European Union Water Initiative Plus for the Eastern Partnership (EUWI+ 4 EaP)

UKRAINE

Terms of References for Local Contractor

30 March 2018

Terms of Reference

Support in the identification and delineation of groundwater bodies in the Dnipro river basin district in Ukraine

1. Financing

European Union (ENI / 2016 / 372-403)

2. Procedure

Single tender procedure according to EU PRAG

3. Contracting Authority

International Office for Water (IOW)

4. Thematic Leader

Umweltbundesamt GmbH (UBA)

5. Nature of contract

Service contract

6. Time period of implementation

May – 14 December 2018

I. INTRODUCTION AND BACKGROUND

The “European Union Water Initiative Plus for Eastern Partnership (EaP) Countries (EUWI+)” involves six eastern neighbours of the EU: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. The EUWI+ project addresses existing challenges in both development and implementation of efficient management of water resources. It specifically supports the EaP countries to move towards the approximation to EU acquis in the field of water management as identified by the EU Water Framework Directive (WFD).

River Basin Management Plans (RBMP) are the planning tools that give the overall orientation of water management in the basin and the objectives to be reached, and the priorities in the actions to be developed. In Ukraine, the Dnipro River Basin District (RBD) has been selected as pilot area for the EUWI+ project.

Among the required actions and expected outputs of the project is the support to the delineation of groundwater bodies (GWB) and groups of groundwater bodies according to the provisions of the WFD. Groundwater bodies are the management units within the 6-year cyclic groundwater management approach of the WFD. A management cycle includes a range of steps: the delineation of groundwater bodies, characterisation, pressure and risk assessment, the design and operation of monitoring systems, the assessment of chemical and quantitative status and chemical trends and the design and implementation of programmes of measures aiming to achieve good status of GWBs.

In fulfilment of the UA-EU Accession Agreement and based on the provisions of the WFD the Ministry of Ecology and Natural Resources (MENR) of Ukraine developed a draft Order on the Methodology for Identification of Surface and Groundwater Bodies. This methodology is inter alia to provide practical suggestions for the identification, characterisation and delineation of groundwater bodies in Ukraine reflecting requirements of the Ukrainian water legislation and the EU Water Framework Directive. This draft Order includes in its Annex 1 a list of aquifers in Ukraine for which groundwater bodies shall be delineated.

II. SCOPE OF SERVICE AND DELIVERABLES

The State Service of Geology and Mineral Resources of Ukraine is responsible for the delineation of groundwater bodies and committed to finalise the delineation of groundwater bodies in the whole Dnipro River Basin District until the end of the year 2018. The specific objective of this contract is to assist the State Service of Geology and Mineral Resources of Ukraine in achieving this commitment both in time and in conformity with the national legislation.

This service is to be based on the provisions of the draft Order of the Ministry of Ecology and Natural Resources (MENR) of Ukraine on the 'Methodology for the Identification of Surface and Groundwater Bodies' and on the provisions laid down in the WFD and the methodologies given in the following guidance documents of the EU Common Implementation Strategy (CIS) for the WFD:

- CIS Guidance Document No. 2 on "Identification of Water Bodies";
- CIS Guidance Document No. 9 on "Implementing the Geographical Information Systems (GIS)";
- CIS Guidance Document No. 26 on "Risk Assessment and the Use of conceptual models for groundwater".

The key provisions of the WFD on the delineation of groundwater bodies as well as a pragmatic stepwise approach and methodology for their delineation are attached as Annex 1.

This service is to be performed in close cooperation and coordination with the State Service of Geology and Mineral Resources of Ukraine, the EUWI+ national coordinator and the EUWI+ Thematic Leader.

