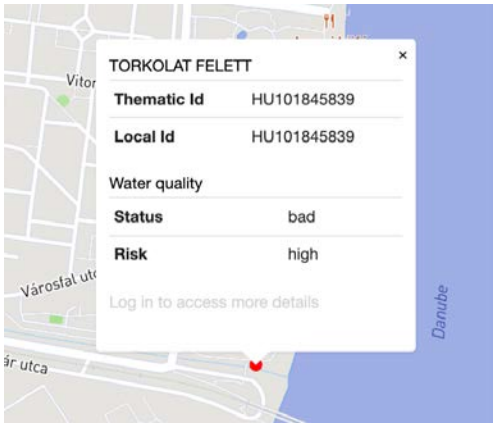

Figure 8 Monitoring site summary

4.3. Registration

Registering an account is open to everyone and requires minimum amount of data to be entered: first name, last name and email address. These data will be stored by the platform hence subject of *GDPR* and the user needs to read and accept the privacy policy first.

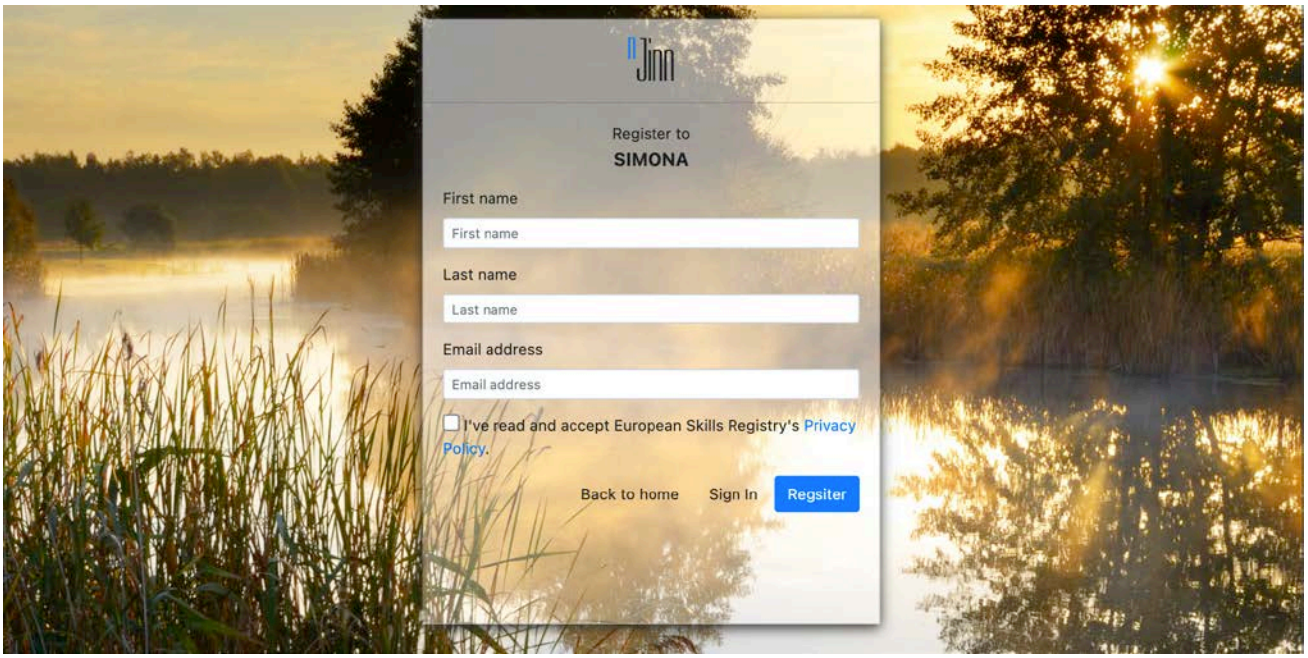

Figure 9 Simplified registration form

After submitting the basic personal information, a confirmation email is sent to the given email account containing a custom link that can be used to verify it.

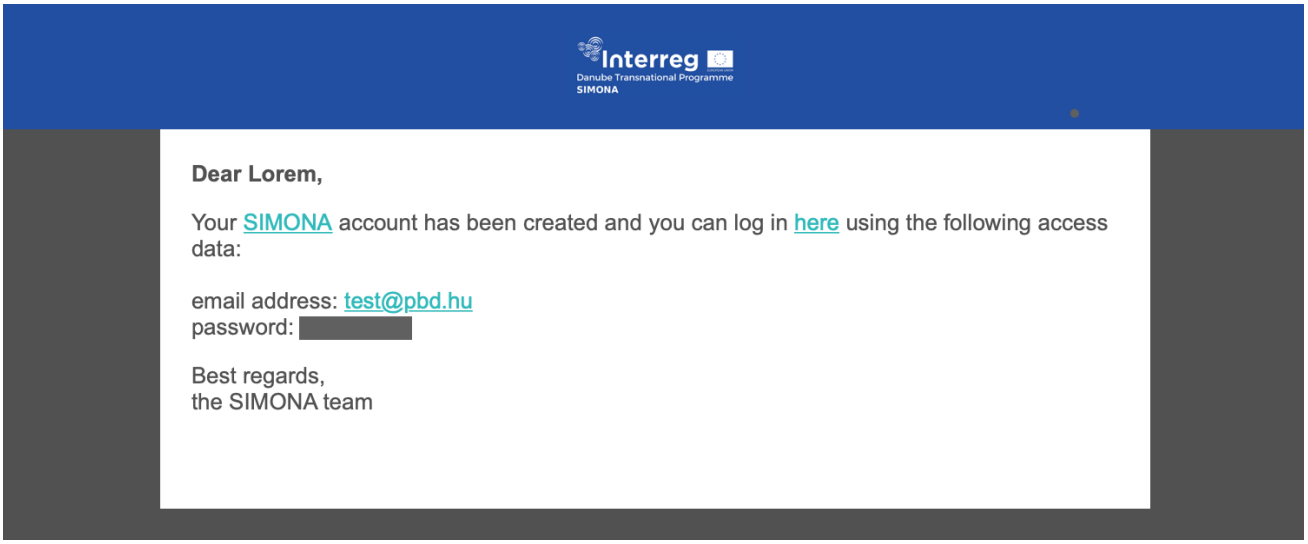

Figure 10 Confirmation email sent after account registration

4.4. Monitoring site details

Registered users have access to more information associated to a monitoring site depending on their role.

