



OPW

Oifig na
nOibreacha Poiblí
Office of Public Works

COASTAL EROSION HAZARD MAPPING SPATIAL DATA SPECIFICATION

Office of Public Works

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GLOSSARY

AEP	Annual Exceedance Probability (expressed as a percentage)
CDADB	Coastal Defence Asset Data Base
CEHM	Coastal Erosion Hazard Mapping (Sector)
GIS	Geographic Information System
ISO	International Organisation for Standardisation
NCEHM	National Coastal Erosion Hazard Mapping (Project)
OPW	Office of Public Works
TMN	National Coastal Erosion Hazard Mapping Technical Methodology Note

1 INTRODUCTION

1.1 PURPOSE

All spatial data created in the development of Coastal Erosion Hazard Mapping (CEHM) must be produced and submitted according to the specifications documented in this standard.

Each submitted spatial dataset becomes part of the permanent archive and serves as a source for updating information on the OPW's enterprise Geographic Information System (GIS), which serves as a CEHM Data Repository. Standardisation allows files and individual data layers originating from a wide number of sources to be integrated with other data components while ensuring consistency of the information managed and disseminated on the GIS. The data dissemination process is semi-automated and therefore a strict adherence to this standard is necessary. Additionally, the OPW requires standardised spatial data for distribution to key stakeholders and where relevant, available as Open Data.

The data standards described in this document are intended to support the above needs.

1.2 SCOPE OF SERVICES

This standard encompasses all aspects of spatial data outputs relating to CEHM for the OPW enterprise GIS, managed by FRM Data Management section. It does not include input datasets such as aerial photography, LiDAR data, or survey data which is used for but not created within a CEHM Project.

1.3 NON-COMPLIANCE AND VARIANCES

Any dataset not compliant with this standard will not be accepted by the OPW and will be returned to the Consultant for correction. Situations may arise where data created for CEHM may not be covered by this standard. If such situations were to arise, the Consultant must inform the Client Representative immediately and request written guidance from the Client in all such situations.

If for some reason it is not possible to adhere to this standard, the party creating the data must request in writing a waiver to this standard. Such waiver requests must define the specific section of the standard for which the waiver is requested, the reason for the waiver, the resulting impacts on the use of the data in the GIS, and any alternative approaches that should be considered. In certain instances, the Client may grant such requests and will then submit all the conditions and restrictions in relation to the waiver in writing to the Consultant. A waiver can only be granted when the Consultant has shown that it is necessary to vary from this standard and that the variation does not affect the objective for uniform and consistent data on OPW's enterprise GIS.

IMPORTANT NOTE FOR LOCAL AUTHORITIES: If a Local Authority is the Client for the Project then it must consult with the OPW in relation to any requests from the Consultant for variation from the specification and will not act unilaterally in this regard.

1.4 REVISION HISTORY

As changes of the Spatial Data Standards are necessary and accepted, this document will be updated accordingly. A summary of the main changes will be found in the document control

sheet. It is important to note that minor amendments may not be listed in the document control sheet and the latest version of this document must always be reviewed in full.

2 DATA MANAGEMENT

2.1 GENERAL DATA QUALITY ELEMENTS

There is one type of data format that may be produced by a given CEHM Project: vector data. Specific information in relation to the data format as detailed in this standard must be adhered to.

The International Organisation for Standardisation (ISO) is a worldwide federation of national standards bodies. The ISO produce documents outlining international standards on quality assurance measures for numerous different fields and disciplines. '*ISO 19157 – Geographic information – Data quality*' (ISO 19157) is a comprehensive document outlining quality standards for geographic information. The Consultant shall familiarise themselves with ISO 19157 and take all necessary steps to ensure spatial data deliverables adhere to this ISO standard and best practice industry standards. The following sections of this spatial data specification periodically references specific sections contained in ISO 19157 which must be adhered to.

2.1.1 COMPLETENESS

All spatial data shall be delivered without excess or missing data.

2.1.2 LOGICAL CONSISTENCY

DOMAIN CONSISTENCY

The naming convention for the data shall follow the convention as set out in Appendix A, using valid entries as set out in Appendix B. The use of single quotation marks ('sample_text') or double quotation marks ("sample_text") sometimes used in this document to emphasise dataset names, attributes etc. is entirely for clarity and should not be used in the spatial data.

All file names, dataset names, file paths, attribute data field headers and attribute data values must be **lower case only and no spaces are to be used**, except for attribute data values as appropriate and unless otherwise specified in this standard. **No spaces are to be used in file names, dataset names and attribute data field headers**; underscores shall be used instead as shown ("example_header").

File names, dataset names, file paths and attribute data field headers shall not contain any special characters unless specified in this standard. If a value is not provided (missing data), leave the field empty (blank). Do not enter 'NULL', 'N/A' or other placeholder values. Where a controlled lookup value for 'not applicable' is defined in Appendix B, this value must be used.

FORMAT CONSISTENCY

The final and approved datasets are to be delivered on a Project basis with all the data for each data type, e.g. coastal erosion mapping, are to be delivered in one single cleaned and merged data package which is to be generated by the CEHM Integrated Spatial Model (ISM) for each management approach, time period and climate change timeline.

2.1.3 POSITIONAL ACCURACY

The Consultant shall adhere to best practice industry standards regarding positional accuracy for each type of data deliverable.

