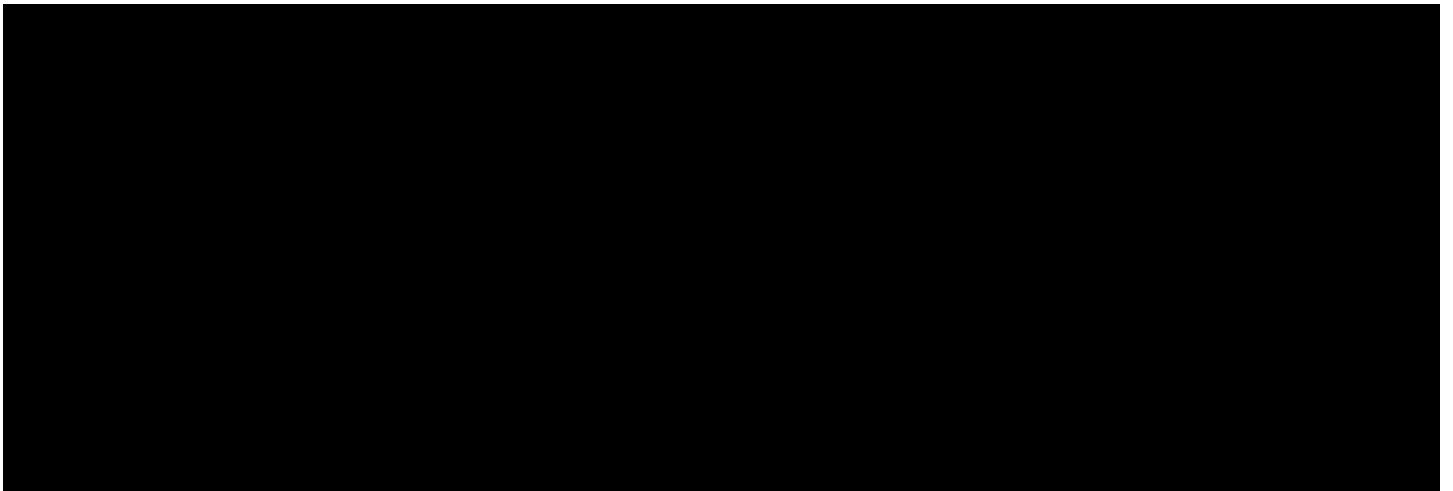


# Requirements for providing survey data to The Crown Estate via the Marine Data Exchange



## Requirements Version 2.0, November 2021

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## Document Control

Version	Date	Author	Reviewed by	Description of change
1.0	July 2012	Pete Edmonds	Round 3 Data Workshop	Requirements up until 2021 when Version 2 was released.
2.0	October 2021	John Mitchell	Chelsea Bradbury	Updated requirements to relay changes to the delivery process as a result of the new-look MDE that was launched in June 2021.
2.1	June 2022	John Mitchell	Chelsea Bradbury	Updated SSL delivery process, and defined key terms.

## 1. Executive Summary

- The Marine Data Exchange (MDE) is the system used to store, manage and disseminate offshore survey data provided to The Crown Estate.
- A set of consistent standards and requirements ensure that this system is maintained to a high level with enhanced discoverability of data.
- The data provided must be sensibly structured into a hierarchy of “Series” and associated packages of deliverables.
- A series can be defined as a group of datasets and reports collected in relation to a survey or data collection campaign, linked by a common research question. A series must be described by a metadata record and must contain all reports and datasets related to that survey or campaign, including report appendices and GIS shapefiles where applicable.
- A package is defined as a ‘pillar’ of clearly related data, reports and associated information related to a *single* parameter, instrument or method.
- The Crown Estate requires MEDIN Discovery Standard metadata to be delivered for all Series.
- Metadata is used to return search results. Therefore, to improve discoverability, The Crown Estate require all mandatory elements to be completed, with emphasis upon an accurate title, abstract, temporal and spatial extent, and relevant keywords from the following controlled vocabularies: MEDIN Parameter Discovery Vocabulary, TCE Development Phases.
- Where data are spatially referenced, their coordinate reference system should be fully defined, and where transformation parameters do not exist (e.g. a bespoke engineering grid), transformation parameters between the coordinate reference system and WGS 1984 (EPSG code: 4326) should be provided.
- Where appropriate, The Crown Estate will use the MEDIN data guidelines as a pro forma for quality control of data received. This means that, as a minimum, The Crown Estate expects that data provided contain all of the mandatory details identified by the appropriate MEDIN data guideline.

## 2. Introduction

When an offshore Agreement<sup>1</sup> is entered into with The Crown Estate, an obligation to provide survey data collected in respect of the Agreement is included in the data clause. This document should be taken as a generic set of requirements, with the Agreements being referred to for specific definitions of the obligation.

This document focusses on survey data. All survey data are provided to The Crown Estate via the Marine Data Exchange (MDE). The more complex nature of survey data means that it is necessary for The Crown Estate to provide a specialised system which incorporates a comprehensive quality assurance mechanism, ensuring maximum value is derived from survey data for both The Crown Estate and marine users alike.

To standardise data management and quality, The Crown Estate has adopted the MEDIN<sup>2</sup> discovery metadata standard, and also uses the MEDIN Data Guidelines to quality assure data. MEDIN is a partnership of over 30 UK organisations committed to improving access to marine data and the MEDIN data model is accepted as best practice across government Data Archive Centres.

All data is provided and handled according to The Crown Estate's Marine Data Policy (Appendix 1). This Policy advises how we work with our customers with regards to the data clause. The Policy also outlines the principles by which we take account of commercial sensitivity and generally seek to make data available to the public.

## 3. Scope

The scope of this document is to provide requirements for providing survey data in accordance with Agreements including defining:

- a. High level data structure
- b. High level data definition: Series and Packages
- c. Metadata requirements
- d. Minimum acceptable standards for survey data
- e. The process for providing survey data

Outside of this scope are requirements relating to non-survey data e.g. specific GIS/CAD data requirements for turbine layout plans and cable route options, commercial contracts, health and safety information, etc.

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<sup>1</sup> "Agreement" includes an Exclusivity Agreement, Agreement for Lease or Lease held with The Crown Estate, or a temporary consent to perform intrusive seabed works, such as a Seabed Survey Licence.

<sup>2</sup> <https://www.medin.org.uk/>

This document is provided for information purposes only and in no way replaces, varies or supplements the terms of any Agreement. It should be used to supplement the data clause.

### 3.1 Sectors and Activities

For the avoidance of doubt, this document provides general guidance for the following sectors and activities, where there is an obligation to provide survey data to The Crown Estate as per the Agreement:

- Marine Renewables
- Marine Aggregates
- Telecommunication Cables
- Electricity Interconnectors
- Seabed Survey Licences (SSL)

## 4. Supporting Appendices

This document is supplemented by a number of Guidance Notes – included here as Appendices:

Appendix No.	Subject	Scope
<b>Appendix 1</b>	The Crown Estates Marine Data Policy	1. An introduction to the data clause, how the MDE works and data confidentiality
<b>Appendix 2</b>	Series anticipated from an offshore development, aggregate site or SSL.	1. Provide a high level breakdown of anticipated Series to be provided to the Marine Data Exchange for an offshore development, aggregate site or SSL.
<b>Appendix 3</b>	Detailed Data Structure Examples	1. This provides some guidance and a template to structuring a variety of survey types, including more complex surveys such as geophysical surveys that have numerous outputs and deliverables.
<b>Appendix 4</b>	QC Protocol	1. The Crown Estate’s check list for performing quality control on received data. 2. The minimum acceptance criteria related to data

## 5. Requirements

### 5.1 Themes

The Agreement should be referred to for more detail and specific definitions of “data” where applicable. However, relevant survey data, expected to be delivered to The Crown Estate, can generally be defined by the following themes:

- Environmental and ecological
- Physical environment
- Human environment
- Engineering & technical

These themes refer to primary observations, investigations, modelling, monitoring, and associated reports. For the purpose of these Requirements, all survey data refers to data collected offshore, in the intertidal area and/or for the purpose of informing offshore decisions (i.e. vantage point bird surveys carried out onshore and onshore meteorological masts); onshore data is not included in requirements for data delivery to The Crown Estate. For a detailed breakdown of anticipated survey data to be provided to the MDE – please see Appendix 2.