4.4.1 Risk evaluation results

Risk assessment with regards to the selected monitoring site against a specific quality standard can be quickly carried out on the *Overview* tab of the *Monitoring Site Details* dialog. Using the drop-down list at the top of the panel one can select a quality standard. Once the standard is selected, the assessment gets performed using the threshold values defined by the standard. On the result view components are listed along with the corresponding status and risk results.

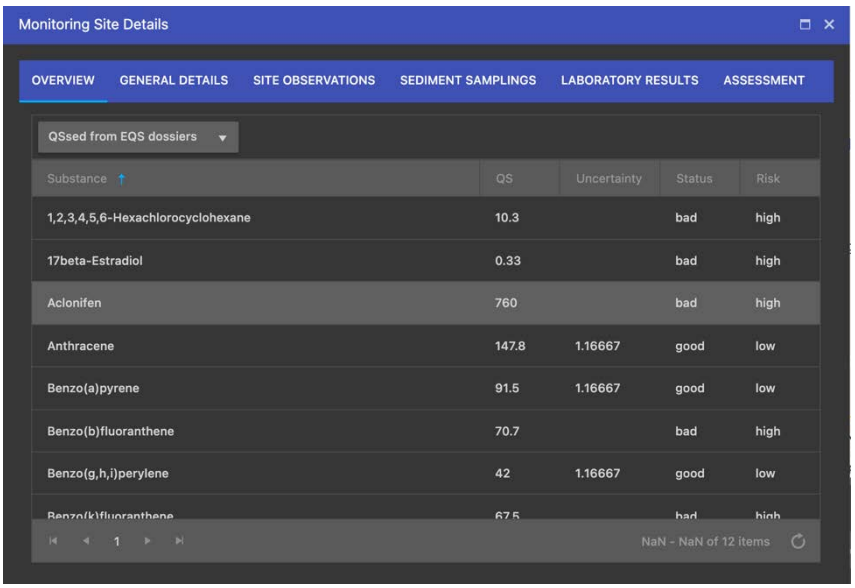

Figure 11 Assessment results by substances

4.4.2 General geographic details

Monitoring sites belong to a specific geographic location. Following the *WISE* geographic classification, the relevant water body, sub unit and river basin district is shown. Each feature is linked to their Eionet Data Dictionary record.

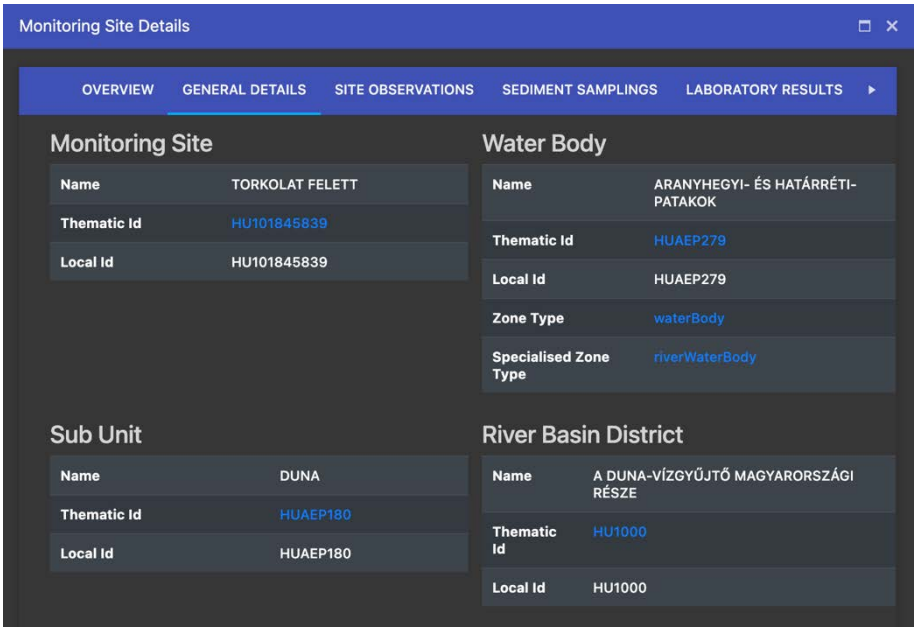

Figure 12 Geographic details of monitoring site

4.4.3 Monitoring site observations

Observation data collected during surveillance monitoring about the site is listed under the *Site Observations* tab. The list shows each record of observations where details can be edited and documents can be stored.