2.2 VECTOR DATA QUALITY ELEMENTS

Vector data for each vector data type, as outlined in Appendix A, Table A1.1, shall be supplied to the Client in accordance with this standard. Vector data shall have a valid geometry and be produced for Irish Transverse Mercator (EPSG: 2157) with Malin Head Datum (OSGM15 geoid) for all datasets. Each vector feature shall be accompanied by attributes in an attribute table.

2.2.1 LOGICAL CONSISTENCY

CONCEPTUAL CONSISTENCY

The ordering of the attribute fields is critical and shall be kept as described in Appendix B, referencing the field numbers in Tables C1.1 – C1.3. No additional attribute fields shall be included in the attribute tables unless advance agreement is received from the Client. If agreed, additional attribute fields shall always be included after the mandatory attribute fields at the end of the attribute table in a consistent order.

DOMAIN CONSISTENCY

Attribute data field headers and attribute data values shall comply with the naming convention, domain constraints and ordering as described in Appendix B, Tables B2.1 – B2.3. Attribute domain constraints, specifying valid attribute values for the vector data types, are detailed in Appendix B and C and these shall strictly be adhered to.

FORMAT CONSISTENCY

The vector data shall be delivered in GeoPackage format (.gpkg) and shall contain all required spatial datasets and attribute data. The data object types for vector data will be polygon, polyline and point. All spatial vector data deliverables shall adhere to the specified data object types in Appendix A, Table A1.1.

TOPOLOGICAL CONSISTENCY

CEHM ISM model outputs shall be post processed to, for example, eliminate any errors such as overlapping of hazard areas or hazard areas extending seawards of the Coastal Feature Line. Topology is used to define the spatial relationship between features in one or more feature classes through a set of predefined rules, see Table 2.1. The submitted data must be topologically correct according to Table 2.1 below.

*Table 2.1 – Topology Rules within any single layer **

Rule	Description	Geometries Affected
Must Not Have Gaps	All polygons must form a continuous surface. Use this rule on data that must completely cover an area.	Polygons
Must Not Have Duplicates	This Rule requires that there will be no duplication of geometries, for example: - A Polyline will have single vertices at each change in direction. - A Point feature will have a single geometry representing it.	Polylines Points

Rule	Description	Geometries Affected
Must Not Intersect	This rule requires that line features from the same feature class do not cross or overlap each other. Lines can share end vertices.	Polylines
Must Not Have Dangles	This rule requires that where the end vertices of two polylines of the same feature class meet should be connected. An endpoint that is not connected to another line is called a dangle, similar to polygon gaps.	Polylines
Must Not Self Intersect	This rule requires that line features do not cross or overlap themselves, resulting in false intersections.	Polygons Polylines
Must Be Single-Part	This rule requires that all geometries must be single-part geometry features and not multi-part (except where the purpose is to create donut features).	Polygons Polylines Points

*Note: The supplied geometry shall also be a valid geometry in accordance with all generally accepted standards and must additionally pass the testing using the GDAL:ogr2ogr library (or any subsequent versions of this library). Particular attention is required when creating doughnut features.

3 QUALITY ASSURANCE REQUIREMENTS

3.1 QUALITY CONTROL TESTING

All spatial datasets shall be tested on an individual pass/fail basis by the Consultant with a 100% pass rate required for each data quality element and data type. It is the responsibility of the Consultant to ensure that all datasets are fully quality checked and conform to the requirements of this specification.

Records of all quality checking carried out should be retained by the Consultant and made available upon request.

Both manual and automated quality controls shall be performed by the Consultant to ensure that the data is correct and in accordance with this standard.

3.2 QUALITY CONTROL REPORT

A standalone quality control report shall be submitted with each data delivery and updated for each subsequent revision, clearly marked with the current revision number of the dataset assessed. The report should detail each of the quality elements outlined in this specification and the result for each data type and quality element, referencing the specific revision. Furthermore, any variations to the standard that affect the data, as agreed in advance with the Client, must be detailed in the report.

The evaluation and reporting of data quality shall use the standard data quality measures detailed in Annex D of ISO 19157 and as described below and in section 3.1 above:

- Completeness - Refer to section D.2, Annex D of ISO 19157 regarding reporting of commission and omission of data.
- Logical Consistency - Refer to section D.3, Annex D of ISO 19157 regarding reporting of conceptual consistency, domain consistency, format consistency and topological consistency of data.
- Positional Accuracy - Refer to section D.4, Annex D of ISO 19157 regarding reporting of positional accuracy of data.
- Temporal Quality - Refer to section D.5, Annex D of ISO 19157 regarding reporting of accuracy of time measurement, temporal consistency and temporal validity of data.
- Thematic Accuracy - Refer to section D.6, Annex D of ISO 19157 regarding reporting of classification correctness, non-quantitative attribute correctness and quantitative attribute accuracy of data.
- Usability Element – All other data quality measures should be reported under the usability element.

4 DATA DELIVERY

4.1 DELIVERY CONTENT

All required datasets shall be delivered as one single delivery for each stage of the Project, with one revision number used consistently across the entire deliverable. If any part of the data delivery does not pass the Client's quality control after delivery, the Consultant will be required to correct the data and resubmit the entire data deliverable, together with a detailed description of the corrections made. Once the data has been accepted as final by the Client, a full re-delivery of the final data shall take place, where the revision number shall be consistent across the entire deliverable.