### 5.2 Data Delivery Period

Survey data (as outlined in this document) are required to be delivered during the entire duration of an Agreement. For an infrastructure or minerals project this includes: feasibility, consenting, pre, during and post-construction/dredge monitoring, and decommissioning phases, where applicable<sup>3</sup>.

### 5.3 Data Structure

The data should be sensibly structured, with a high level package structure which is clearly labelled. Examples of data structure for different survey themes can be found in Appendix 3.

Although the majority of data shall be provided online, The Crown Estate may sometimes approve a data delivery offline on physical media. Any delivery to The Crown Estate, whether online or offline, must always follow a sensible structure.

#### 5.3.1 Series

A series can be defined as a collection of datasets and reports related to a survey or data collection campaign, linked by a common research question. A series can be viewed as a folder holding related datasets and reports together and must be described by a

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<sup>3</sup> It is important to refer to the relevant Agreement, as Agreements may differ on this point depending on sector and/or activity.

MEDIN discovery metadata record. It is important that the series contains all final reports, report appendices, datasets and other deliverables, such as GIS shapefiles, where relevant.

The data clause does not extend to requiring every version of a dataset and/or report and each dataset and/or report should be assessed to confirm the final versions of reports, before being provided. As a guide, a series provided to The Crown Estate will contain:

- Metadata for the series to an agreed standard;
- A base data product (cleaned and QA'd version of the raw data, pre-analysis);
- Raw data where appropriate;
- A final version of the analysed/modelled data (e.g. 10m resolution digital elevation model);
- QC and calibration reports;
- Supporting data (e.g. survey equipment, logs, GIS shapefiles); and
- Final report(s).

Example Series Title: 2020, Originator, Example Offshore Wind Farm, Pre-Construction Ornithological Survey

### 5.3.2 Package

Packages are folders of datasets or reports. They contain the individual components that make up a series, such as the operations report, raw data or GIS files. Each individual package should only contain one theme of data or reports. Ideally, packages should have a logical, clearly labelled file structure, avoiding the use of company codes or abbreviations.

To facilitate greater discovery, a package should achieve the right level of granularity. Special attention should be given to ensure that all datasets, reports and associated information are provided, especially for surveys where numerous equipment types are used and data outputs generated, such as geophysical surveys (please see Appendix 3 for an example).

### 5.4 Metadata

The Crown Estate’s requirements for metadata are:

Level	Standard	Where can this be created?
Series	MEDIN Discovery Standard	Using the <a href="#">MEDIN Online Tool</a> or the Metadata Maestro desktop tool. See here.



Metadata standards provide a definition of a set of minimum elements that must be populated to create a conformant metadata record. Not only do standards improve the ability to discover, understand and evaluate datasets, they also ensure that the originator understands the data that has been created by ensuring that certain elements are considered (e.g. spatial reference system of the dataset).

The Crown Estate requires all mandatory fields (which are clearly marked) within the metadata to be complete accurately, ensuring that the title follows the MEDIN recommended format (date, originator, location, survey type), the spatial and temporal information is correct, abstracts are informative and relevant keywords from the following controlled vocabularies: MEDIN Parameter Discovery Vocabulary, TCE Development Phases.

MEDIN Metadata can be generated using the MEDIN Online Tool or Metadata Maestro, which provides an offline option. Both tools can be accessed [here](#).

For more information see please view the [MEDIN Discovery Metadata Standard](#). For help with MEDIN metadata, please contact the MEDIN Metadata Helpdesk.

## 5.5 Standards for Data

### 5.5.1 Coordinate Reference Systems

Where data are spatially referenced, their coordinate reference system should be fully defined, and where transformation parameters do not exist (e.g. a bespoke engineering grid), transformation parameters between the coordinate reference system and WGS 1984 ([EPSG code](#): 4326) should be provided.

### 5.5.2 MEDIN Data Guidelines

Where appropriate, The Crown Estate will use the [MEDIN data guidelines](#) as a pro forma for quality control of data received. The data guidelines set out the requirements for information that must be recorded when a certain type of data is being collected (e.g. cetacean sighting and identification data) to ensure that the data can be understood, interpreted and used with confidence now and in the future. These guidelines instil good practice, aid organisations in specifying formats that data should be returned in and ensure that all relevant attributes are included to ensure that the data collected is of maximum value.

Although The Crown Estate does not require data to be delivered in the MEDIN data Guideline Excel template, all mandatory elements (as defined within the Guidelines) must be available within the datasets and reports that make up a complete series.

For help and advice in using these guidelines, please contact MEDIN.

## 6. Process of providing data

### 6.1 Offshore Agreements

The process for providing data to The Crown Estate is outlined in *Figure*

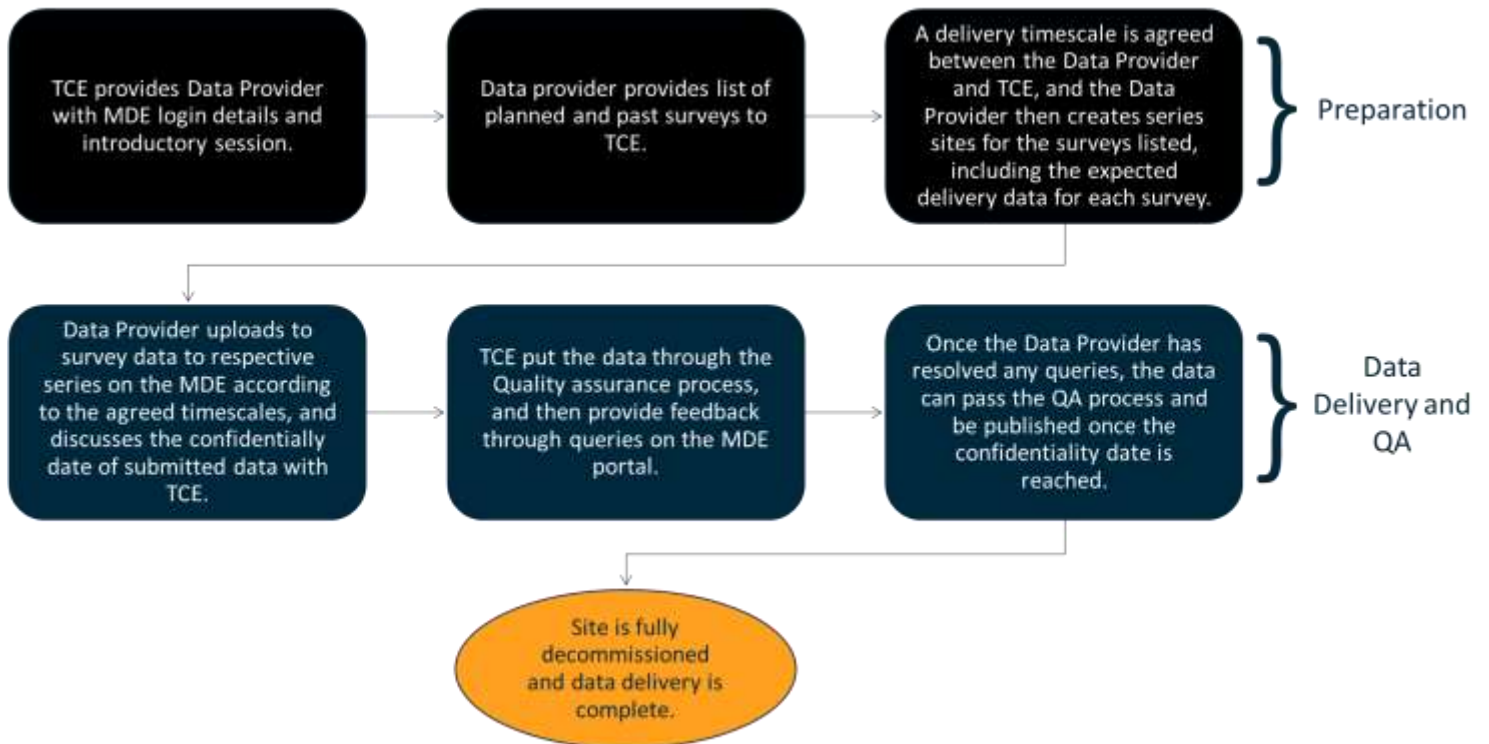


Figure 1 - Process for providing data to The Crown Estate

### 6.2 Data provision for SSL Customers

Unlike many of The Crown Estate’s marine customers, SSL customers often carry out a single survey campaign. Data collected in these campaigns may be ‘of interest’ to The Crown Estate, as we believe it can contribute to our knowledge of the marine environment and/or inform marine spatial planning, and as such should be made publicly available. If data is considered to be ‘of interest’ but will be publicly available within a reasonable timeframe (1 year) then we will review whether or not it is necessary to request the data. We retain the right to request data from other licensees at a later date.