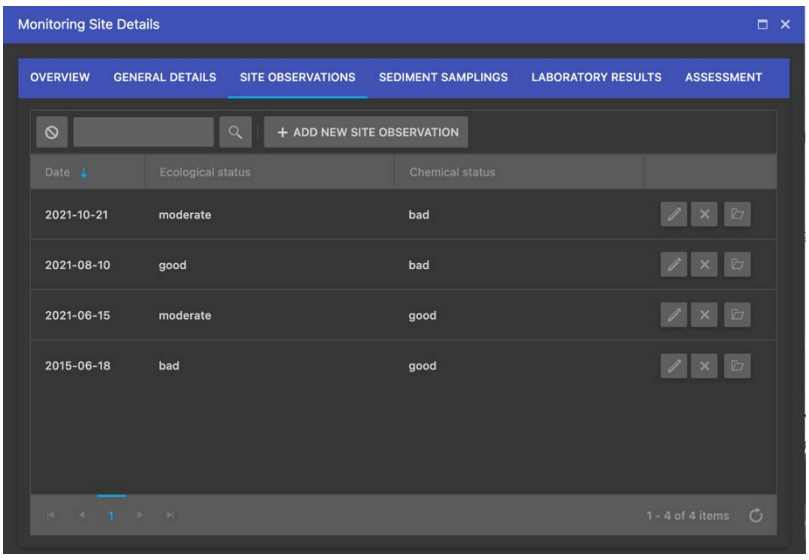

Figure 13 List of recorded monitoring site observations

4.4.4 Sediment samplings

Sediment samplings in the system represent the observation event when sediment samples are collected. On the *Sediment samplings* tab such recorded events are listed.

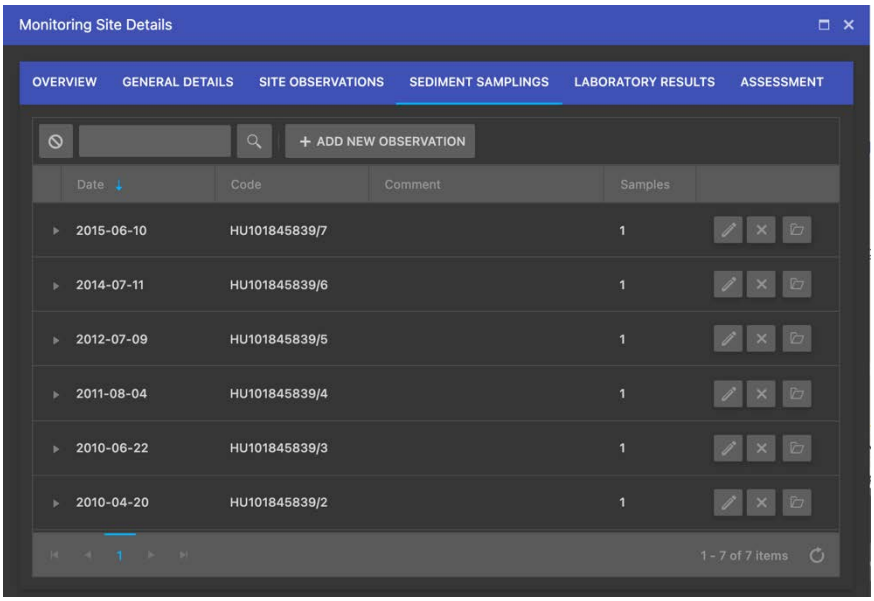

Figure 14 Sediment samplings that took place at the monitoring site

4.4.5 Laboratory results

On the *Laboratory results* tab actual concentration information is shown for each sample collected under the registered samplings. This data is produced by laboratories as a result of the analysis of samples.

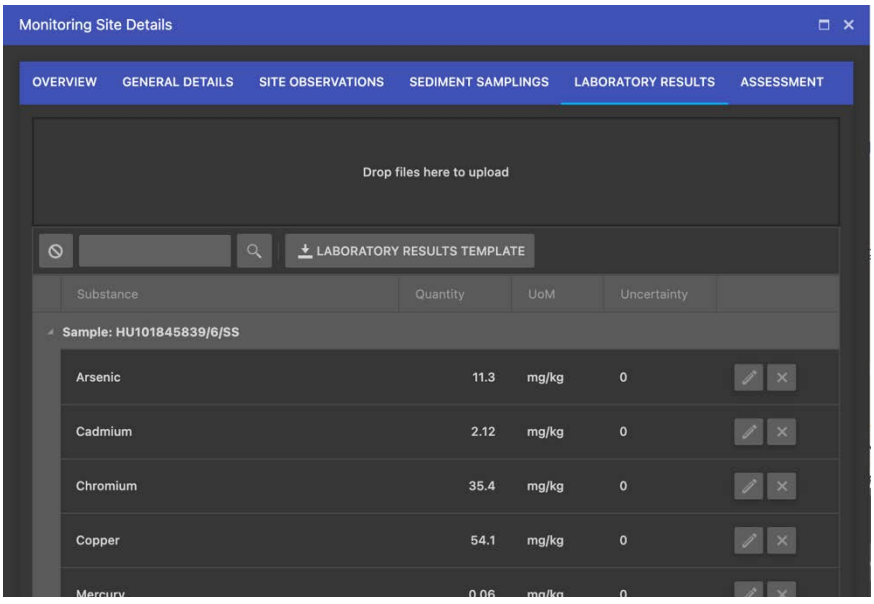

Figure 15 List of measured concentration details of components

4.4.6 Assessments

For researchers the *Assessment* tab allows to run quick risk evaluation against a single substance.