Tasks to be performed by the Local Contractor

The selected Local Contractor for this assignment will assist the State Service of Geology and Mineral Resources of Ukraine and the EUWI+ Thematic Leader by performing the following tasks:

Groundwater bodies

a. Identify and delineate **groundwater bodies** according to the provisions of the national legislation (draft Order), the WFD and the relevant CIS guidance documents of the EU Common Implementation Strategy, based on available and relevant information (e.g. geological maps, profiles etc.), and following the principles outlined in Annex 1;

b. Give each groundwater body a code and a name according to the provisions of the State Service of Geology and Mineral Resources of Ukraine;

c. Provide the boundaries of the identified and delineated groundwater bodies electronically in GIS format fulfilling the requirements laid down in Annex 3 (e.g. production of datasets, shapefile layers, QGIS maps and accompanying metadata);

d. Prepare a list of all groundwater bodies in the Dnipro River Basin with code, name, size (km^2), predominant aquifer type, sub-basin district to which the groundwater body is assigned, significant groundwater-relevant human pressures (on chemistry and quantity) and the associated chemical substances/indicators, based on available information and expert judgement;

e. Prepare a summary text (1–3 pages) about groundwater bodies in the Dnipro River Basin, the importance of groundwater for uses and ecosystems and the significant pressures (human and non-human) which feeds into the River Basin Management Plan;

f. Prepare a summary of open issues and data gaps which need to be addressed in future (e.g. further research, further data gathering, additional monitoring etc.);

g. Prepare a summary explaining in detail the applied methodologies and considered information (inclusion of references and literature).

Organisation / communication

a. Prepare a detailed roadmap of tasks, deliverables and distribution of responsibilities in close coordination with the State Service of Geology and Mineral Resources of Ukraine and the EUWI+ Thematic Leader. Regularly review and if needed revise the roadmap depending on the progress made. A general groundwater roadmap for Ukraine is provided in Annex 2;

b. Organise and support the kick-off meeting and the working meetings foreseen in the roadmap, in the form of meeting logistics (e.g. locations), preparing draft agendas, writing the meeting minutes (incl. list of participants), providing the training material and providing translations between Ukrainian and English in the meetings and of the documents;

c. Translate the material provided by the EUWI+ Thematic Leader into Ukrainian language (e.g. presentations);

d. Act as communication link between the State Service of Geology and Mineral Resources of Ukraine, the EUWI+ Thematic Leader and the EUWI+ national coordinator in Ukraine;

e. Proofread and translate all elaborated draft and final text developed over the course of the implementation of the activities into English language (e.g. agendas, meeting minutes, list of human pressures and substances, summary text for the RBMP, sampling handbook, summary of open issues and gaps, summary of applied methods).

Final report

a. Provide a draft final and a final report describing the progress made in 2018, with the main outputs of the tasks above, the deliverables below and detailed documentation on the applied methodologies and considered information (inclusion of references and literature). The report will follow the structure given in Annex 4 and will include text, tables and maps. To develop the final report based on the draft final report, the Local Contractor will consider all comments provided by to the State Service of Geology and Mineral Resources of Ukraine, the EUWI+ Thematic Leader and the EUWI+ national coordinator.

Deliverables

The selected Local Contractor for this assignment will deliver the following main products:

a. A detailed roadmap for the implementation of the service, based on the general roadmap provided in Annex 2;
b. The datasets, metadata, shapefile layers and QGIS maps as detailed in Annex 3 for all identified and delineated groundwater bodies in the Dnipro River Basin, following the principles outlined in Annex 1;
c. A list of all groundwater bodies in the Dnipro River Basin with code, name, size (km²), predominant aquifer type, sub-basin district to which the groundwater body is assigned, significant groundwater-relevant human pressures (on chemistry and quantity) and the associated chemical substances/indicators, based on available information and expert judgement;
d. A summary text (1–3 pages) about groundwater bodies in the Dnipro River Basin including the importance of groundwater for uses and ecosystems and the significant pressures (human and non-human), which feeds into the River Basin Management Plan;
e. A summary of open issues and data gaps which need to be addressed in future (e.g. further research, further data gathering, additional monitoring etc.);
f. A summary document explaining in detail the applied methodologies and considered information (inclusion of references and literature);
g. Agendas and minutes of all working meetings – including list of participants – held with participation of either a representative of the EUWI+ Thematic Leader or the State Service of Geology and Mineral Resources of Ukraine. Minutes of the groundwater sampling training, including lists of participants;
h. A detailed groundwater sampling handbook tailored to the Ukrainian situation;
i. Provided material translated into Ukrainian and elaborated text provided in English and Ukrainian, as specified under ‘tasks to be performed’;
j. Draft final report and final report summarising the activities and products prepared under this contract, as specified under Annex 4 and delivered according to the given timeframe.