4.2 DELIVERY FORMAT

All spatial data and associated quality control reports shall be delivered in a secure manner. Electronic file transfer or physical storage media may be used, with the appropriate method to be agreed with the OPW in advance of each delivery. For large datasets where electronic file transfer is not practical, physical storage media may be required.

4.3 DATA PACKAGE SUBMISSION REQUIREMENTS

All data packages submitted to the Client shall be provided at the Coastal Sub-cell level. Coastal Cells and Frontage Cells are not valid delivery units.

Each Coastal Sub-cell data package shall contain only those Frontage Cells that have been added or updated. Unchanged Frontage Cells shall not be included.

Upon receipt of a Coastal Sub-cell data package, the Client will treat the contents of that data package as the current authoritative version for the Frontage Cells it contains.

APPENDIX A - DATASET NAMING CONVENTION AND DATA PACKAGE STRUCTURE

Table A1.1 – Dataset Naming Convention for CEHM Data

Dataset	Dataset Naming Convention	Data Format	Table
Coastal Feature Line (cfl)	cc<xx>_cs<xx>_<dataset_code>_<version>_<status>	GeoPackage (Polyline)	C1.1
Manmade Coastal Defences (mcd)	cc<xx>_cs<xx>_<dataset_code>_<version>_<status>	GeoPackage (Polyline)	C1.2
Coastal Erosion Hazard Mapping (cem)	cc<xx>_cs<xx>_<dataset_code>_<management_approach>_<climate_change_timeline>_<future_year>_<version>_<status>	GeoPackage (Polygon)	C1.3

Additional notation

In all tables and file naming conventions below, x denotes the corresponding lookup code for that attribute, with each code to be drawn from the relevant lookup table. See Appendix B.

Additionally, the symbols “<” and “>” mark annotation text, which should be replaced with the correct text/code. Example:

cc<xx>_cs<xx>_<dataset_code>_<management_approach>_<climate_change_timeline>_<future_year>_<version>_<status>

Would be replaced with:

cc01_cs00_cem_wm_so_2050_01-01_d

Version Convention

Datasets shall be assigned a version identifier in the format XX-XX, where the first two digits represent the **major version** and the second two digits represent the **minor version**.

The minor version shall be incremented for each subsequent update or revision made prior to the next published release.

For example:

“00-05” Version 0.05 (Draft with four previous versions)

“01-00” Version 1.00 (Finalised and signed off by client, which typically would then be published)

“01-01” Version 1.01 (indicates first draft version subsequent to the version [1.0] signed off by the client)

“02-00” Version 2.00 (next signed off version followed by published release)

Data package structure

Each data package shall be delivered as a single GeoPackage for each Coastal Cell and Coastal Sub-cell combination. The GeoPackage shall be named as follows:

ccxx_csxx.gpkg

Where “xx” represents the applicable lookup code defined in Appendix B.

Example of Coastal Sub-cell GeoPackage for Coastal Cell 03, Sub-cell 01:

cc03_cs01.gpkg

Names of tables within that Coastal Sub-cell GeoPackage:

cc03_cs01_cfl_01-01_d

cc03_cs01_mcd_01-01_d

cc03_cs01_cem_wm_so_2050_01-01_d

cc03_cs01_cem_wm_so_2080_01-01_d

cc03_cs01_cem_ht_so_2050_01-01_d

etc..

APPENDIX B - DATASET NAME CODE / ATTRIBUTE FIELD VALUES

The section below contains valid dataset name codes and attribute field values for attributes that are common with the dataset name codes. Attribute field values that are layer specific or not contained in a dataset name will be specified in the relevant sections for each data type in Appendix C.

Note: Co-ordinate Reference System is not required as all data will use the Irish Transverse Mercator (EPSG: 2157) with Malin Head Datum (OSGM15 geoid).

Note: “<” and “>” indicate text that should be replaced. Example: <01 to 99> should be replaced with e.g. “07”.

B1. DATASET NAME CODE

Attribute	Attribute Description	Code	Code Description
cc	Coastal Cell is a two digit code to represent the individual coastal cell	01	Carlingford Lough to Skerries
		02	Skerries to Wicklow Head
		03	Wicklow Head to Greenore Point
		04	Greenore Point to Hook Head
		05	Hook Head to Old Head of Kinsale
		06	Old Head of Kinsale to Cape Clear
		07	Cape Clear to Slea Head
		08	Slea Head to Loop Head
		09	Loop Head to Slyne Head
		10	Slyne Head to Erris Head
		11	Erris Head to Malin More
		12	Malin More to Malin Head
		13	Malin Head to Lough Foyle
cs	Coastal Sub-cell is a two digit code to represent the individual coastal sub-cell.	<01 to 99>	Refers to the coastal Sub-cell. Must always be two digits e.g. 5 should be 05.
dataset_code	Dataset code (Note: if an appropriate data code is not listed, please notify the Client)	cem	Coastal Erosion Hazard Mapping (Polygon)
		cfl	Coastal Feature Line (Polyline)
		mcd	Manmade Coastal Defences (Polyline)
management_approach	The approach shown in the mapping with regards to how the manmade coastal defences are managed.	wm	With Maintenance
		wr	With Replacement
		nm	Without Maintenance (or No Maintenance)
status	Status of dataset as a whole	d	Draft for circulation (draft for circulation and review by the OPW or other external stakeholders)
		f	Final (signed off by the OPW)
		p	Published (typically only used by the OPW)
climate_change_timeline	Climate change timeline	pd	Present Day
		so	Slower Onset
		mo	Medium Onset
		fo	Faster Onset
future_year	Future Year: is to be expressed as a four digit numeric (yyyy)	2050	Only used for Coastal Erosion Hazard Mapping, area at risk of coastal erosion by 2050
		2080	Only used for Coastal Erosion Hazard Mapping, area at risk of coastal erosion by 2080
		2130	Only used for Coastal Erosion Hazard Mapping, area at risk of coastal erosion by 2130
version	The version identifier assigned to the dataset. The version shall comprise a major and minor version number in the format xx-xx. See Appendix A.	<xx-xx>	Examples: 01-00 = Version 1.00 (initial release); 01-01 = Version 1.01; 02-00 = Version 2.00.