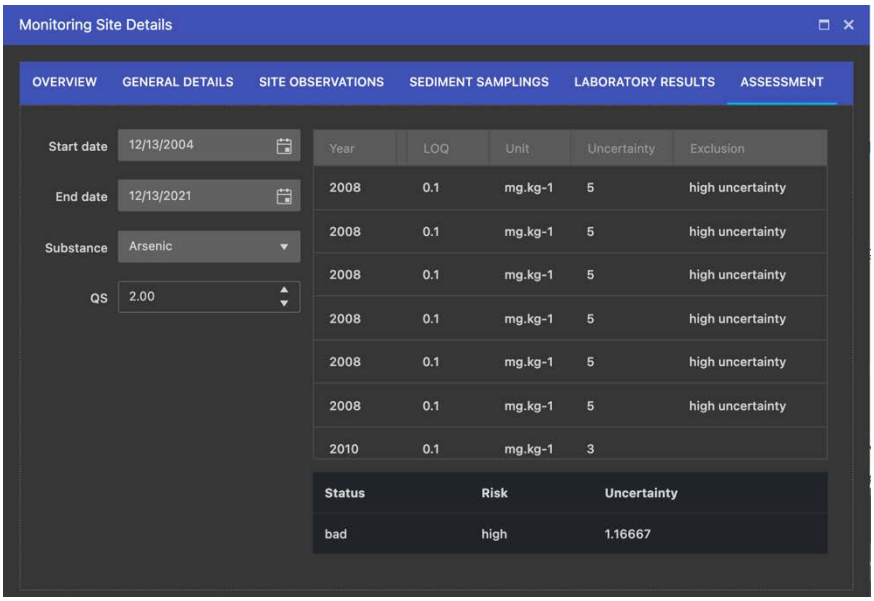

Figure 16 Custom assessment

4.5. Recording monitoring site observation data

Monitoring site observation data can be submitted by filling in the *Site Observation* form, specifying observation details in the following categories:

- Monitoring site identification
- Hydromorphology
- Hydrography
- Water quality
- Physiography
- Other site-specific features

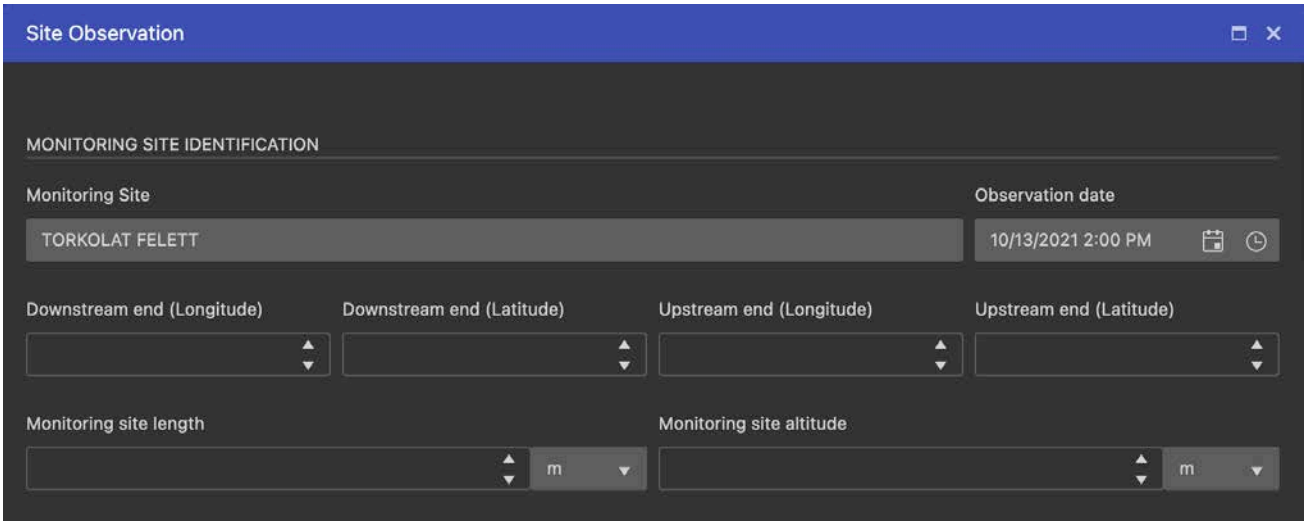

Figure 17 Monitoring site observation form

4.6. Submitting sediment sample data

Sediment samples belong to samplings, therefore, details about the observation (e.g., sampling date, weather and water conditions) need to be entered. Once this information is given arbitrary number of samples can be added to the sampling.

