



# PLASTFLOW

## Data Management Plan

### Version II

Deliverable D2.2. PLASTFLOW Data Management Plan (M16)

Authors: Jelle Rondelez<sup>1</sup>; Charlotte A.L. Dhondt<sup>1</sup>; Ana I. Catarino<sup>1</sup>; Nelle Meyers<sup>1</sup>; Els Knaeps<sup>2</sup>; Nithin Achutha Shettigar<sup>3</sup>; Boudewijn Decrop<sup>4</sup>; Erik A. Toorman<sup>3</sup>

Author affiliations: <sup>1</sup>Flanders Marine Institute (VLIZ); <sup>2</sup>Flemish Institute for Technological Research (VITO); <sup>3</sup>Catholic University of Leuven (KUL); <sup>4</sup>International Marine and Dredging Consultants (IMDC)

Reviewed by: Jana Asselman (University of Ghent); Hanne Diels (University of Antwerp)

Date: 2025-12-17

cmartlife<sup>©</sup>



SAMEN MAKEN WE  
MORGEN MOOIER

**OVAMVLIZ**

pioneer in  
marine science



GHENT  
UNIVERSITY



University  
of Antwerp



IMDC



vito

**KU LEUVEN**

1. Introduction.....	4
2. Data Management Plan.....	5
<b>1. RESEARCH DATA SUMMARY .....</b>	<b>5</b>
<b>2. DOCUMENTATION AND METADATA.....</b>	<b>8</b>
<b>3. DATA STORAGE &amp; BACK-UP DURING THE RESEARCH PROJECT.....</b>	<b>10</b>
<b>4. DATA PRESERVATION AFTER THE END OF THE RESEARCH PROJECT .....</b>	<b>12</b>
<b>5. DATA SHARING AND REUSE.....</b>	<b>12</b>
<b>6. RESPONSIBILITIES.....</b>	<b>15</b>
<b>GDPR .....</b>	<b>15</b>
<b>DPIA.....</b>	<b>15</b>

# 1. Introduction

The initial Data Management Plan (DMP) (**D2.1**; first version) was created using the DMP Online tool. This platform is a web-based tool that supports researchers to develop data management plans. It contains the latest funder templates and best practice guidelines to support users to create good quality data management plans.

To create this DMP, the ‘Flemish Standard (FWO) DMP’ template was used. After all questions were filled in by the VLIZ Marine Data Centre (VMDC), this document was sent out to the project consortium for feedback and finalized to be delivered to the project officer. During the project, necessary changes to the original plan were documented, resulting in this deliverable (**D2.2**; an update (second version) of the DMP) at the end of the project.

**Changes compared to the first version of the DMP are:**

- The microplastic transport model of KUL will not be made publicly available (yet). See sections 1 (data summary) and 5 (sharing and reuse) of this DMP for more information.
- Minor additions or adjustments in several sections of this DMP.

The data management plan is included hereafter, formatted as an export by the DMP Online tool.

**The second version of the Data Management Plan (D2.2) can be referenced as:**

Rondelez, J.; Dhondt, C.A.L.; Catarino, A.I.; Meyers, N.; Knaeps, E.; Shettigar, N.A.; Decrop, B.; Toorman, E.A. (2025). PLASTFLOW: Data Management Plan (Deliverable D2.2). Version 2. Flanders Marine Institute (VLIZ): Ostend. 14 pp. <https://dx.doi.org/10.48470/124>

## 2. Data Management Plan

*A Data Management Plan created using DMPonline.be*

**Funder:** The Smartlife project LIFE19 IPE/BE/000008 has received funding from the LIFE Programme of the European Union