B2. DATA DICTIONARY AND ATTRIBUTE FIELD CODES**B2.1 Coastal Feature Line (cfl)**

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
1	frontage_id	String	7	No	Unique 7-digit identifier code for each single spatial feature in the layer but should correspond with the same frontage in the other datasets i.e. mcd and cem. See Appendix B1.	<cccsfc>	Example A: 1104005 = Coastal Cell 11, Coastal Sub-cell 04, and Frontage Cell 005 Example B: 0212102 = Coastal Cell 02, Coastal Sub-cell 12, and Frontage Cell 102
2	cc	String	2	No	A two digit code to represent the individual coastal cell	<01 to 13>	See full list in Appendix B1
3	cs	String	2	No	A two digit code to represent the individual coastal sub-cell	<01 to 99>	Refers to the coastal Sub-cell.
4	fc	String	3	No	Code for relevant frontage cell (fc).	<001 to 999>	A three digit code to represent the individual frontages within each sub-cell. This will be a randomly generated unique number.
5	dataset_code	String	3	No	Dataset code. (Note: if an appropriate data code is not listed, please notify the Client)	cem	Coastal E rosion H azard Mapping (Polygon)
						cfl	Coastal F eature L ine (Polyline)
						mcd	M anmade C oastal D efences (Polyline)
6	status	String	1	No	Status	d	D raft for circulation (draft for circulation and review by the OPW or other external stakeholders)
						f	F inal (signed off by the OPW)
						p	P ublished (typically only used by the OPW)
7	version	String	5	No	Version number. See Appendix B1.	<xx-xx>	Examples: 01-00 = Version 1.00 (initial release); 01-01 = Version 1.01; 02-00 = Version 2.00.
8	survey_source	String	10	No	The source of data used to digitise the Coastal Feature	aerial	To be used if aerial imagery was predominantly used to categorise the frontage (e.g. non-cliffed frontages).
						lidar	To be used if LiDAR was predominantly used to categorise the frontage e.g. cliffed frontages.
9	survey_year	Integer	4	Yes	The survey year used to digitise the Coastal Feature Line, captured using the format yyyy.	<1950 to Present>	Example: if the survey was done in February 2013, the yyyy would be 2013
10	coastal_hardness	String	12	No	The hardness of the coastal frontage (see TMN 4.1.1)	hard	See TMN section 4.1.1. for further information.
						soft	See TMN section 4.1.1. for further information.
						soft_to_hard	See TMN section 4.1.1. for further information.
11	coastal_topography	String	9	No	The type of topography of the coastal frontage (see TMN)	cliff	To be used for cliffed sections
						non_cliff	To be used for non-cliffed sections
12	bedrock	String	200	No	The type of bedrock as designated by GSI 'bedrock geology 100k' layer under the attribute heading "DESCRIPT".	<insert the dominant bedrock type>	<insert the dominant bedrock type. in cases where there are multiple types within a frontage. Example A: purple_mudstone_and_siltstone Example B: paleozoic_basaltic_intrusion
13	quaternary_sediment	String	200	No	The type of quaternary sediment as designated by GSI's 'Quaternary Sediment 50k' dataset, where a string is used to capture exactly what is in the "QSED_TYPE" field from the GSI dataset.	<insert the dominant type from QSED_TYPE>	Example: bedrock outcrop or subcrop (Note, text to match exactly what is in the GSI dataset and spaces are acceptable)
14	coastal_zone	String	200	No	A text description of the designated coastal zone using the Copernicus Coastal Zones Land Cover/Land Use 2018, data set where a string is used to capture exactly what is in the "DESCRIPTION" field from the Copernicus dataset.	<insert the dominant type from DESCRIPT>	Examples: sandy beaches, shingle beaches, coastal cliffs, intertidal flats (Note, text to match exactly what is in the Copernicus dataset and spaces are acceptable)
15	historic_change_rate_myr	Decimal	5,2	No	The historic coastal change rate in meters per year Note: Data for this attribute must match exactly the 'historic_change_rate_myr' attribute in the cem dataset	<Decimal rounded to two places>	Example: 0.51