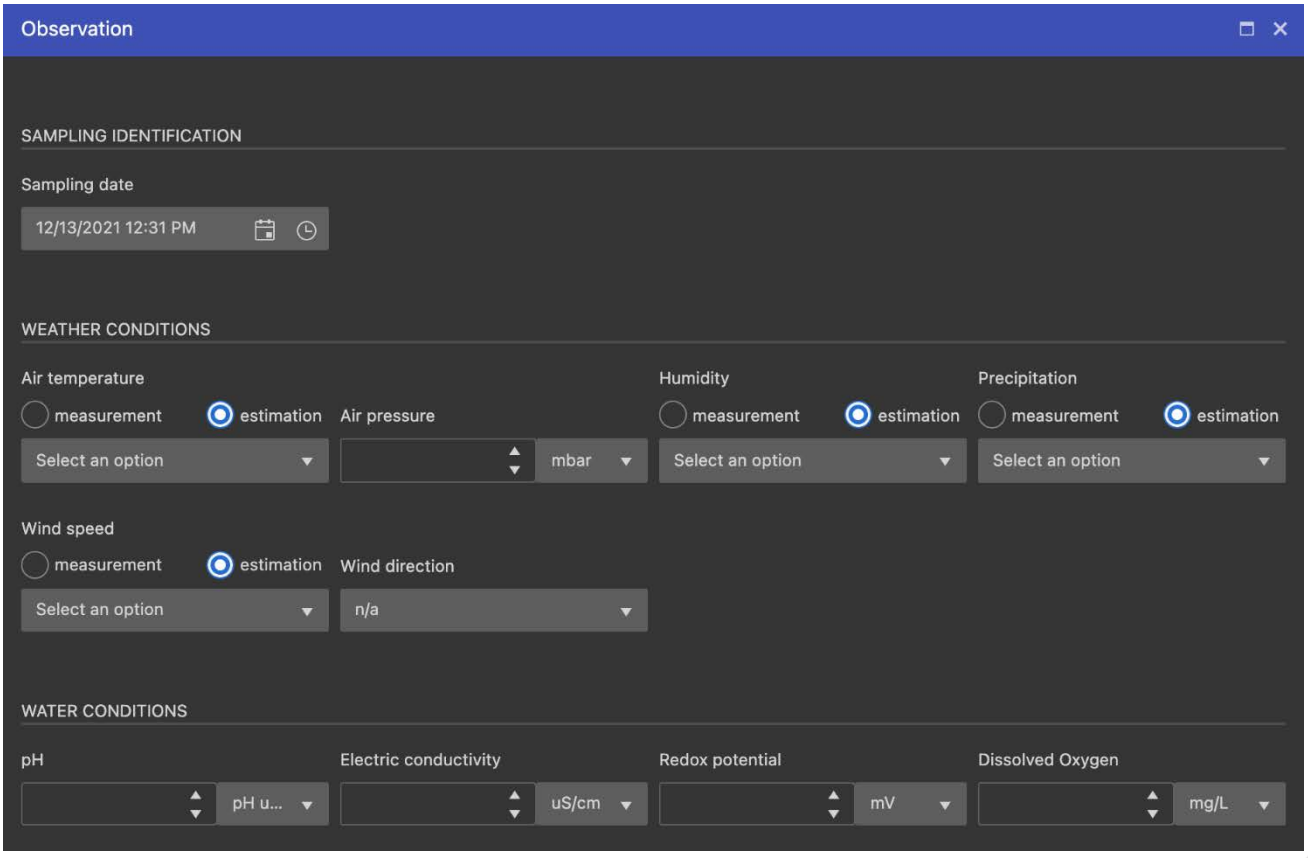

Figure 18 Sediment sampling details

In the 2nd step information about each sample is requested.

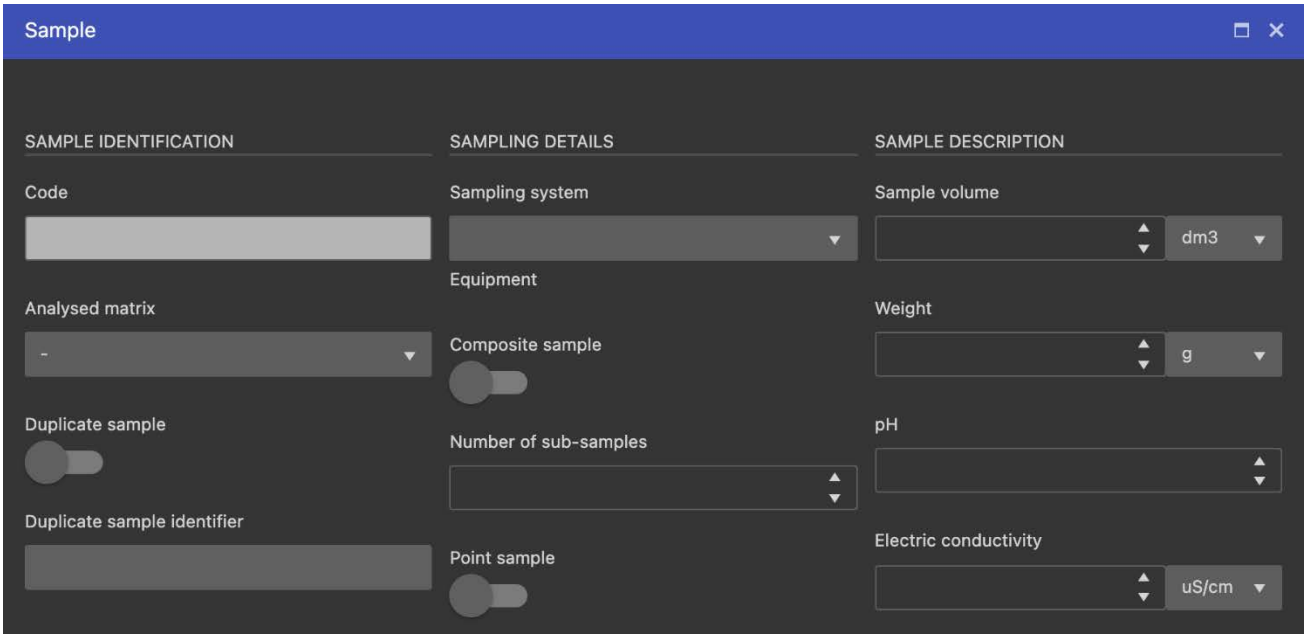

Figure 19 Sediment sample details

4.7. Uploading laboratory results

On the *Laboratory results* tab of the *Monitoring Site Details* dialog – for those who are allowed to upload – a file upload panel is available. Using the drag-n-drop method laboratory results can be submitted as an Excel spreadsheet.