**Template:** FWO DMP (Flemish Standard DMP)

**Project start date:** 2024-04-01

**Project end date:** 2025-11-30

### **Project abstract:**

Plastic pollution in aquatic environments poses a significant threat to marine ecosystems and human health, highlighting the need for comprehensive monitoring and mitigation efforts. In line with Goal 9 of the Flemish Marine Litter Action Plan, which aims to reduce the influx of plastic waste into the marine environment by 75% by 2025, the PLASTFLOW sampling plan outlines a strategy for conducting follow-up measurements to evaluate (changes in) plastic pollution levels in the Scheldt and its estuary during 2024 - 2025. Building upon the baseline study conducted in 2020 - 2021, we aim to employ consistent sampling methodologies and techniques as well as sampling locations, in this way ensuring comparability with the baseline data. At the same time, the plan addresses all key objectives outlined in the call, such as the assessment of accumulation areas of e.g. plastic pellets. The sampling strategy includes details of the types of measurements considered, the sampling locations, the compartments to be sampled, the types of litter targeted, the equipment to acquire them, and the number of samples to be taken. Through targeted sampling at specific locations along the Scheldt and its estuary, including potential plastic hotspots, and utilizing a variety of sampling equipment to capture different environmental compartments and types of plastic litter, we seek to update the assessment of litter levels in the Scheldt estuary (Everaert et al., 2022), as well as to estimate plastic flux levels, and to identify areas of litter accumulation.

### **1. RESEARCH DATA SUMMARY**

**List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.**

Dataset Name	Description	New or reused	Digital or Physical	Digital Data Type	Digital Data format	Digital data volume (MB/GB/TB)
Results phase 1	Aggregated results of micro-, meso- and macroplastic sampling in sediment and water and on the riverbank, during phase 1 of WP3	New	Digital	Aggregated observational data	.csv	<1GB
Results phase 2	Aggregated results of micro-, meso- and macroplastic sampling in sediment and water and on the riverbank, during phase 2 of WP3	New	Digital	Aggregated observational data	.csv	<1GB
Drone images	High resolution drone images of the riverbank, made with a high-resolution RGB and multispectral sensor, and derived data products	New	Digital	Observational data	TBD; .csv; .txt; .tif; .shapfile	<100GB
Output from numerical models	Numerical models created in a previous project, will be applied to determine the transport of plastic particles in the Scheldt Estuary. The models will be upgraded and validated with the results from phase 1 and 2	New	Digital	Simulation data	TBD; .png; maybe .slf; .csv	100GB or less
Results baseline study	Results of micro-, meso- and macroplastic sampling in sediment and water	Reuse	Digital	Observational data	.xlsx	<1GB
Existing hydro- and meteorological data	To be used for the numerical models. Data are all available online. Sources: <ul style="list-style-type: none"> <li>• Wind data: ERA5</li> <li>• Tidal data: TPXO Global dataset</li> </ul>	Reuse	Digital	Observational and reanalysis data	.txt, .nc, .csv, binary files	<50GB

	<ul style="list-style-type: none"> <li>• Seawater temperature and salinity: Copernicus Marine Services</li> <li>• Discharge, salinity, temperature: waterinfo.be</li> </ul>					
--	---	--	--	--	--	--

See also the PLASTFLOW Sampling Plan (deliverable **D3.1**) and the PLASTFLOW final report (**D1.2**).

**If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:**

Data of baseline measurements for OVAM in 2020-2021 will be re-used to create the sampling strategy and for comparison with the data collected for this project. This data is linked to the report of Everaert, et al. (2022; DOI: 10.48470/26), and is currently stored in the password-protected Marine Data Archive of VLIZ.

The numerical models applied in PLASTFLOW have been developed in other projects. Sources of the data reused for the numerical models are listed above.

**Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.**

- No

**Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.**

- Yes

Drone images could possibly capture personal data (for example faces of people) but any personal data will be blurred on the images before further processing. No personal data will be used or shared.

**Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, ...)? If so, please comment per dataset or data type where appropriate.**

- Yes

One of the numerical models applied in WP4 holds potential for commercial valorization. IMDC anticipates that in the future a commercial value will be in the model since it can be used for studies in preparatory phase of plastic cleaner deployments globally. Note that the algorithms for macroplastics transport have been developed in a past project and not in PLASTFLOW.

**Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements/ research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.**

- Yes

For the numerical model applied in WP4 by IMDC (macroplastic transport model), the code and specifications of the model itself will not be publicly available. This does not apply to the data needed to run the model, nor to the output produced by it. Also, the model has been described in publications in the past.

For the numerical model applied by KU Leuven (microplastic transport model), the code will also remain under restricted access with KUL. More information in section 5 (sharing and reuse) of this DMP.

Metadata and results of the two models will be available in the final project report (D1.2).

**Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate, and which restrictions will be asserted.**

- Yes. See the two previous questions.

## 2. DOCUMENTATION AND METADATA

**Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g., in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).**

The project's data and publications will be made findable through MarineInfo (<https://marineinfo.org/search>), which is an extensive online and searchable metadata catalogue made and maintained by VLIZ. The catalogue connects datasets, publications, institutes, projects and persons together through the addition of well-described metadata and clear references to the storage locations of the (data) files.

Following discovery metadata is provided to the dataset metadata records in MarineInfo as much as possible / when available:

- Data provider
- Data creators, contributors
- Contact person(s) and/or institute(s)
- Dataset title
- Citation
- License
- Unique Persistent Identifier (for example: DOI)
- Project
- Short description
- Temporal coverage: date (and time with reference) of sampling
- Parameters
- Units
- More information on the measurement
- Geographical coverage: latitudinal and longitudinal coordinates and name of the measuring station or sampling location
- Sampling method
- Access point where data or metadata can be found or downloaded
- Related datasets and publications/reports
- Any additional information on the data(set)

The use of the MarineInfo catalogue provides the opportunity to formally describe datasets and publications by assigning a Digital Object Identifier (DOI) to it. A formal data publication procedure will help assure that a dataset or publication is citable and traceable.

Publications will include reports on the numerical models, which will be linked to the relevant deliverables of this project. These reports will contain info on methodology and location of any source codes for the models that are open access or will include a reference to the publications in which the closed models are described and a contact point for the latter.

Datasets/output produced by the sampling campaigns, the drone images and/or the numerical models will have metadata records with clear access points to the data files, which will be stored on the Marine Data Archive. The metadata of these records will be fed by the metadata applied during the archiving of the files in the data repository (see next question). The datasets will also be linked to the sampling plan (deliverable **D3.1**) which outlines the sampling methodologies and instruments used and gives an overview of the timeframe and sampling locations.

The high-resolution drone images will also receive metadata records in MarineInfo, which will redirect the user to the cloud of VITO where the images will be stored or an equivalent contact point.

**Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.**

● Yes

For the data/data products coming from the sampling phases, the drone images and/or the numerical models, the addition of general discovery metadata happens during storage of the data within the Marine Data Archive (MDA), using the interface and metadata templates of this repository. VLIZ will apply existing metadata standards when creating the metadata templates per data type, which are being created during the activities of the VLIZ Marine Data Centre in plastic-related projects like INSPIRE, Plastic Pirates and TREASURE.

In cases where no standard is publicly available, one will be set up by VLIZ according to FAIR best practices. The added metadata in MDA will later be used to create the metadata records in MarineInfo (see question above). Elaboration of the metadata is possible, to ensure a link of datasets to publications, projects, persons and institutes.

For the drone images stored in the cloud of VITO, VLIZ will provide a template to get the necessary metadata information to create the metadata records in MarineInfo. How to match this template to the storage of VITO will be discussed with the VLIZ Marine Data Centre and the responsible department at VITO.

For the collection of the monitoring data and specific metadata, standardized (meta)data templates for the data files will be used for harmonization purposes within the project and with already existing data in international data systems. These templates for micro- and macrolitter have previously been created by VLIZ and consider current international (meta)data standards and vocabularies. These templates ensure that the data are understandable and reusable in the future and for third parties.