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
16	historic_change_confidence_score	Integer	2	No	A confidence score for the assessment of the historical coastal change, where an integer is used to capture the rating. Guidance for these rates can be found in the (TMN). Note: Data for this attribute must match exactly the '<i>historic_change_confidence_score</i>' attribute in the cem dataset	<0 to 10>	The following is extracted from the TMN: 10 = detailed monitoring/measurement/analysis from this frontage and spanning >20 yrs 9 = detailed monitoring/measurement/ analysis from this frontage and spanning >10 yrs 8 = measurements taken directly from this frontage and spanning >20 yrs 7 = " " taken directly from this frontage and spanning >10 yrs 6 = " " 'borrowed' from one adjacent similar frontage 5 = " " 'borrowed' from one or more similar frontage (Mean) 4 = " " taken directly from this frontage and spanning <10 yrs 3 = " " 'borrowed' from multiple similar fronts (Typical/Most Common/ Median) 0 = based on approximation only (no measurements possible)
17	historic_change_confidence_rating	String	8	No	A confidence rating for the assessment of the historical coastal change. Note: Data for this attribute must match exactly the '<i>historic_change_confidence_rating</i>' attribute in the cem dataset	high	If 8 to 10 entered for 'historic_change_confidence_score' attribute
						medium	If 4 to 7 entered for 'historic_change_confidence_score' attribute
						low	If 0 to 3 entered for 'historic_change_confidence_score' attribute
18	beach_slope_ratio	Integer	3	Yes	The slope of the beach in the format of a ratio 1:X (in meters), where an integer is used to capture the horizontal distance <x>	<x>	80 value would represent a slope of 1:80 (in metres)
						<999>	999 value to be used if the ' <i>coastal_hardness</i> ' attribute is <i>hard</i>
19	defended	String	3	No	The confirmation that a manmade coastal defence is present.	yes	If a manmade coastal defence is present
						no	If a manmade coastal defence is not present
20	defence_classification	String	255	Yes	The defence classification as designated in the Manmade Coastal Defence (mcd) layer under the attribute heading <i>defence_classification</i>. Note: both attribute tables (cfl and mcd) must contain the same classification for each feature.	<See mcd table B2.2 attribute defence_classification for pre-defined list>	Example from Table B2.2: eb_with_slope_or_toe_protection If no defence, leave as <i>null</i>
21	comments	String	500	Yes	Any additional comments strictly covering issues/flags/reasoning for other attribute submissions during revision. All comments shall be removed by the OPW for final/published data sets.	<comments>	-

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
1	frontage_id	String	7	No	Unique 7-digit identifier code for each single spatial feature in the layer but should correspond with the same frontage in the other datasets i.e. mcd and cem. See Appendix B1.	<cccsfc>	Example A: 1104005 = Coastal Cell 11, Coastal Sub-cell 04, and Frontage Cell 005 Example B: 0212102 = Coastal Cell 02, Coastal Sub-cell 12, and Frontage Cell 102
2	cc	String	2	No	A two digit code to represent the individual coastal cell	<01-13>	See full list in Appendix B1
3	cs	String	2	No	A two digit code to represent the individual coastal sub-cell	<01 to 99>	Refers to the coastal Sub-cell. Note, only the file name may contain “00” to represent a full coastal sub-cell.
4	fc	String	3	No	Code for relevant frontage cell (fc).	001 to 999	A three digit code to represent the individual frontages within each sub-cell. This will be a randomly generated number.
5	dataset_code	String	3	No	Dataset code. (Note: if an appropriate data code is not listed, please notify the Client)	cem	Coastal Erosion Hazard Mapping (Polygon)
						cfl	Coastal Feature Line (Polyline)
						mcd	Manmade Coastal Defences (Polyline)
6	status	String	1	No	Status of the dataset	d	Draft for circulation (draft for circulation and review by the OPW or other external stakeholders)
						f	Final (signed off by the OPW)
						p	Published (typically only used by the OPW)
7	version	String	5	No	Version number (version). See Appendix B1.	<xx-xx>	Examples: 01-00 = Version 1.00 (initial release); 01-01 = Version 1.01; 02-00 = Version 2.00.
8	county_code	String	2	No	The county in which the asset is located.	<County Code>	Predefined list. See Appendix B2.2.1
9	local_authority	String	15	No	The local authority which controls the jurisdiction where the asset is located.	<LA Code>	Predefined list. See Appendix B2.2.1
10	location_desc	String	50	No	The geographic location of the manmade coastal defence, typically the townland / parish / road it protects or the geographic setting in which it resides, where a string captures this information.	<Location>	Examples: “Roxtown Harbour”, “Trawbreaga Bay (southern end)”, “R611” for a road Note: unknown can be used in certain circumstances
11	defence_owner	String	15	No	The identified owner of the manmade coastal defence.	local_authority	Indicates the LA, of the county where the defence is based, is the owner
						opw	Indicates the OPW is the owner
						public	Indicates a public sector body is the owner
						semi_private	Indicates a semi state body is the owner e.g. irish rail
						private	Indicates the defences owner is either a private resident or a private commercial entity
						multiple	To be used where e.g. a continuous defence has multiple owners along the same defence. Multiple owner details to be captured in the “ <i>defence_owner_multiple</i> ” attribute.
						unknown	Only used if owner cannot be identified or categorised into the above
12	defence_owner_multiple	String	150	Yes	Only to be used if ‘multiple’ selected for the attribute ‘ <i>defence_owner</i> ’ where further information is needed to be captured	<owner_details>	To be left as ‘null’ unless “ <i>multiple</i> ” in the ‘ <i>defence_owner</i> ’ attribute has been selected. Using only the list in the ‘ <i>defence_owner</i> ’ attribute, insert each maintainer one after another and ensure a “ ” between each. Example: “private_opw”.
13	defence_maintainer	String	15	No	The identified primary maintainer of the manmade coastal defence (typically the same as the “owner” but not always) Note: The primary host of defence data info will be CDAD.	local_authority	Indicates the LA of the county where the defence is based, is the primary maintainer
						opw	Indicates the OPW are the maintainer
						public	Indicates a public sector body is the maintainer
						semi_private	Indicates a semi state body is the maintainer e.g. irish rail
						private	Indicates the defences maintainer is a private resident or private commercial entity
						multiple	To be used where e.g. a continuous defence has multiple owners along the same defence. Multiple owner details to be captured in the “ <i>defence_maintainer_multiple</i> ” attribute.
						unknown	Only used if maintainer cannot be identified or categorised into the above