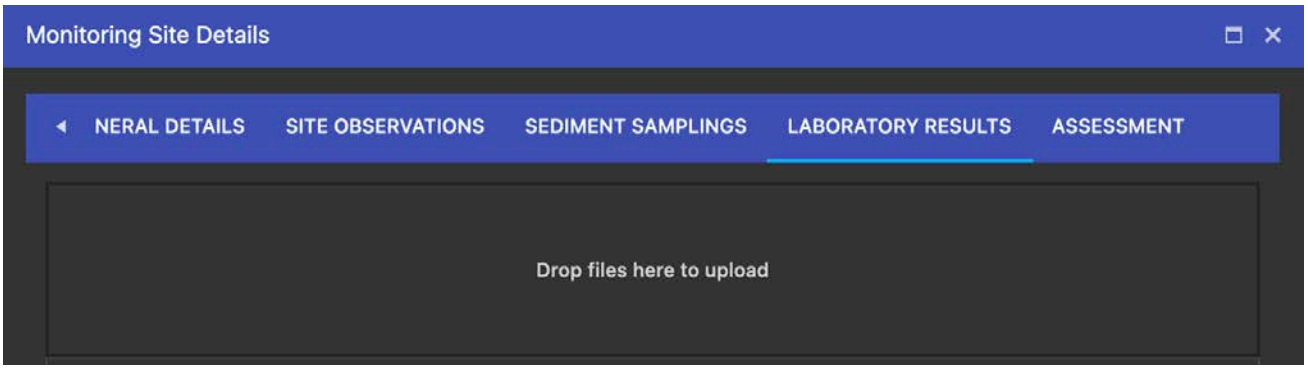

Figure 20 Panel for uploading laboratory results

The scheme of the spreadsheet must follow a predefined structure to be processable by the system. Namely, all the components need to be referenced by their *CAS* code and associated to a sample identifier generated by the tool.

monitoringSiteIdentifier	monitoringSiteIdentifierScheme	parameterWaterBodyCateg	observedPropertyDeterminandCode	procedureAnalysedMatrix	resultUom	phenomenonTimeSamplingDate	sampleIdentifier	resultObservedValue	resultQualityObservedValueBelowLOQ	procedureLOQValue	parameterSamplingDepth	Sedimeter	parameter	res
SDR01BS	ProjectCode_SIMONA	RW	CAS_7440-38-2_Arsenic and its com	S-2000	mg/kg	2020-08-05	SDR01BS/CR/TL	2,52	false	0,005		5		
SDR01BS	ProjectCode_SIMONA	RW	CAS_7440-43-9_Cadmium and its co	S-2000	mg/kg	2020-08-05	SDR01BS/CR/TL	1,98	false	0,003		5		
SDR01BS	ProjectCode_SIMONA	RW	CAS_7440-47-3_Chromium and its c	S-2000	mg/kg	2020-08-05	SDR01BS/CR/TL	44,1	false	0,03		5		
SDR01BS	ProjectCode_SIMONA	RW	CAS_7440-50-8_Copper and its com	S-2000	mg/kg	2020-08-05	SDR01BS/CR/TL	18,6	false	0,1		5		
SDR01BS	ProjectCode_SIMONA	RW	CAS_7439-97-6_Mercury and its con	S-2000	mg/kg	2020-08-05	SDR01BS/CR/TL	0,09	false	0,005		5		

Figure 21 Laboratory results

4.8. Data analysis

For researchers a dedicated *Assessment* tab is available in the *Monitoring Site Details* dialog. It allows the user to carry out custom assessment against the stored laboratory results using four input data: start- and end date of the period of interest, the selected substance and the custom *QS* value.

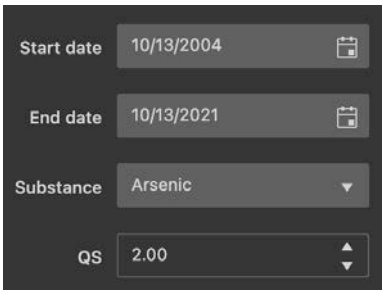

Figure 22 Assessment input

The assessment results are summarised in a tabular layout as well as listed by observations.

Status	Risk	Uncertainty
bad	high	1.16667

Figure 23 Assessment summary

4.9. Exporting WISE compatible reports

Report generation in WISE compatible format is done by the system automatically with no further input required than pressing the *Report* button on the *Monitoring Site Summary* popup.

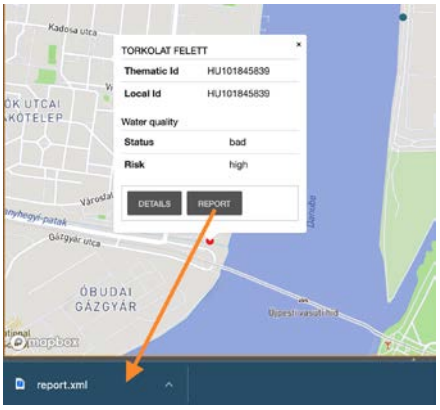

Figure 24 Downloading WISE compatible report

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4.10. Add new monitoring site

Monitoring sites can be added to the database by clicking on the map and selecting the *Add new monitoring site* option.

Figure 25 Context popup for adding new site

As a second step the new site's name is required to be specified. Once it is submitted the site can be accessed.

4.11. Manage quality standards

Region managers, national contacts and researchers can manage the system's quality standard database. From the aside panel the Quality Standard Manager can be launched.