The data provision process for SSL customers varies slightly from the process outlined in section 6.0.

The process for providing data to The Crown Estate is as follows:

1. When filling out an SSL application form, the SSL customer will outline the data deliverables anticipated to arise from the survey
2. Where 'of interest' data has been identified, The Crown Estate will contact the licensee on the confirmation of an SSL, and confirm the date when these deliverables are expected to be available (with a reasonable delivery period considered to be within 6 months from the end of surveying), and the method of data submission
3. Once the agreed delivery date is reached, The Crown Estate will initiate the data delivery process.
4. A confidentiality review date for the data is agreed between The Crown Estate and the SSL customer in line with the 'reasonable timeframe' outlined in section 6.3

Data is transferred to The Crown Estate via FTP, a hard drive or through the MDE website. We request that you MEDIN Discovery Standard series metadata (See Section 5.4 for more details) is provided. The Crown Estate will provide support as deemed necessary to enable a timely and efficient data delivery process.

Once data has been delivered to The Crown Estate, the process for Quality Assurance (QA) and Publication is as follows:

1. All delivered survey data is reviewed against the QA process outlined in section 5.5.2 and any necessary feedback is provided to the SSL customer
2. Any QA issues are resolved by the SSL customer and the item is closed
3. Upon the agreed confidentiality review date, The Crown Estate will issue an intent to publish email to the SSL customer; providing an opportunity for any changes in situation to be flagged and a reasonable extension to the confidentiality to be considered
4. If there are no changes, or the SSL customer does not respond within 15 working days, The Crown Estate will publish the data on the MDE

### 6.3 Publishing Data and Confidentiality Review Dates

Our purpose is to create lasting and shared prosperity for the nation. We are uniquely placed to look at the bigger across a breadth of sectors and know that data and evidence can help to unlock opportunities for the sustainable development of the seabed. We do this by facilitating better information sharing and promoting collaboration to optimise the use of data to achieve efficiencies and to re-risk investment offshore.

It is our intention to ultimately publish all survey data held on the MDE where possible and within a "reasonable timeframe", which is defined as within a year of data

submission, unless the data is considered a risk to the project or the project is in its pre-consent/pre-FID stage (see Appendix 1). Therefore, a secure and traceable process for managing confidentiality of data has been implemented for data held on the MDE. Annual reviews of the status of data are undertaken in consultation with the data providers and details of the decision to make data public or not are recorded.

The process is as follows:

1. Upon the delivery of survey data, a 'confidentiality review date' for each Series that is uploaded to the MDE is set.
2. Once this review date arrives, a notification is sent to the MDE administrators
3. A discussion between the data provider and The Crown Estate is triggered surrounding the status of the Series.
4. The decision of whether to publish the data or not is logged in the MDE and if necessary, a new date for review is set.

Within a series, different confidentiality statuses can be applied. This ensures that a sensitive dataset or report can be held in confidence whilst the rest of the series is made publically available.

The confidentiality status of each Series can be seen quickly and easily in the MDE, along with the date that any data were made publically available.

For more information about how we manage confidentiality, please refer to the Marine Data Policy (Appendix 1).

# Appendices

## Appendix 1 – The Crown Estate’s Marine Data Policy

November 2021

### Introduction

We have a clause relating to survey data in almost all of our offshore Agreements. The wording of data clauses varies between agreements and individual agreements should be referred to for the precise obligation in each case. Where uncertainty exists, the developer should contact The Crown Estate to confirm the requirements. The current standard clause requires all survey data (environmental, physical and social) to be provided to The Crown Estate with during the entirety of the Agreement, including feasibility, consenting, pre, during and post-construction/dredge monitoring, and decommissioning phases, where applicable. The clause also gives us the right to make the data publically available, subject to consideration being given to the commercial sensitivity. For example, wind resource data is explicitly included in the definition of “data” in offshore wind farm agreements, but is specifically protected from being made publically available for a period of two years from its date of collection.

This Policy outlines the principles by which we take account of commercial sensitivity and generally seek to make data available to the public.

### The Marine Data Exchange

We have a dedicated team working with our offshore customers to:

1. Understand what survey data is being collected
2. Put in place efficient processes for the timely provision of survey data to The Crown Estate
3. Ensure that obligations under the data clause are being discharged
4. Quality assure data deliverables against the requirements specified in the document ‘Requirements for providing survey data to The Crown Estate via the Marine Data Exchange’
5. Discuss data confidentiality with data providers and ensure that data is published in a reasonable timeframe, as set out in this Data Policy
6. Promote value added use of the data and enhance discoverability of publically available data

All data is stored within a dedicated data management system called the Marine Data Exchange.

## Managing confidentiality

The Crown Estate is subject to both the Freedom of Information Act and the Environmental Information Regulations, and will respond to requests for data in accordance with the provisions within these legislative instruments and communicate with the owners of data when we receive such requests to both make them aware of the request and our decision with regards to the release of data.

We understand that confidentiality is a key concern surrounding data that has been collected at significant cost. However, all data has a confidentiality shelf life and once it has served its original purpose there are many benefits that can be realised by making it publically available. The Marine Data Exchange has a “confidentiality review” system built into it. Whenever data is uploaded to it, the user adding the data is required to set a reasonable date which will trigger a review of its confidentiality. Once that date comes around we will assess the confidentiality of the data and discuss this with the Agreement holder.

## Key Milestones

### Environmental survey data

Despite the contractual position with regard to confidentiality, in general we will not release data relating to a particular project until consent is awarded and the period for judicial review has passed. This is because we recognise the possible risk that an application might be adversely affected if data relating to it were to be made publically available before all of the relevant issues identified have been considered and addressed in the application and determination process.

Once a firm consent decision has been determined the data is effectively in the public domain, so generally will be released thereafter. However, we will exercise discretion and, if asked, will consider an alternative time to release specific datasets in consultation with agreement holders – subject to our rights under the relevant agreements.

### Physical survey data including geophysical and geotechnical data

We will hold survey data relating to geophysical, geotechnical, metocean and meteorological data, confidentially until a Financial Investment Decision (FID), subject to a biannual review from the date of consent, where the time period between consent and FID is extended. If released before FID, this data might prejudice a project’s activity in securing a competitive Financial Investment Decision.

### Resource data

We recognise that resource data can be commercially valuable. For this reason, the data clause explicitly references this type of data and it varies from sector to sector.

For fixed offshore wind farm projects, we will hold wind resource data confidentially until FID and thereafter for two years from the date of collection.

For wave and tidal stream sites, we will hold current and wave data confidentially until FID and thereafter for three years from the date of collection.

For floating offshore wind farm projects, we will hold wind resource and wave resource data confidentially until FID and thereafter for two years from the date of collection.

### Proximity to other projects

Where there is another Agreement in close proximity which may be impacted by the publication of survey data nearby, we will notify the nearby Agreement holder of the intention to publish data following conversations with the data provider whose data is to be made publically available and before any decision to publish is finalised.

In the event of a Round 3 project, where individual projects are the outcome of a zone development area, we will consider all projects together and so the Key Milestones will trigger a confidentiality review point once all projects within the original zone have reached the Key Milestone. This will be reviewed annually and on a case by case basis.

### Termination of Agreement

In the event that the Agreement is terminated we endeavour to release the data into the public domain.

### Sale of data

We will not sell any data provided to us.

We do not consider market value of data to be a reason in itself to maintain confidentiality.

### Questions

If you have any questions regarding this Policy, please mail [mde@thecrownestate.co.uk](mailto:mde@thecrownestate.co.uk)



## Appendix 2 – Series anticipated from an offshore development

The table below demonstrates the survey types that could be anticipated from an offshore project or survey campaign. For larger developments, many surveys will be repeated to monitor changes to the development site (e.g. geophysical surveys) and to comply with licence conditions (e.g. ornithological surveys).