All listed deliverables and all data will be prepared in Ukrainian and English languages. The final report and all data will be submitted to the State Service of Geology and Mineral Resources of Ukraine, the EUWI+ Thematic Leader and the EUWI+ national coordinator, in printed (1 copy in each language) and electronic versions (the report in Microsoft Word and PDF formats, tables in Microsoft Excel format). All GIS products shall be provided as shapefile layers and QGIS maps.

Meetings

A Teleconference / Skype meeting after the award of the contract to discuss the implementation modality in detail and prepare the kick-off meeting currently scheduled for the fourth week of May 2018.

A kick-off meeting at the beginning of the assignment, currently scheduled for the fourth week of May 2018, where the EUWI+ Thematic Leader will provide an introduction to the principles of the WFD in general and the objectives of the tendered tasks and deliverables. Hereby a first hands-on training on groundwater body identification and delineation using a selected case study will be performed.

Depending on the progress of the implementation, one or two interim working meetings will be organised where the progress and the draft work on the provided service will be discussed in order to ensure that the implementation is in line with the overall scope of the service both in terms of time and conformity with the WFD and the national legislation.

A final working meeting is foreseen at the end of the assignment for finalisation of the service provided out under this assignment and de-briefing of the EUWI+ national coordinator.

III. REPORTING

Regarding the progress of the provided services and for all day-to-day management issues the Local Contractor shall report to:

- Ms Nataliia Zaritovska of the State Service of Geology and Mineral Resources of Ukraine, EUWI+ Project Ukrainian Focal Point for Groundwater Monitoring;
- Ms Oksana Konovalenko, EUWI+ national coordinator and Ms Nataliia Zakorchevna, EUWI+ consultant; and
- Mr Andreas Scheidleder, EUWI+ Thematic Leader.

IV. TIMEFRAME

The duration of the assignment is expected to be 7.5 months**.** The expected commencement of the assignment is 2 May, 2018 and the completion date is 14 December 2018 at the latest.

The assignment will follow the mutually agreed groundwater roadmap for Ukraine. A general roadmap is provided in Annex 2. Review and adaptation of the roadmap for detailed planning will be subject to the progress made and to agreement between the State Service of Geology and Mineral Resources of Ukraine and the EUWI+ Thematic Leader, and will be carried out by the Local Contractor.

The following table provides an overview of key dates for this contract.

Month	Milestones
2 May 2018	Contract start
Fourth week of May 2018	Kick-off meeting
June/July 2018	1st interim working meeting
16 November 2018	Draft final report delivered
14 December 2018	Final report delivered and completion of the contract

V. IMPLEMENTATION MODALITY

The Local Contractor has to provide all means and technical equipment (e.g. hardware, software) necessary for the successful implementation of the tendered services.

The Local Contractor has to implement the service in close contact and cooperation with the State Service of Geology and Mineral Resources of Ukraine, the EUWI+ national coordinator and the EUWI+ Thematic Leader.

All key correspondence and documents related to these services must be written in English.

The Local Contractor will organise the necessary meetings in close coordination with the EUWI+ Thematic Leader, the EUWI+ national coordinator and the State Service of Geology and Mineral Resources of Ukraine.

The EUWI+ Thematic Leader will support the Local Contractor by providing technical guidance and support in groundwater body identification and delineation as considered necessary.

Any adaptations of the tasks and deliverables as defined under the present Terms of Reference require mutual written agreement.

All costs arising from the implementation of the tasks and deliverables under the present Terms of Reference are covered by the contract amount.

The Local Contractor agrees to adhere to the EU visibility guidelines.

VI. CONTACT DETAILS

Ms Nataliia Zaritovska of the State Service of Geology and Mineral Resources of Ukraine, natazar2010@ukr.net

The EUWI+ national coordinator is Ms Oksana Konovalenko, oksana.konovalenko@euwipluseast.eu

Local EUWI+ consultant is Ms Nataliia Zakorchevna, natzakor@gmail.com

The EUWI+ Thematic Leader for groundwater is Mr Andreas Scheidleder, Umweltbundesamt GmbH (UBA), andreas.scheidleder@umweltbundesamt.at

VII. PARTICIPATION TO THE TENDER

Interested parties (individual and legal persons) are invited to request the full tender dossier containing instructions and further information about the tender procedure from Andreas Scheidleder (andreas.scheidleder@umweltbundesamt.at)

The deadline for submission of the technical and financial offer is 18 April 2018, 15:00 CET. Tenders submitted after the deadline will not be considered.