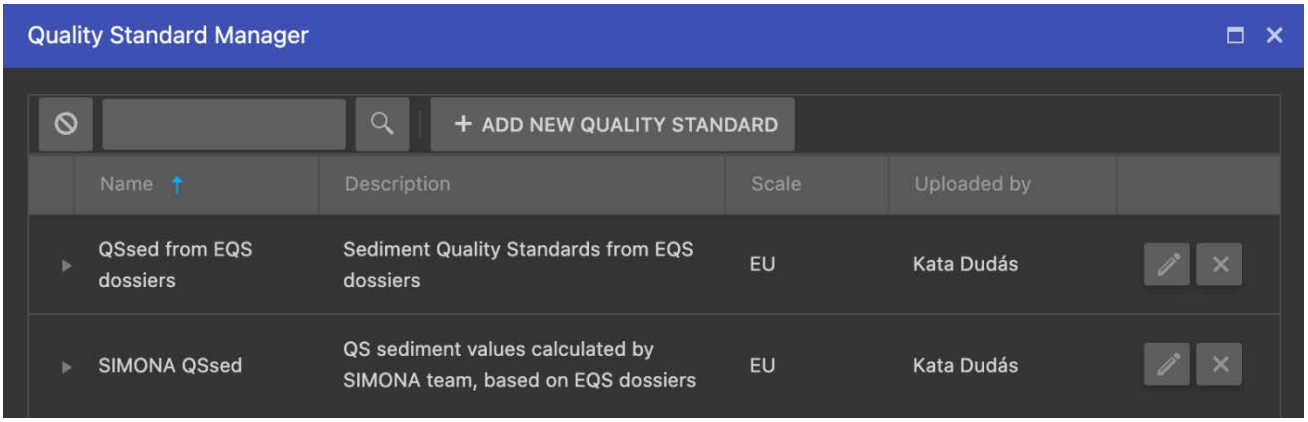

Figure 26 List of quality standards

New quality standard can be added by specifying its name, description and the intended scale of it.

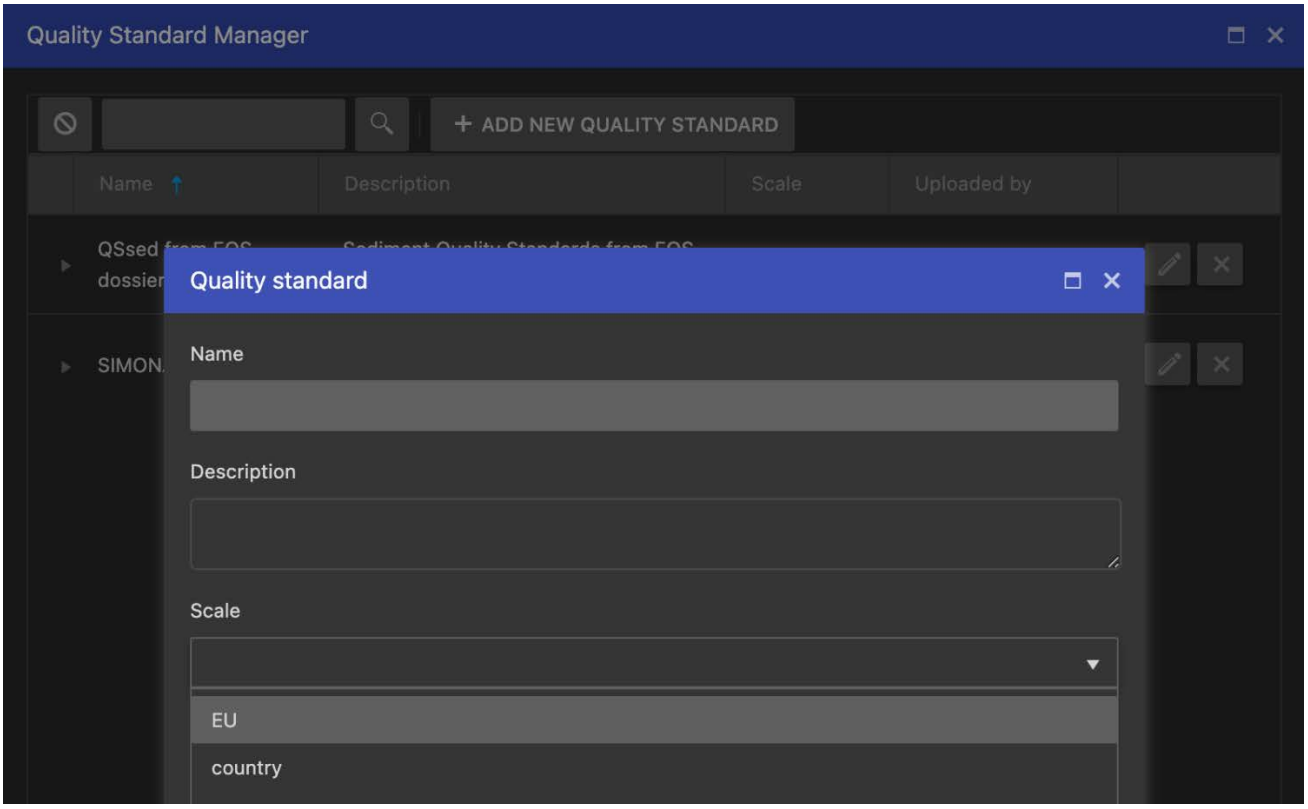

Figure 27 Adding new quality standard

On the detail panel of each quality standard the list of substances is available along with their *QS* value.