Survey type	Survey Name	Content
Physical	<b>Geophysical surveys of the site and cable routes</b>	<ul style="list-style-type: none"> <li>• (Single) multi-beam echo soundings or swathe bathymetry, side scan sonar, magnetometer, sub bottom profiler (sparker, boomer, etc.),</li> <li>• Also include UXO related geophysical interpretation of sonar and magnetometer charts together with detailed interrogation of the digital raw data</li> <li>• Please see the geophysical survey example in Appendix 3</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">Bathymetry</a> , <a href="#">Side scan sonar</a> , <a href="#">Magnetometer</a> , <a href="#">Sub bottom profiler</a> .</li> </ul>
	<b>Meteorological data</b>	<ul style="list-style-type: none"> <li>• Meteorological and oceanographic conditions at the site; sensors and auxiliary systems measuring wind speed, wind direction, temperature, pressure, humidity, solar radiation and visibility</li> <li>• Follow this link to download the MEDIN data guidelines for <a href="#">Fixed position Meteorological Measuring Instruments</a>.</li> </ul>
	<b>Geotechnical survey</b>	<ul style="list-style-type: none"> <li>• Test procedures, Qualification testing, Equipment verification, Daily operation reports and field logs, Borehole records, Core photographs, Vibra-core, Cone, DGPS and gyrocompass calibrations, Lab report, Cross section diagrams, Raw and derived PCPT test results, standard , Penetration tests, PSA.</li> <li>• The Crown Estate strongly recommends contacting the British Geological Survey about possibly depositing borehole samples. This would be discussed on a case by case basis based upon location, terminal depth and proximity to other samples.</li> <li>• Follow these links to download the MEDIN data guidelines for <a href="#">geotechnical site investigation data</a> , <a href="#">core data</a> , <a href="#">sampling sediment and rock characteristics</a> .</li> </ul>
	<b>Metocean surveys</b>	<ul style="list-style-type: none"> <li>• Data on wave, tide, current and suspended sediment concentrations</li> <li>• Follow these links to download the MEDIN data guidelines for <a href="#">moored oceanographic instruments</a> , <a href="#">underway oceanographic sampling</a> , <a href="#">oceanographic vertical profile data</a> , <a href="#">ADCP data</a> , <a href="#">tidal elevation data</a> .</li> </ul>

	<b>Coastal processes</b>	<ul style="list-style-type: none"> <li>• Interpretation of hydrodynamic, sediment and morphodynamic regime</li> </ul>
	<b>Seabed morphology and scour survey</b>	<ul style="list-style-type: none"> <li>• Two (one winter and one summer) high resolution swath-bathymetric surveys per annum of the wind farm intra-array and export cable route – pre-construction baseline, then twice a year</li> <li>• Immediately after construction is complete, 100% coverage swath bathymetric survey around a sample of adjacent turbines. Repeated at six monthly intervals for a period of three years (revision report every 1.5 years).</li> <li>• Follow this link to download MEDIN Data Guidelines: <a href="#">Bathymetry</a></li> </ul>
	<b>Radiological assessment of disturbed sediment</b>	<ul style="list-style-type: none"> <li>• A desk-based assessment to determine the risk to human health from the sediment that could be disturbed during the wind farm construction</li> </ul>
	<b>Sedimentology</b>	<ul style="list-style-type: none"> <li>• Monitoring of suspended sediment concentrations within the area of jetting and at a control point outside the area.</li> <li>• Follow this link to download MEDIN Data Guidelines: <a href="#">oceanographic vertical profile data</a></li> </ul>
<b>Environmental</b>	<b>Intertidal habitat appraisal</b>	<ul style="list-style-type: none"> <li>• Wildlife surveys to consider potential ecological impact</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">for archiving of digital images</a> , <a href="#">video surveys of species and benthos</a></li> </ul>
	<b>Sediment and benthic sampling surveys</b>	<ul style="list-style-type: none"> <li>• Baseline control sites (then on-going monitoring)</li> <li>• Beam trawl sampling for epifaunal species</li> <li>• Video observations of colonisation of the monopoles and scour protection</li> <li>• Further e.g. grab sampling, retention of benthic fauna, sampling of the sediment particle size analysis, sampling of the sediment for contaminants, drop-down camera sampling</li> <li>• Ongoing monitoring – a minimum of three replicates at each station</li> <li>• Survey of the intertidal habitats where trenching is used to install the export cables in the intertidal zone</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">data collected by grab</a> , <a href="#">for archiving of digital images</a> , <a href="#">species and benthos data by trawl and dredge</a> , <a href="#">video surveys of species and benthos</a> , <a href="#">shellfish stock assessment data</a> .</li> </ul>
	<b>Marine mammals survey</b>	<ul style="list-style-type: none"> <li>• Aerial, boat-based visual surveys, mammal tagging and PAM assessment of the potential impacts of the wind farm to mammal populations</li> </ul>



	<ul style="list-style-type: none"> <li>• Mitigation of marine mammals during installation of foundations</li> <li>• Additional monitoring throughout the life cycle of the project or as deemed necessary</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">ad-hoc sightings</a> , <a href="#">photo identification of cetaceans</a> , <a href="#">for archiving of digital images</a></li> </ul>
<b>Ornithological surveys</b>	<ul style="list-style-type: none"> <li>• Aerial, boat-based visual surveys, radio tagging surveys</li> <li>• Comparison between development phases i.e. pre-construction to post-construction</li> <li>• Please see Section 5.3 Figure 2 in the main document for guidance on structuring ornithological series.</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">ad-hoc sightings</a> , <a href="#">for archiving of digital images</a></li> </ul>
<b>Seabird survey for locally identified species</b>	<ul style="list-style-type: none"> <li>• Terrestrial, inshore boat, and offshore boat surveys; reanalysis of bird population data to apply in modelling to calculate mortality rates in relation to wind farms; feeding ecology, desk reviews</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">ad-hoc sightings</a> , <a href="#">for archiving of digital images</a></li> </ul>
<b>Marine ecology</b>	<ul style="list-style-type: none"> <li>• Investigation of benthic grab samples, epifaunal beam trawling and drop-down video sampling surveys to provide data and analysis informing on the marine ecology</li> <li>• Pelagic survey</li> <li>• Information on the macro benthic properties</li> <li>• Follow these links to download MEDIN Data Guidelines: <a href="#">data collected by grab</a> , <a href="#">for archiving of digital images</a> , <a href="#">species and benthos data by trawl and dredge</a> , <a href="#">video surveys of species and benthos</a> , <a href="#">: ad-hoc sightings</a> , <a href="#">photo identification of cetaceans</a> , <a href="#">net, trap or pot data</a> .</li> </ul>
<b>Electromagnetic field</b>	<ul style="list-style-type: none"> <li>• Desk-based study</li> <li>• Follow this link to download MEDIN Data Guidelines: <a href="#">species and benthos data by trawl and dredge</a></li> </ul>
<b>Environmental Statement</b>	<ul style="list-style-type: none"> <li>• Full Environmental Statement including appendices</li> </ul>
<b>Marine fish survey</b>	<ul style="list-style-type: none"> <li>• A survey determining the general marine fish status (numbers, distribution) of the local fish populations which will be used for comparison with the post construction surveys (adult and juvenile fish surveys); fish and shellfish resourced</li> <li>• Raw, processed and interpreted data as well as report.</li> </ul>