Eligibility criteria are stipulated in detail in the tender dossier.

The implementing organisations of EUWI+ are dedicated to all principles of an equal opportunity employer and are determined to ensure that no applicant receives less favourable treatment on the grounds of gender, age, disability, religion, belief, origin, sexual orientation, marital status or race.

Annex 1 – Principles of GWB delineation

The Water Framework Directive (2000/60/EC) considers a **groundwater body** as a coherent management unit assigned to a River Basin District which has to meet the environmental objectives (Article 4). The term "body of groundwater" should therefore be understood in the context of the hierarchy of relevant definitions provided under Article 2 of the WFD:

- According to WFD Article 2.2, "**Groundwater**" means all water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil;
- According to Article 2.11, "**Aquifer**" means a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater;
- According to Article 2.12, "**Groundwater body**" means a distinct volume of groundwater within an aquifer or aquifers.

According to the definitions and the specifications laid down in the WFD, groundwater bodies are **management units** with the main purpose of enabling their quantitative and qualitative status to be accurately described and compared to the environmental objectives, and of implementing the measures necessary for achieving these objectives. Groundwater management has to consider groundwater in relation to its uses and functions and its interactions with connected aquatic and terrestrial ecosystems, and in relation to the natural conditions (geology, hydrogeology etc.) and human influences (pressures).

Principal aim: To delineate groundwater bodies (GWB) in a way that enables an appropriate description of the quantitative and chemical status of groundwater (only minor groundwater flow from one GWB to another). The bodies should be units of one chemical and one quantitative status that can be characterised and managed to allow the effective achievement of the WFD's objectives.

Not the aim: A body of groundwater does **not** have to be delineated so that it is homogeneous in terms of its natural characteristics, or the concentrations of pollutants or level alterations within it. This can be the case, but does not have to be the case.

The following guidance documents of the EU Common Implementation Strategy (CIS) for the WFD provide relevant methodologies:

- CIS Guidance Document No. 2 on "Identification of Water Bodies";
- CIS Guidance Document No. 9 on "Implementing the Geographical Information Systems (GIS)";
- CIS Guidance Document No. 26 on "Risk Assessment and the Use of conceptual models for groundwater".

Brief summary approach for the identification and delineation of groundwater bodies:

1. Identification of all relevant aquifers:
   - Check if more than 10m³/day groundwater could be abstracted;
   - Check whether surface waters or terrestrial ecosystems (wetlands) are connected to the groundwater within the aquifer and could be damaged if groundwater quantity (levels or flow direction) or groundwater chemistry in the aquifer changes;

   If one of these conditions is true, then the aquifer is relevant for further consideration under WFD groundwater management;

   If neither of these conditions is true, then the aquifer is not relevant for further consideration under WFD groundwater management.

2. Separate high productive aquifers from low productive aquifers.

3. Identification and delineation of groundwater bodies – horizontal dimension:
   - Start delineation along hydrogeological boundaries;
   - You can consider groundwater flow divides or river catchments and geological boundaries;
   - Consider variations of human pressures on groundwater: Where the human pressure situation is consistent, large GWBs may be delineated; Where the human pressure situation is very diverse and different between parts of GWBs (e.g. different land use) sub-divide the GWB;
   - A coastline could be a boundary, as long as the groundwater beyond the coastline is not an important resource;
   - Consider existing boundaries of hydrographical entities which are already subject to a local management plan;
   - Identify bodies of groundwater so that there is only minor groundwater flow from one GWB to another;