The most important international standards that are incorporated in the templates are:

- Standards used in EMODnet Chemistry (<https://emodnet.ec.europa.eu/en/marine-litter>)
- EU Joint List of Litter Categories (Fleet et al. 2021) for macrolitter
- NOC data vocabularies (<https://vocab.nerc.ac.uk/collection/?filter=litter>) for microlitter characteristics

### **3. DATA STORAGE & BACK-UP DURING THE RESEARCH PROJECT**

#### **Where will the data be stored?**

Data/data products generated by the sampling campaigns, drone images and/or numerical models will be provided with metadata and stored in the Marine Data Archive of VLIZ

(<http://mda.vliz.be/>) according to the principles of FAIR (e.g. <https://www.nature.com/articles/sdata201618>).

The Marine Data Archive (MDA) is an online and secured data repository specifically developed to independently archive data files in a fully documented manner. The MDA can serve individuals, consortia, working groups and institutes.

For this project, a private context was created within the Marine Data Archive. Access to this context is regulated through an account-based registration procedure, managed by VLIZ.

The MDA is not publicly searchable: for data in the MDA to be findable, they need to also be listed in a metadata catalogue. For this to happen, data in the MDA can be linked to a metadata record in MarineInfo (<https://marineinfo.org/search>).

All this information, and more, is available in the data policy information of the MDA (<https://mda.vliz.be/mdadatapolicy.pdf>).

The raw drone images will be securely stored within the cloud-storage of VITO.

### **How will the data be backed up?**

The development, backup and maintenance of the MDA is an institutional activity of VLIZ. If VLIZ ceases to exist or terminates its data-archiving activities, VLIZ shall attempt to transfer the data files to a similar organisation that will continue the Agreement with the Data provider under similar conditions if possible. If VLIZ does not succeed in finding a similar organisation, VLIZ will organise the transfer of all files to each intellectual property right holder or data provider.

VITO also ensures that the necessary back-up systems are in place for the cloud environment that stores the raw drone images.

### **Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely.**

**If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.**

- Yes

The development, backup and maintenance of the MDA is an institutional activity of VLIZ.

VITO also ensures that the cloud environment has enough capacity for the raw drone images.

### **How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?**

Access to the MDA is regulated through an account-based registration procedure, managed by VLIZ. Access is only given after consulting the project contact persons and the VLIZ Data Centre. Similarly, the cloud storage of VITO is closed off behind an authentication procedure. An SFTP server is used to upload and download data.

**What are the expected costs for data storage and backup during the research project? How will these costs be covered?**

There are no costs for the project in using the MarineInfo and MDA data systems. VLIZ provides this platform freely to projects in the marine realm as a service. Any actions needed from the data managers of VLIZ are already covered within this project. The use of the cloud storage for the drone images is also covered by VITO.

#### **4. DATA PRESERVATION AFTER THE END OF THE RESEARCH PROJECT**

**Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).**

Both the datasets from the sampling phases, the drone images, and the data generated by the numerical models will be retained for a minimum of five years, yet preferably much longer.

**Where will these data be archived (stored and curated for the long-term)?**

Data/data products generated by the sampling campaigns, drone campaign and/or numerical models will be provided with metadata and stored in the Marine Data Archive of VLIZ (<http://mda.vliz.be/>) according to the principles of FAIR (e.g. <https://www.nature.com/articles/sdata201618>).

The raw drone images will be stored within the cloud-storage of VITO.

**What are the expected costs for data preservation during the expected retention period? How will these costs be covered?**

There are no costs for the project in using the MarineInfo and MDA data systems. VLIZ provides this platform freely to projects in the marine realm as a service. The use of cloud storage for the drone images is also covered by VITO.

#### **5. DATA SHARING AND REUSE**

**Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.**

- Yes, in an Open Access repository
- No (closed access)

The datasets/output coming from the sampling phases, the drone campaign and/or the numerical models will be made accessible through the MarineInfo catalogue of VLIZ. For this, MDA will serve as an Open Access repository and MarineInfo will serve as a searchable metadata catalogue.

The raw drone images will remain in closed access within the cloud storage of VITO.

Code of the macroplastic transport model of IMDC used in WP4 will not be made available and shall remain property of IMDC.