		<ul style="list-style-type: none"> <li>Follow these links to download MEDIN Data Guidelines <a href="#">species and benthos data by trawl and dredge</a> , <a href="#">video surveys of species and benthos</a> , <a href="#">net, trap or pot data</a> , <a href="#">shellfish stock assessment data</a>.</li> </ul>
<b>Human</b>	<b>Archaeological assessment</b>	<ul style="list-style-type: none"> <li>Investigation of geophysical, geotechnical and diver/ROV data to identify archaeological sites and exclusion construction zones.</li> <li>Subsequent monitoring: results of watching briefs, a 3 year reporting cycle to monitor effectiveness of seabed construction exclusion zones</li> <li>Follow this link to download MEDIN Data Guidelines: <a href="#">for archiving of digital images</a></li> </ul>
	<b>Underwater noise study</b>	<ul style="list-style-type: none"> <li>Modelling assessment of underwater noise during piling operations</li> <li>Follow this link to download MEDIN Data Guidelines: <a href="#">underwater noise data</a></li> </ul>
	<b>Seascape and visual technical study</b>	<ul style="list-style-type: none"> <li>Magnitude and significance of change to the character of the regional seascape, landscape and general views</li> </ul>
	<b>Shipping and navigation risk assessment</b>	<ul style="list-style-type: none"> <li>An assessment of the potential impact of the proposed development on the routing and safe navigation of vessels. Baseline information relating to ports, navigational aids, sailing directions, wrecks, oil and gas infrastructure, exercise areas and met ocean data.</li> <li>Follow these links to download MEDIN Data Guidelines: <a href="#">marine recreation data</a> , <a href="#">Automatic Identification System Data</a></li> </ul>
	<b>Maritime traffic survey</b>	<ul style="list-style-type: none"> <li>Radar, Automatic Identification System (AIS) and visual observations.</li> <li>Follow this link to download MEDIN Data Guidelines: <a href="#">Automatic Identification System Data</a></li> </ul>
	<b>Human activities</b>	<ul style="list-style-type: none"> <li>Any surveys should be related to benthic surveys:</li> <li>The distribution, intensity of recreational activities</li> <li>The distribution, intensity and type of commercial and recreational fishing activity</li> <li>Follow this link to download MEDIN Data Guidelines: <a href="#">marine recreation data</a></li> </ul>
	<b>Socio-economic study</b>	<ul style="list-style-type: none"> <li>Assesses the impacts of a wind farm or coastal infrastructure, e.g. a port, such as changes in employment, transportation or recreation, or changes in the aesthetic value of a landscape.</li> </ul>
	<b>Noise and vibration from the turbines</b>	<ul style="list-style-type: none"> <li>Measurements at various frequencies at locations immediately adjacent to and between turbines</li> <li>Follow this link to download MEDIN Data Guidelines: <a href="#">underwater noise data</a></li> </ul>
	<b>Decommissioning programme</b>	<ul style="list-style-type: none"> <li>Proposed decommissioning measures</li> </ul>

## Appendix 3 – Detailed Data Structure Examples

This section is intended to provide guidance when structuring and uploading surveys to the MDE. Below are example series structures for each survey theme. These structures are suggestions and are not mandatory. They are designed to cover everything that *could* be collected for each survey theme and as such are not the expected deliverables for each series.

### Example Series Structures

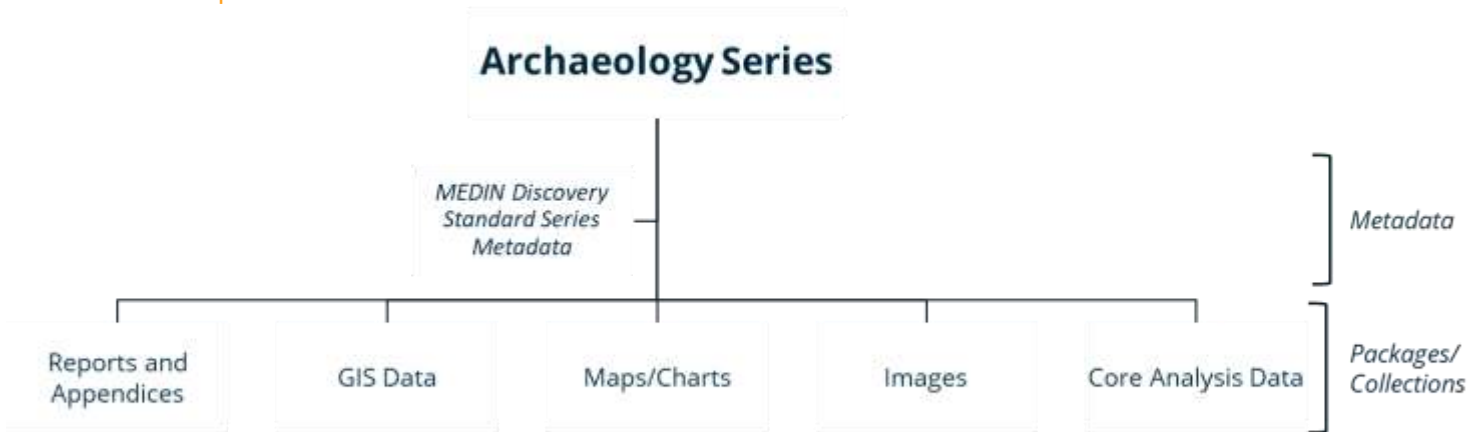


Figure 1. Example archaeology series structure

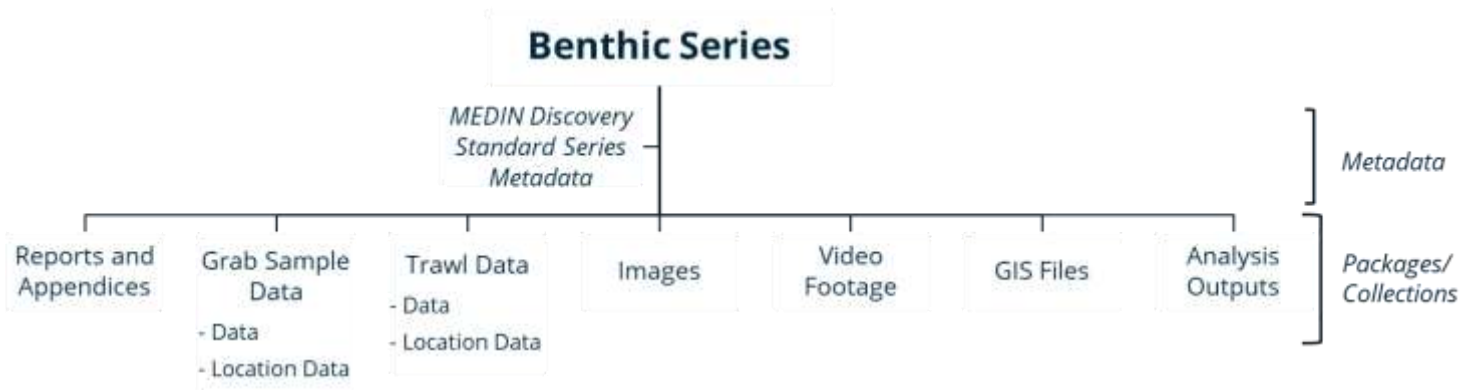
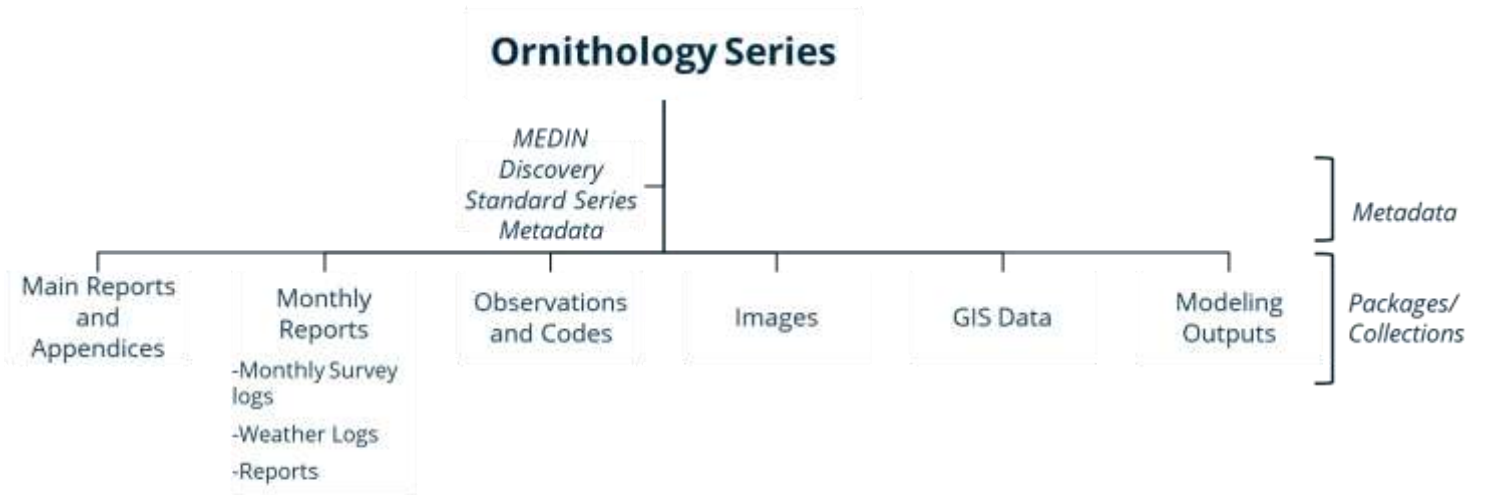
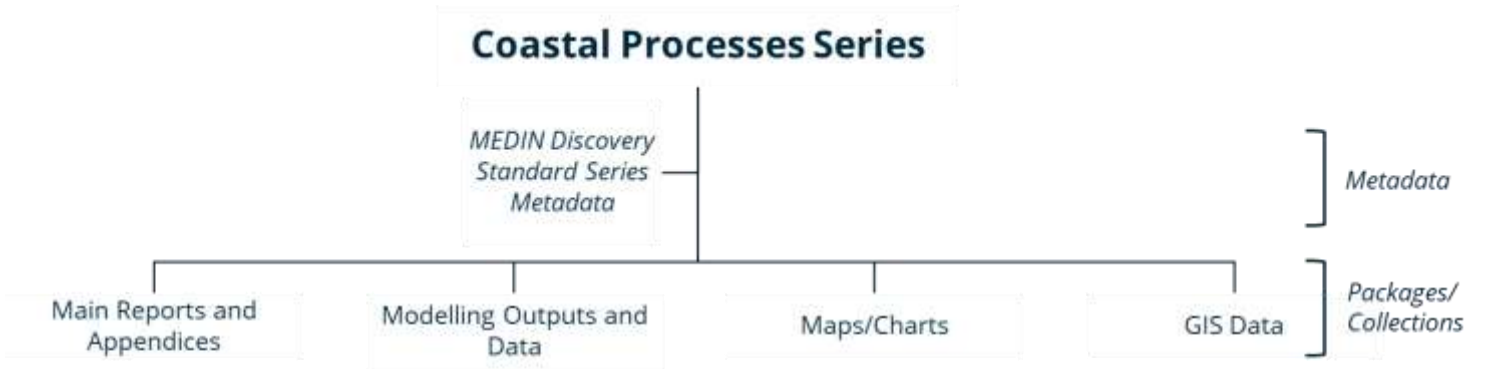