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
14	defence_maintainer_multiple	String	150	Yes	Only to be used if 'multiple' selected for the attribute 'defence_maintainer' where further information is needed to be captured	<details>	To be left as 'null' unless " <i>multiple</i> " in the 'defence_maintainer' attribute has been selected. Using only the list in the 'defence_maintainer' attribute, insert each maintainer one after another and ensure a " _ " between each. Example: "private_opw".
15	asset_type	String	30	No	The primary or dominant type of manmade coastal defence providing coastal protection. Note(1): if an appropriate data code is not listed, please notify the Client. Note(2): Code guide taken from CDADB definitions.	embankment	An artificial earthen structure raised above the ground around it to protect against flooding and/or erosion.
						engineered_high_ground	Retained, engineered or otherwise modified ground, that is not covered by one of the other defence asset types. Only covers cases where the top of the retaining structure is no higher than the ground behind it, therefore it is not considered a raised flood defence such as a wall or embankment.
						quay	A structure adjacent to or protruding into a watercourse or the sea to moor, load or unload boats. It can also provide a line of defence against flooding and/or erosion.
						revetment	A sloping structure placed along or in front of an asset to absorb and dissipate wave energy.
						wall	A wall which is raised above the surrounding land and acts as a flood and/or erosion defence. Includes all walls considered formal effective flood defences, formal ineffective flood defences, informal effective flood defences and walls constructed to provide protection from erosion. Does not include walls which only retain and are not raised above the ground behind them. These assets should be classified as engineered high ground.
						unknown	To be used only if there is limited or very unclear data/imagery on a critical asset
16	asset_material	String	20	No	The primary or dominant material type of the manmade coastal defence (as per the TMN). Note: if an appropriate data code is not listed, please notify the Client	asphalt	Composite material consisting of aggregates binded together using bitumen (commonly use on road surfacing but can be used in revetments.
						brick	-
						clay	Typical construction material for a earth embankment or engineered high ground only (in most cases, these will have established vegetation or grass cover)
						concrete	-
						gabion	Gabions are typically metal or synthetic cages, cylinders, or boxes filled with rocks or stones.
						masonry	Masonry refers to the use of laying individual units (such as bricks, stones, or concrete blocks) together, typically binding them with mortar.
						rock	Rock refers to the raw, natural geological material extracted from the earth.
						steel	-
						stone	Stone is the refined version of rock; it has been quarried, cut, polished, or shaped for specific structural or aesthetic building applications.
						timber	-
17	defence_classification	String	60	No	The classification which the manmade coastal defence sits in - for the purpose of assigning a defence deterioration curve (from Section 7.1.1 of TMN). The 'asset_type' and 'asset_material' attributes should be used to identify the appropriate 'defence_classification'. Note: Data for this attribute must match exactly the 'defence_classification' attribute in the cfl dataset	vw_concrete	vertical wall (vw) where concrete is the primary material
						vw_brick_or_masonry	vertical wall (vw) where brick or masonry is the primary material
						vw_timber	vertical wall (vw) where timber is the primary material
						vw_gabion	vertical wall (vw) where gabions are the primary structure
						vw_sheet_piles	vertical wall (vw) where sheet piles are the primary structure
						eb_turfed_only	embankment (eb), which is turfed only
						eb_with_slope_or_toe_protection	embankment (eb) with slope/toe protection
						sw_turfed_only	sloping wall (sw), which is turfed only
						sw_with_slope_protection_or_revetment_permeable	sloping wall (sw) with slope protection or a permeable revetment
						sw_with_slope_protection_or_revetment_impermeable	sloping wall (sw) with slope protection or an impermeable revetment
						ms_minor_walls	minor structure (ms) which features a wall that may protect against coastal erosion, but is not designed as a formal defence and may not be resilient e.g. some privately constructed assets