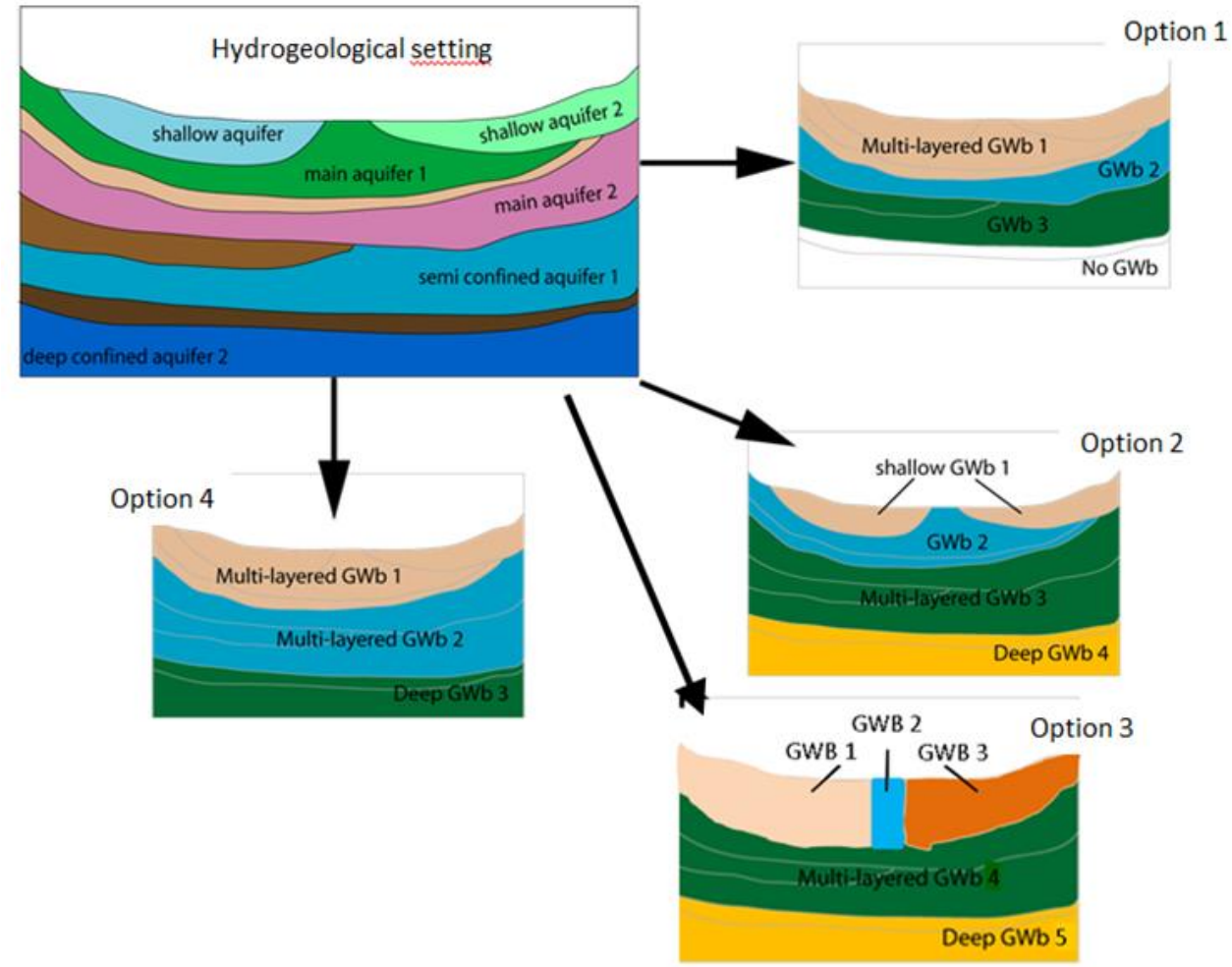
4. Identification and delineation of groundwater bodies – vertical dimension:
   - Delineate the GWB in three dimensions;
   - Consider the objectives of the WFD: is the groundwater in the aquifer used or planned to be used in future? Is the groundwater connected with rivers or terrestrial ecosystems (wetlands) which could be damaged if groundwater flows or chemistry changes?

     The vertical heterogeneity/variability of a hydrogeological setting can lead to many different arrangements of differently delineated GWBs. If hydrogeology is not the only factor considered (which is probably the case), many additional ways of delineation and types of configuration are possible.

Avoid the fragmentation of aquifers into unmanageable numbers of GWB, keeping in mind the further steps of WFD groundwater management including the necessities to characterise, monitor, assess risk, assess status and design and implement the measures needed to keep or achieve good status.

The vertical heterogeneity/variability of a hydrogeological setting can lead to many different possible arrangements of differently delineated GWBs. Hydrogeology is not the only factor considered, also human pressures should be taken into account, therefore many additional ways of delineation and types of configuration are possible. The following figure illustrates one example hydrogeological setting and 4 different possible options of GWB delineation and arrangements.