Code of the microplastic transport model of KU Leuven will be kept under restricted access on the KUL GitLab environment. It will be available upon request with KUL (contact details specified in metadata on MarineInfo), and access and usage conditions will be discussed, assessed and potentially approved for each individual case separately.

**If access is restricted, please specify who will be able to access the data and under what conditions.**

Drone images will only be available after a request is granted by VITO. Every request will be inspected individually, based on the intent of the users.

Code of the macroplastic transport model of IMDC used in WP4 will not be made available and shall remain property of IMDC.

See questions above and below for the code of the microplastic transport model of KUL.

**Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain in the comment section per dataset or data type where appropriate.**

- Yes, Intellectual Property Rights

Code of the macroplastic transport model of IMDC used in WP4 will not be made available and shall remain property of IMDC. This is put in place as the model holds commercial value, and to protect the Intellectual Property Rights of IMDC.

Code of the microplastic transport model of KUL will still be in a development stage. Once the developments have come into another, more final, phase, KUL will explore the possibility to merge their developments into the formal and public release of TELEMAC (<http://www.openTELEMAC.org>). Therefore, the model will stay under restricted access on GitLab and will only be available upon request with KUL (see also questions above).

**Where will the data be made available? If already known, please provide a repository per dataset or data type.**

The project's data and publications will be made findable through MarineInfo, which is an extensive online metadata catalogue made and maintained by VLIZ. The catalogue connects datasets, publications, institutes, projects and persons together through the addition of well-described metadata and clear references to the storage locations of the (data)files. Model results will be available at the end of the project in the final report.

To maximize the availability of data, the extent to which the data from this project can flow through to EMODNet Data Ingestion and the EMODNet Chemistry portal will also be examined. Another research output of the PLASTFLOW project is a story map to visualize and share goals, methodologies and results of the project for/with the broader public. Links to publications and datasets will also be included in the story map.

**When will the data be made available?**

Data will be made available as soon as possible, and at the end of the project at the latest. This will be done in relation to the publication of other deliverables such as models, scripts, reports and articles, so a short moratorium period is possible.

**Which data usage licenses are you going to provide? If none, please explain why.**

The use of the MarineInfo metadata catalogue typically applies the CC BY license to any data for which metadata records are being created. This will be considered the standard for this project as well. In cases where another license is merited, this will be discussed between the partners and the VLIZ Marine Data Centre.

**Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.**

Yes: a DOI. See **D2.3**.

**What are the expected costs for data sharing? How will these costs be covered?**

There are no costs for the project in using the MarineInfo and MDA data systems. VLIZ provides this platform freely to projects in the marine realm as a service. Similarly, any costs related to the use of the cloud environment of VITO are covered by VITO itself.

Any actions needed from the data managers of VLIZ to ensure the agreements made in this DMP, are covered within the project's budget.

## 6. RESPONSIBILITIES

### **Who will manage data documentation and metadata during the research project?**

Although these activities are the responsibility of all project partners collecting and/or working with the data, the VLIZ Marine Data Centre will provide thorough support through a helpdesk, manuals and tools.

### **Who will manage data storage and backup during the research project?**

Although these activities are the responsibility of all project partners collecting and/or working with the data, the VLIZ Marine Data Centre will provide thorough support through a helpdesk, manuals and tools during storage. Backup of the VLIZ data systems is the responsibility of the VLIZ IT department. VITO will be responsible for the storage and backup of the raw drone images. KU Leuven and IMDC will be responsible for the backup of their models.

### **Who will manage data preservation and sharing?**

Data preservation within the used storage systems is the responsibility of VLIZ and VITO, respectively. Data sharing will be managed by the VLIZ Marine Data Centre, in some cases after approval by the project partners.

### **Who will update and implement this DMP?**

The VLIZ Marine Data Centre (VMDC) will be responsible for updating the DMP. Implementing the DMP is a shared responsibility of all project partners with support of the VMDC.

## GDPR

### **Have you registered personal data processing activities for this project?**

- Not applicable

## DPIA

### **Have you performed a DPIA for the personal data processing activities for this project?**

- Not applicable