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
						ms_ad_hoc_revetments_or_mounds	minor structure (ms) which features ad hoc revetments or mounds that may protect against coastal erosion, but are not designed as a formal defence and may not be resilient e.g. some privately constructed assets
18	purpose	String	20	No	The purpose of the asset with regards to flood risk management, erosion protection, both or other.	erosion	When there is evidence that the asset provides erosion protection or could have been built specifically for erosion protection
						flooding	When there is evidence that the asset provides flooding protection or could have been built specifically for coastal flooding protection
						both	When an asset provides both types of protection
						other	To be used for assets that offer neither an erosion protection or flood risk management function but do provide an alternative purpose
						unknown	To be used only if there is limited evidence of the purpose of the defence
19	performance_standard_ratio	Integer	3	Yes	The performance standard of manmade coastal defences relates to the storm event that a defence has been designed to withstand. This is independent of condition grade. Estimated Performance Standard, given as 1:X, where X is the 1-in-X-year return period. See TMN Section 7.2 for further information.	20	1 in 20 return period is evident (or 5% AEP)
						50	1 in 50 return period is evident (or 2% AEP)
						100	1 in 100 return period is evident (or 1% AEP)
						200	1 in 200 return period is evident (or 0.5% AEP)
20	performance_standard_confidence_score	Integer	2	No	This ensures that the level of confidence associated with the selected 'condition grade' and 'performance standard' is captured. See TMN section 7.3 for further information.	<0 to 10>	The following is a guide from the TMN on how to score confidence in the performance standard. The guide for the performance standard: 10 (best) = The detailed design details are available 8 = Detailed information/knowledge from the local authority about the asset 7 = Observational data/evidence (e.g. storm records, photographs) to inform estimate 5 = High quality recent (<2years) oblique imagery 3 = Local anecdotal opinions 2 = Default value based on defence type only Note: any number from 0 to 10 inclusive can be used.
21	performance_standard_confidence_rating	String	8	No	Confidence rating for the performance standard assessment. Note: Data for this attribute must match exactly the 'performance_standard_confidence_rating' attribute in the cem dataset	high	If 8 to 10 in the performance standard confidence score
						medium	If 4 to 7 in the performance standard confidence score
						low	If 0 to 3 in the performance standard confidence score
22	year_introduced	String	4	No	The (assumed) year of introduction/creation of the defence, as a start year yyyy.	<yyyy>	Refer to Table 7-7 on the TMN (TMN 7.4.1).
23	years_protected	String	8	No	Estimated years of protection at time of failure (TMN 7.4.2)	0_15	Less than 15 years protected
						15_30	15 – 30 years protected
						30_50	30-50 years protected
						50_70	50-70 years protected
						50_100	50-100 years protected (only to be used if years protected cannot be refined further e.g. 50-70 years or 70-100 years)
						70_100	70-100 years protected
						100_plus	100+ years protected

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
24	condition_grade	Integer	1	No	The condition grade of the asset (see TMN for further information)	<1 to 5>	Extracted from the TMN section 7.1.4: 1 ('very good') = should typically be assigned to defences which are recently constructed (<5 years) with no sign of any deterioration; 2 ('good') = should typically be assigned to defences which show evidence of minor defects only which do not reduce the overall performance of the defence; 3 ('fair') = should typically be assigned to defences which show evidence of defects that may reduce the overall performance of the defence; 4 ('poor') = should typically be assigned to defences which show evidence of defects in need of urgent repair that may significantly reduce the overall performance of the defence; 5 ('very poor') =should typically be assigned to defences which have severe defects which mean the defence is no longer performing effectively as a coastal protection structure.
25	condition_confidence_score	Integer	2	No	The confidence score derived for the condition grade assessment	<0 to 10>	The following is a guide from the TMN on how to score confidence in the performance standard. The guide the condition grade: 10 (best) = Full and recent site-based condition survey (<1 year) 9 = Recent site-based visual inspection (<2 years) 8 = Either high quality recent imagery (e.g. hi res obliques <2 years) 8 = Site-based visual inspection (in the last 2-5 years) 5 = Good quality photographs (<5 years) 3 = Older (5-10 years) imagery 2 = Poor or restricted older imagery (>10 years) 1 = Assumption based on age/type Note: any number from 0 to 10 inclusive can be used.
26	condition_confidence_rating	String	8	No	Confidence rating for the condition grade assessment. Note: Data for this attribute must match exactly the 'condition_confidence_rating' attribute in the cem dataset.	high	If 8 to 10 in the 'condition_confidence_score'
						medium	If 4 to 7 in the 'condition_confidence_score'
						low	If 0 to 3 in the 'condition_confidence_score'
27	cdadb_asset_id	String	12	Yes	Unique asset_id extracted from the CDADB for the defence being assessed.	<asset id>	This attribute is to be extracted from the CDADB dataset. Leave <i>null</i> if asset is not present in the CDADB dataset.
28	comments	String	500	Yes	Any additional comments strictly covering issues/flags/reasoning for other attribute submissions during revision. All comments shall be removed by the OPW for final/published data sets.	-	-