Figure: Four different (non-exhaustive) options of GWB delineation for one specific hydrogeological context



Source: European Commission. 2014: WFD Reporting Guidance 2016 Final V6.0.6

Annex 2 – General groundwater roadmap for Ukraine

	Steps of implementation	Responsibility	Date (Location)
1.	**Kick-off meeting** - Overall purpose of work and legal frame (WFD, MENR order). - Scope of 2018 work and expected results - Discussion of methodology for GWB identification and delineation. - Experiences from Austria and EU Member States. - Hands-on demonstration on how to work along the WFD groundwater management approach by a case study. - Discussion of working modality and roadmap.	State Service of Geology and Mineral Resources of Ukraine; EUWI+ Thematic Leader: EUWI+ national coordinator, Local Contractor.	Fourth week of May 2018
3.	**Preparatory (home) work** by national experts: - First draft identification and delineation of GWBs following the stepwise procedure (in map 1:200,000) - Compilation of hydrogeological information and available human pressure information (maps, inventories).		
4.	**1st Working meeting** - Discussion of draft GWBs and hands-on revision. - Discussion of list of identified groundwater-relevant human pressures and associated substances of concern. - …..		
5.	**Preparatory work** by national experts: - Revision of GWB delineation according to the conclusions of the working meeting.		
6.	**2nd Working meeting (optional)** - Discussion of draft GWBs and hands-on revision. - Discussion of list of identified GW-relevant human pressures and associated substances of concern. - …..		
7.	**Preparatory work** by national experts: - Revision of GWB delineation according to the conclusions of the working meeting.		
8.	**Final meeting** - Finalisation of open issues.		
9.	**Hand-over and acceptance by** representatives of the State Service of Geology and Mineral Resources of Ukraine and the EUWI+ Thematic Leader.		14 Dec 2018

Annex 3: Specifications for datasets, metadata and maps production

It is not allowed to present / use datasets in a map or an indicator if the corresponding data set:

- is not described in the catalogue of metadata established by the EUWI+ project;
- Is not made available in the national FTP

As a consequence, the task of the Local Contractor should include:

- To collect the necessary datasets at the level of the producers
- To work with the data producers in order that the dataset provided are described on line into the metadata catalogue made available by the project
- To copy the raw data made available by each producer on the ftp made available by the project

The corresponding expected results can be formulated as follow:

- All datasets used are described in English and in Ukrainian into the metadata catalogue
- All raw dataset used are available on ftp

Methodology for metadata production

The letter of request for data should include the obligation that the data producer provides the corresponding metadata sheet fulfilled (to be provided by EUWI+ project).

The Local Contractor will insure that the metadata are entered in the catalogue with in addition:

- Capture of a thumbnail
- Capture of geographical limits
- Translation in English/Ukrainian of all metadata entered
- Description of right of dissemination
- Declare of public access in the metadata sheet

About specifications of data to be collected

- Layers the closest possible of scale 1/200 000
- Layers in Esri format (.shp)

Specifications for map production

- Maps are produced in QGIS format
- Maps are produced using the map template A3 prepared by the project
- Maps respects the standard GCS_WGS_1984 projection or the official projection adopted at national level

Maps include only layers and dataset described into the metadata catalogue and having raw data available on ftp.

Annex 4: Proposed Outline of the Final Report

Groundwater bodies

1. Summary text (1–3 pages) about groundwater bodies in the Dnipro River Basin including the importance of groundwater for uses and ecosystems and the significant pressures (human and non-human), which feeds into the River Basin Management Plan

Documentation

2. Final version of the detailed roadmap as implemented;
3. Detailed documentation of the applied methodologies and implementation steps and considered information (inclusion of references and literature).
4. List of open issues or data gaps to be addressed in future.

Annexes

5. List of all groundwater bodies in the Dnipro River Basin with code, name, size (km²), predominant aquifer type, sub-basin district to which the groundwater body is assigned, significant groundwater-relevant human pressures (on chemistry and quantity) and the associated chemical substances/indicators, based on available information and expert judgement;
6. Overview of produced layers and datasets including full metadata;
7. QGIS maps of groundwater bodies with indication of aquifer types and human pressures (e.g. chemical point and diffuse pollution, major abstraction points etc.);
8. Agendas and minutes of all meetings including lists of participants;