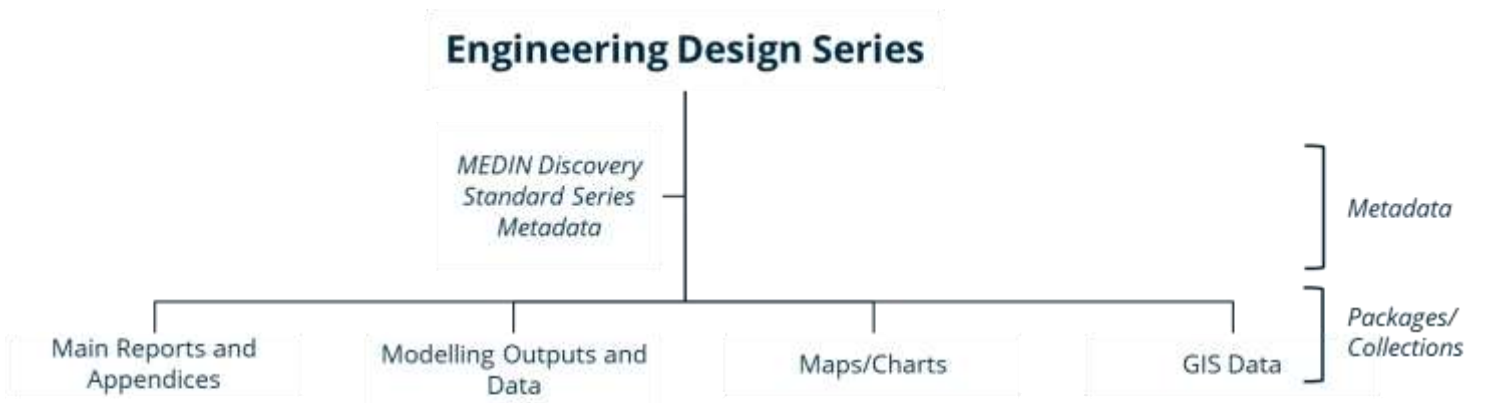
Figure 2. Example Benthic series structure