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
1	frontage_id	String	7	No	Unique 7-digit identifier code for each single spatial feature in the layer but should correspond with the same frontage in the other datasets i.e. mcd and cem. See Appendix B1.	<cccsfc>	Example A: 1104005 = Coastal Cell 11, Coastal Sub-cell 04, and Frontage Cell 005 Example B: 0212102 = Coastal Cell 02, Coastal Sub-cell 12, and Frontage Cell 102
2	cc	String	2	No	A two digit code to represent the individual coastal cell	<01 to 13>	See full list in Appendix B1
3	cs	String	2	No	A two digit code to represent the individual coastal sub-cell	<01 to 99>	Refers to the coastal Sub-cell. Note, only the file name may contain “00” to represent a full coastal sub-cell.
4	fc	String	3	No	Code for relevant frontage cell (fc).	<001 to 999>	A three digit code to represent the individual frontages within each sub-cell. This will be a randomly generated number.
5	dataset_code	String	3	No	Dataset code. (Note: if an appropriate data code is not listed, please notify the Client)	cem	Coastal Erosion Hazard Mapping (Polygon)
						cfl	Coastal Feature Line (Polyline)
						mcd	Manmade Coastal Defences (Polyline)
6	management_approach	String	2	No	Code for relevant management approach. See Appendix B1.	wm	With Maintenance
						wr	With Replacement
						nm	Without Maintenance (or No Maintenance)
7	climate_change_timeline	String	2	No	Code for relevant climate change timeline. See Appendix B1.	pd	Present Day
						so	Slower Onset
						mo	Medium Onset
						fo	Faster Onset
8	future_year	Integer	4	No	Code for the relevant time period, or future year. See Appendix B1.	2050	Only used for Coastal Erosion Hazard Mapping, area at risk of coastal erosion by 2050
						2080	Only used for Coastal Erosion Hazard Mapping, area at risk of coastal erosion by 2080
						2130	Only used for Coastal Erosion Hazard Mapping, area at risk of coastal erosion by 2130
9	status	String	1	No	Status of polygon	d	Draft for circulation (draft for circulation and review by the OPW or other external stakeholders)
						f	Final (signed off by the OPW)
						p	Published (typically only used by the OPW)
10	version	String	5	No	Version number (version). See Appendix B1.	<xx-xx>	Examples: 01-00 = Version 1.00 (initial release); 01-01 = Version 1.01; 02-00 = Version 2.00.
11	historic_change_rate_myr	Decimal	5,2	No	The historic coastal change rate in meters per year. Note: Data for this attribute must match exactly the ‘ <i>historic_change_rate_myr</i> ’ attribute in the cfl dataset.	<Decimal rounded to two places>	Example: “0.51”
12	historic_change_confidence_score	Integer	2	No	A confidence score for the assessment of the historical coastal change, where an integer is used to capture the rating. Guidance for these rates can be found in the TMN. Note: Data for this attribute must match exactly the ‘ <i>historic_change_confidence_score</i> ’ attribute in the cfl dataset	<0 to 10>	10 = detailed monitoring / measurement / analysis from this frontage and spanning >20 yrs
							9 = detailed monitoring / measurement / analysis from this frontage and spanning >10 yrs
							8 = measurements taken directly from this frontage and spanning >20 yrs
							7 = measurements taken directly from this frontage and spanning >10 yrs
							6 = measurements ‘borrowed’ from one adjacent similar frontage
							5 = measurements ‘borrowed’ from one or more similar frontage (Mean)
							4 = measurements taken directly from this frontage and spanning <10 yrs
							3 = measurements ‘borrowed’ from multiple similar frontages (Typical / Most Common / Median)
							0 = based on approximation only (no measurements possible)
13	historic_change_confidence_rating	String	8	No	A confidence rating for the assessment of the historical coastal change. Note: Data for this attribute must match exactly the ‘ <i>historic_change_confidence_rating</i> ’ attribute in the cfl dataset	high	If 8 to 10 entered for ‘ <i>historic_change_confidence_score</i> ’
						medium	If 4 to 7 entered for ‘ <i>historic_change_confidence_score</i> ’
						low	If 0 to 3 entered for ‘ <i>historic_change_confidence_score</i> ’
14	condition_confidence_rating	String	8	No	Confidence rating for the condition grade assessment. Note: Data for this attribute must match exactly the ‘ <i>condition_confidence_rating</i> ’ attribute in the mcd dataset	high	If 8 to 10 in the ‘ <i>condition_confidence_score</i> ’
						medium	If 4 to 7 in the ‘ <i>condition_confidence_score</i> ’
						low	If 0 to 3 in the ‘ <i>condition_confidence_score</i> ’

Field No.	Field	Field Storage Type	Field Size	Null	Field Description	Code	Code Guide
15	performance_standard_confidence_rating	String	8	No	Confidence rating for the manmade coastal defence performance standard assessment. Note: Data for this attribute must match exactly the ‘performance_standard_confidence_rating’ attribute in the mcd dataset	high	If 8 to 10 in the performance standard confidence score
						medium	If 4 to 7 in the performance standard confidence score
						low	If 0 to 3 in the performance standard confidence score
16	erosion_area_m2	Integer	10	No	The erosion area (in m²) derived from spatial output	<area in m²>	Area in m² to the closest two decimal points
17	comments	String	500	Yes	Any additional comments strictly covering issues/flags/reasoning for other attribute submissions during revision. All comments shall be removed by the OPW for final/published data sets.	-	-

B2.4 Additional Tables

Table B2.4.1 – Location & County Councils Codes

Coastal Local Authority (LA) Name	County Code	LA code
Clare County Council	ce	clarecoco
Cork City Council	co	corkcitycoco
Cork County Council	co	corkcoco
Donegal County Council	dl	donegalcoco
Dublin City Council	du	dublincoco
Dún Laoghaire-Rathdown County Council	du	dlrcoco
Fingal County Council	du	fingalcoco
South Dublin County Council	du	southdcoco
Galway City Council	gw	galcitycoco
Galway County Council	gw	galwaycoco
Kerry County Council	ky	kerrycoco
Kilkenny County Council	kk	kilkcoco
Leitrim County Council	lm	leitrimcoco
Limerick City and County Council	lk	limerickcoco
Louth County Council	lh	louthcoco
Mayo County Council	mo	mayococo
Meath County Council	mh	meathcoco
Sligo County Council	so	sligococo
Waterford City and County Council	wd	watcoco
Wexford County Council	wx	wexcoco
Wicklow County Council	ww	wickcoco