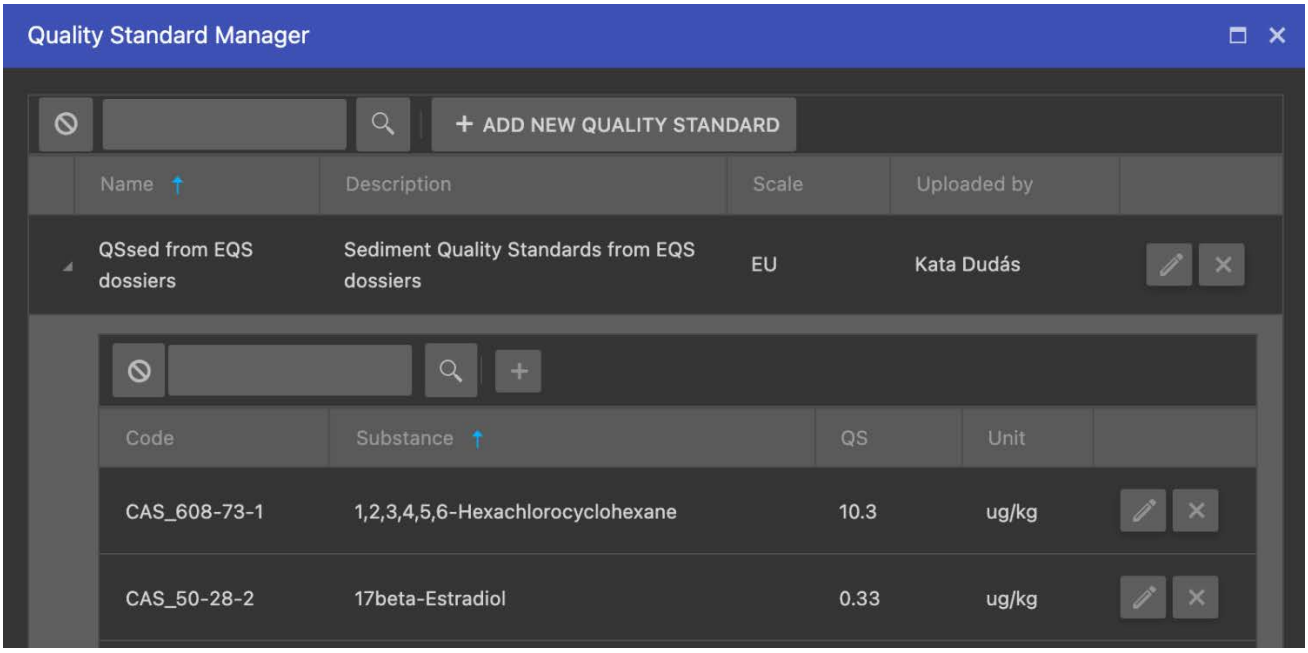

Figure 28 QS values defined by a quality standard

Each value can be updated by clicking on *Edit* and specifying the substance and the threshold in a selected unit of measure.

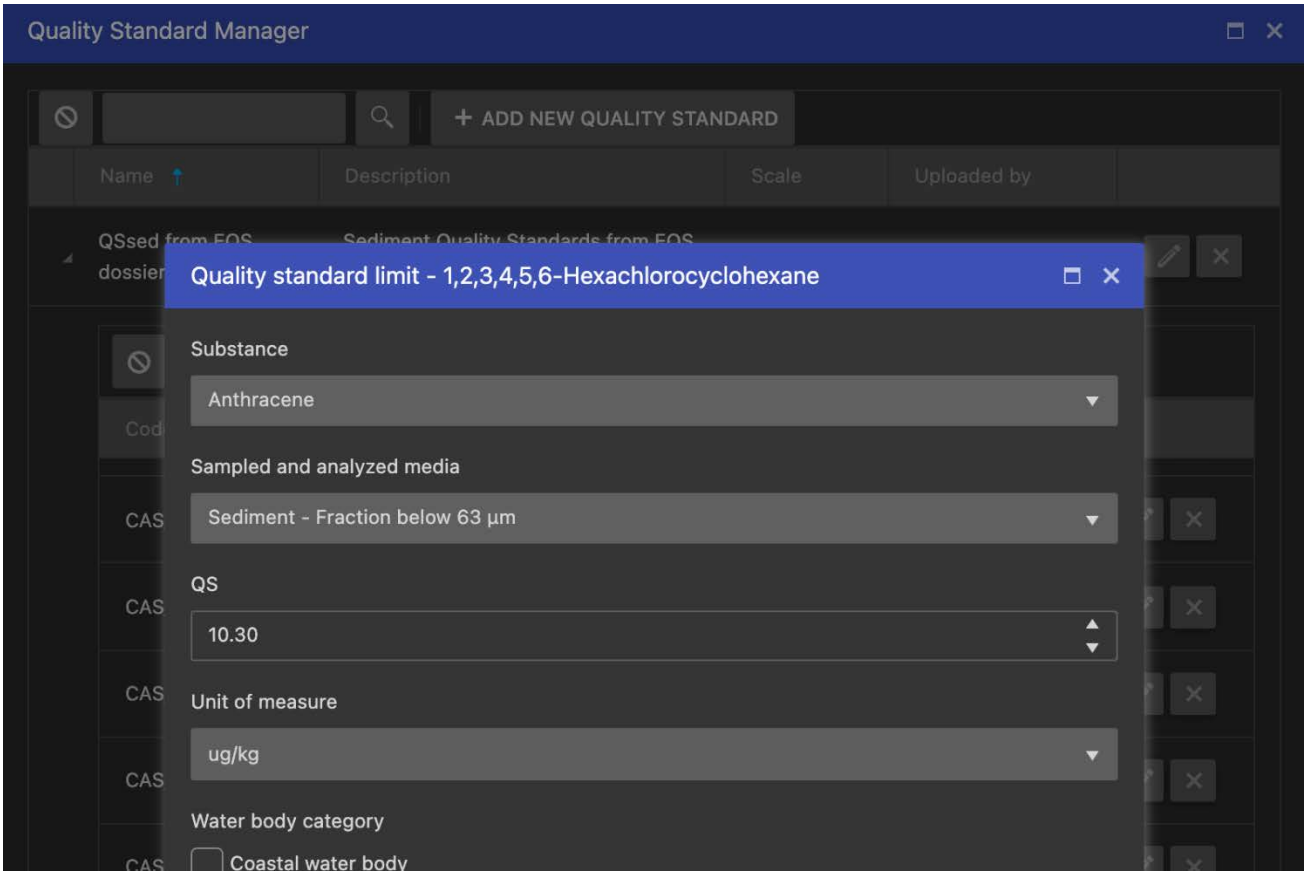

Figure 29 Editing QS value