*Figure 3. Example Ornithology series structure*



*Figure 4. Example Coastal Processes series structure*



*Figure 5. Example Engineering Design series structure*



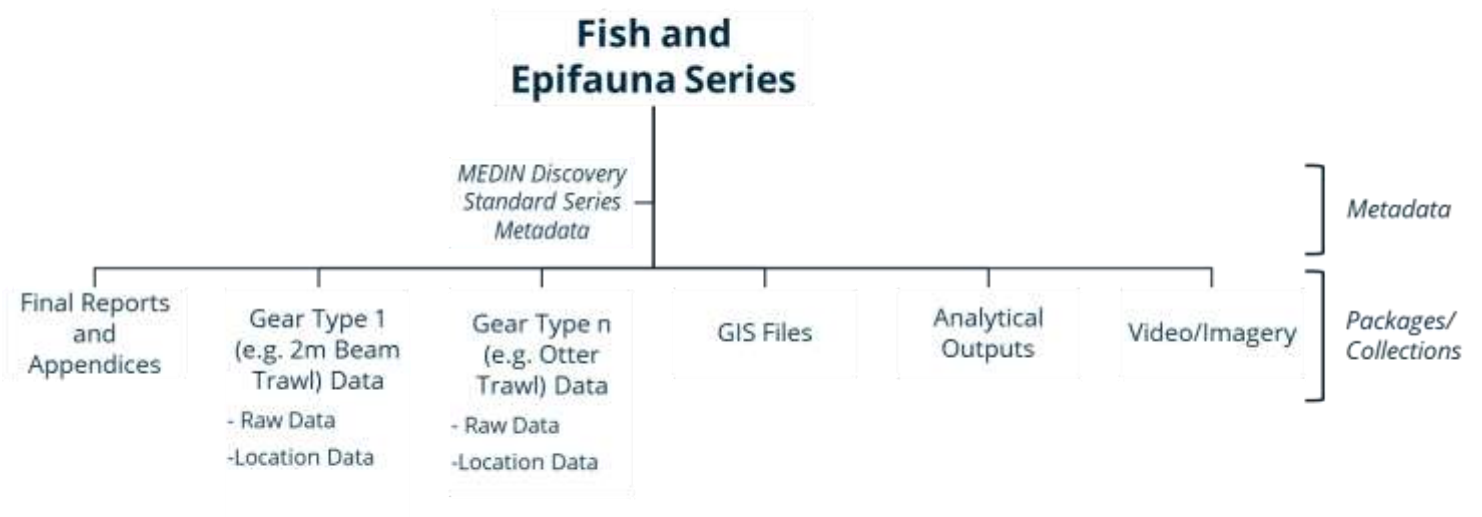


Figure 6. Example Fish and Epifauna series structure

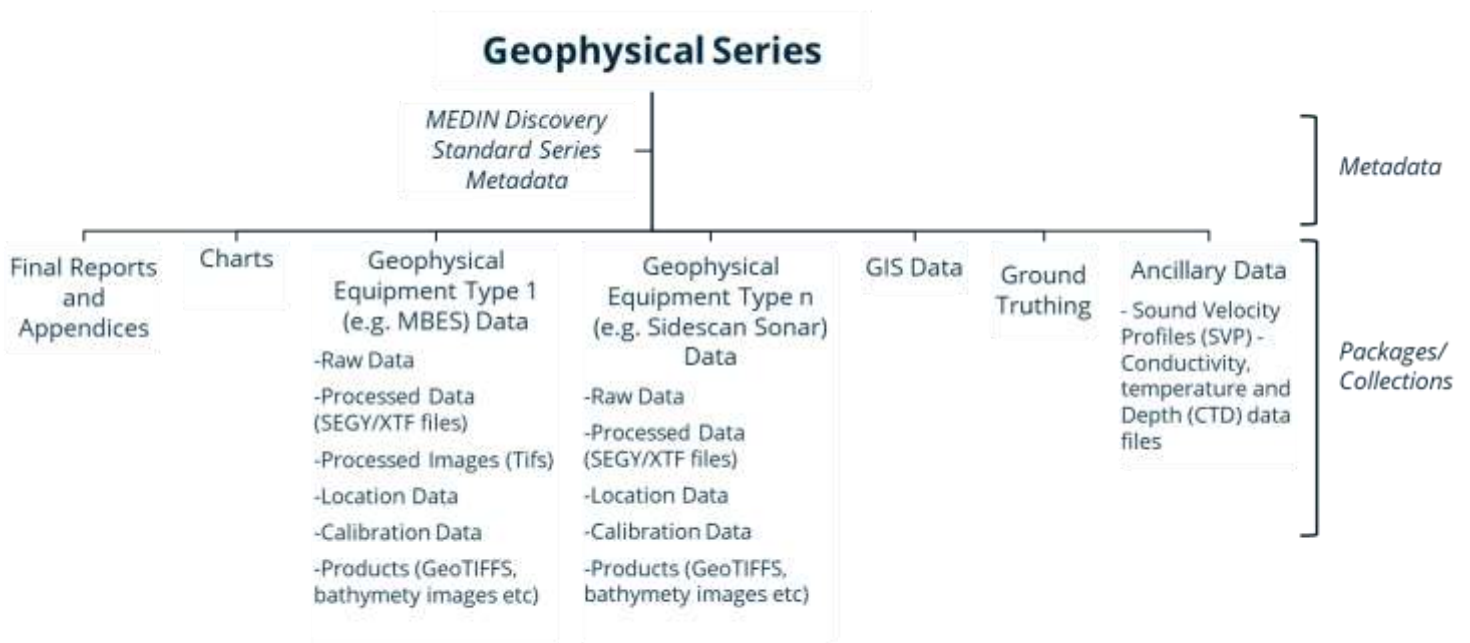


Figure 7. Example Geophysical series structure

### Geotechnical Series

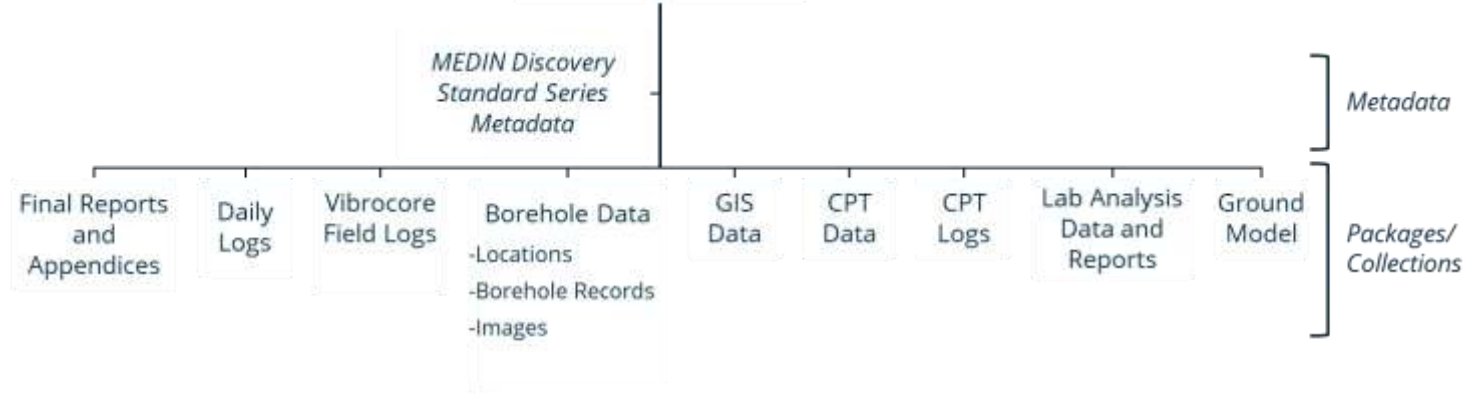


Figure 8. Example Geotechnical series structure

### Intertidal Series

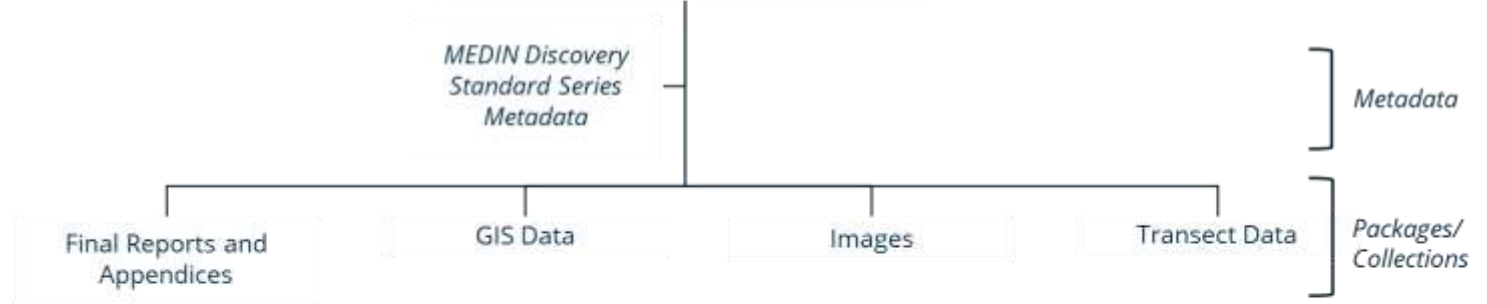


Figure 9. Example Intertidal series structure

### Marine Mammals Series

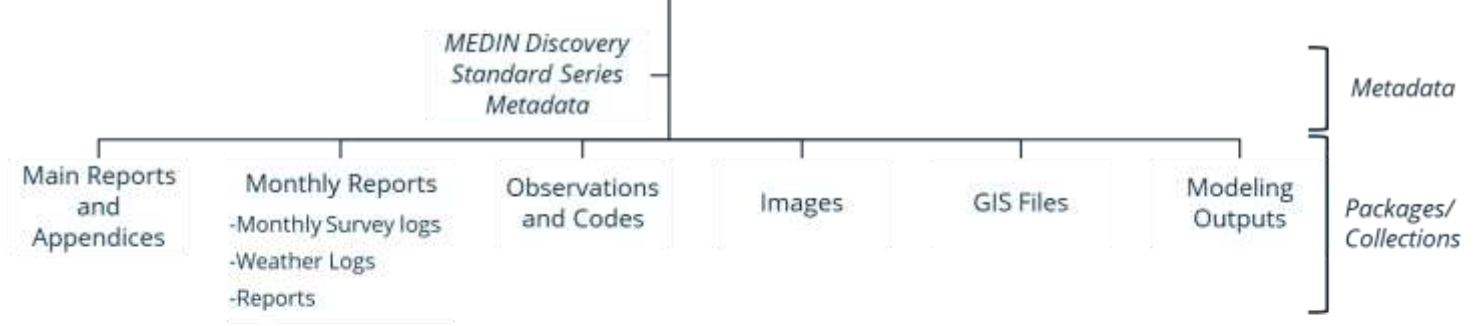


Figure 10. Example Marine Mammals series structure



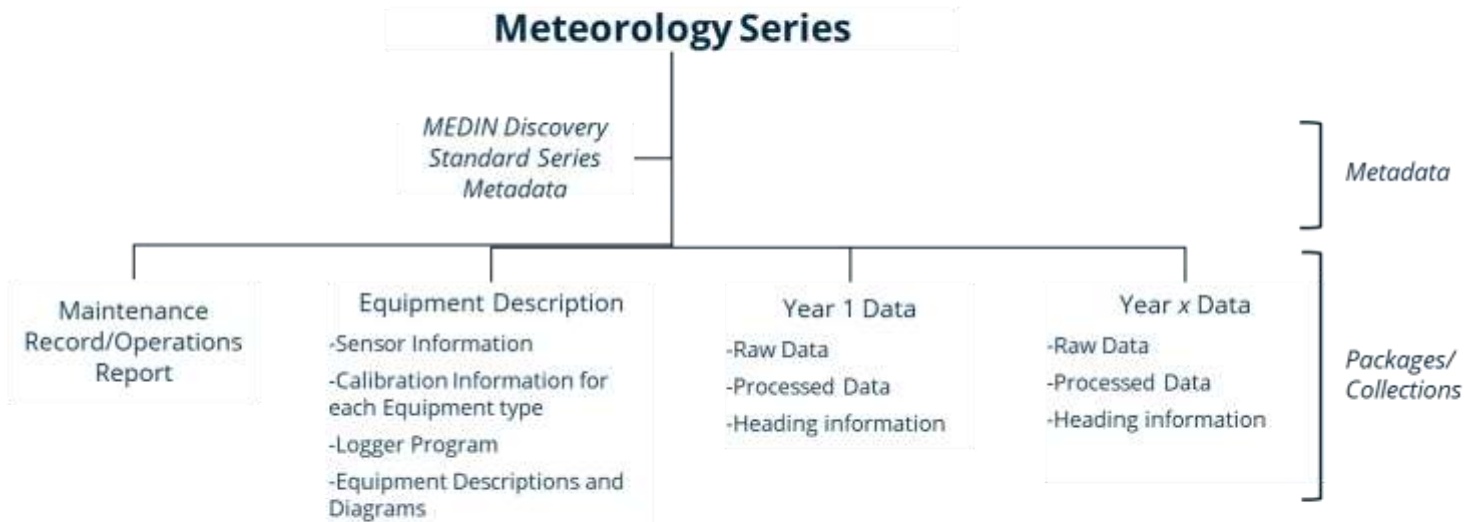


Figure 11. Example Meteorology series structure

It is recommended that datasets are structured into discrete annual packages containing all raw and cleaned data.

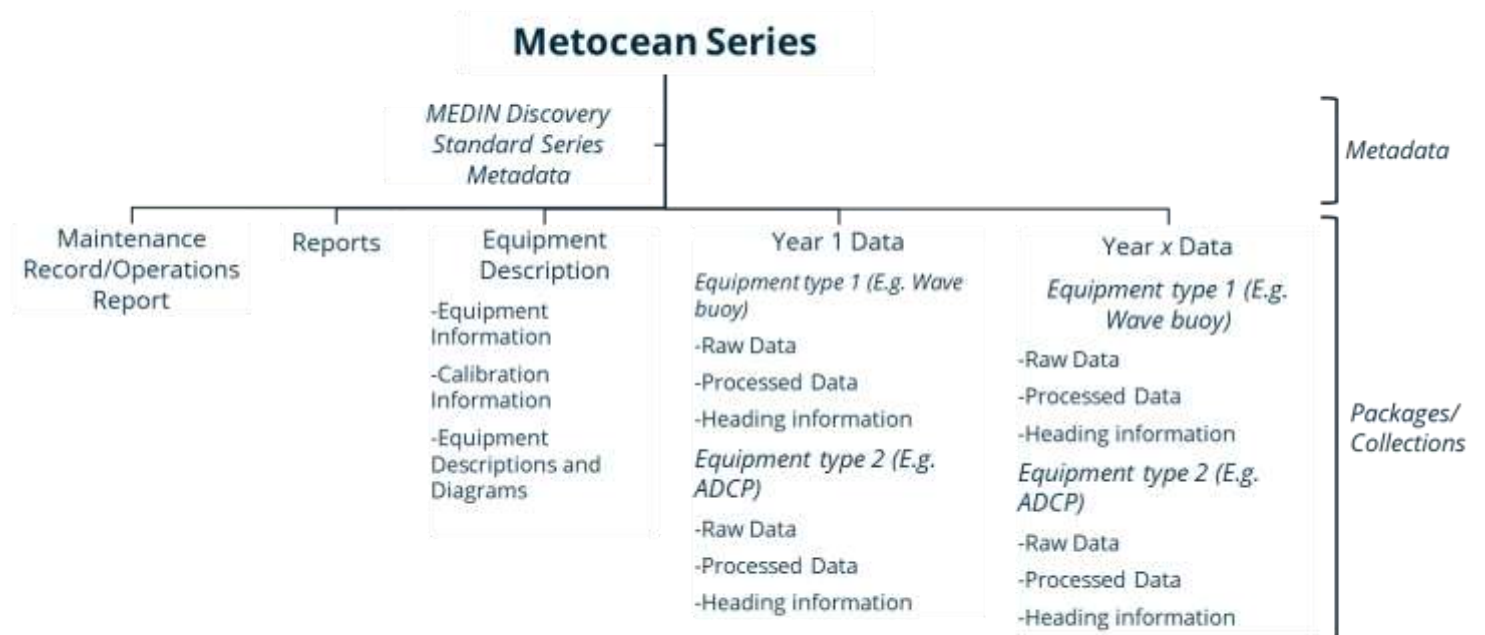


Figure 12. Example Metocean series structure

It is recommended that datasets are structured into discrete annual packages containing all raw and cleaned data.



Figure 13. Example Noise series structure

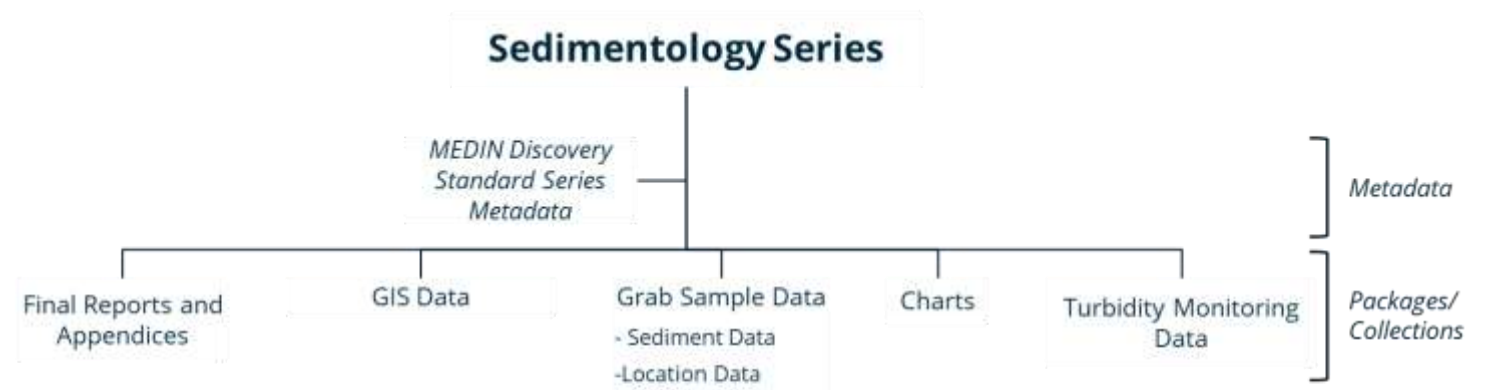


Figure 14. Example Sedimentology series structure



Figure 15. Example Shipping and Navigation series structure

## Appendix 4 – Quality Assurance Protocol

All data uploaded to the Marine Data Exchange (MDE) will be assessed through a high level Quality Assurance (QA) process. This is documented directly onto the MDE and any outstanding QA issues are fed back to the data provider for resolution.

Where applicable, The Crown Estate will carry out the following checks on each Series, Dataset and Report:

1. Check the metadata file
  - ✓ Correct metadata file present
  - ✓ Metadata content appropriate i.e. title, abstract, keywords, contact details, start and end date
2. Check the coordinate system
  - ✓ Defined and transformable to WGS 84
3. Check the content of the Datasets/Reports
  - ✓ No human or gross errors (e.g. missing reports, draft reports provided, missing report sections, figures or appendices, missing datasets, missing units or unclear column headers in datasets)
  - ✓ No file naming issues
  - ✓ No corrupt files
  - ✓ Resolution and spatial/temporal coverage of the data is as expected
  - ✓ QC and calibration reports are available where there is raw data
  - ✓ All data collected is MEDIN compliant, as checked against the relevant MEDIN Data Guidelines where available (post-2013 series only)
4. Check the confidentiality date
  - ✓ It has been set for each Dataset and/or Report
5. Series checks
  - ✓ All reports & datasets provided?
  - ✓ Have the GIS files (shapefiles) been provided (i.e map data shown in report figures)?
  - ✓ Ensure that both the raw and processed data outputs have been provided

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