ODS v3.0.0 Summary

It's important for users of ODS to understand what updates will be implemented in v3.0.0 to change their own internal processes and validations. In accordance with the ODS governance guidelines, these updates will be implemented into the operational version of ODS, **no earlier than three months** following the initial notification to the steering committee (SC) and the eventual signoff from the SC.

The ODS community will be notified of the proposed changes following the SC on 6th September 2022 so they can make changes and perform any UAT within the three-month window.

Details of the updates to be implemented into ODS v3.0.0 are available to review in the GitHub issues but have also been summarised below.

- **#40 https://github.com/OasisLMF/OpenDataStandards/issues/40 - Add 'locPopulation' file to the current OED loc file.**

Adding the following fields from the "loc_population" file to the "loc" file so they are no longer separate input files. These enable OED to support public-sector and humanitarian use cases.

Input Field Name	Type & Description	Required Field	Data Type
LocNumber	Location number	R	nvarchar(20)
LocPopNumber	Population record number	R	nvarchar(20)
OccupantUnderfive	Number of occupants aged under 5 years	O	int
OccupantOver65	Number of occupants aged over 65 years	O	int
OccupantFemale	Number of female occupants	O	int
OccupantUrban	Number of occupants classed as living in an urban area	O	int
OccupantRural	Number of occupants classed as living in a rural area	O	int
OccupantPoverty	Number of occupants classed as living in poverty	O	int
OccupantRefugee	Number of occupants with refugee status	O	int
OccupantUnemployed	Number of occupants classed as unemployed	O	int
OccupantDisability	Number of occupants with a disability	O	int
OccupantEthnicMinority	Number of ethnic minority occupants	O	int
OccupantTemporary	Number of temporary occupants (e.g., tourists)	O	int
OccupantUserDefined1	User defined field to further classify number of occupants	O	int
OccupantUserDefined2	User defined field to further classify number of occupants	O	int

- **#68 https://github.com/OasisLMF/OpenDataStandards/issues/68 (re-opened from v2.3.0)**

  After the updates to the occupancy codes for common house type such as 'detached', 'semi-detached', 'end-terrace' and 'bungalow' (OED occ codes 1070-1073) were released in ODS v2.3.0, an update to the current occupancy code for 'terraced-housing' was required to make it more specific to 'mid-terraced 'housing. See proposed changes below:

Current Occ Code	Current Name	Current Description	Proposed Name	Proposed Description
1056	Residential, Terraced Housing	Attached residential unit. Also referred to as townhouses, row houses, row homes, or brownstones. Usually more than one story and built close to the street.	Residential, **Mid-Terraced** Housing	Attached residential unit, ***not end of terrace (use separate code 1072).*** Also referred to as townhouses, row houses, row homes, or brownstones. Usually more than one story and built close to the street.

- **#70 https://github.com/OasisLMF/OpenDataStandards/issues/70 - Removal of building types (linked to issue #68)**.

  To avoid duplication and confusion following the new occupancy codes outlined in issue 68 above, the more obscure building types that do not warrant a specific occupancy code should remain in 'building type.' See proposed changes below:

OED Input Field	Current OED Code	Current OED Description	Proposed Action/Code
BuildingType	0	Unknown / default	0
	1	Detached	Remove
	2	Semi-detached	Remove
	3	Mid-terrace	Remove
	4	End terrace	Remove
	5	Bungalow	Remove
	6	Manufactured	1
	7	Cottage	2
	8	Ranch	3
	9	Cape Cod Style	4
	10	Earth house	5
	11	Dome	6

- **#74 https://github.com/OasisLMF/OpenDataStandards/issues/74 - OED to support public infrastructure.**

  The aim is to align ODS with the *Global Exposure Databases for All* (GED4ALL) supported by the *Global Facility for Disaster Risk Reduction* (GFDRR) (https://www.hotosm.org/projects/global-exposure-database-for-all-ged4all) so multiple infrastructure codes for transport and utilities are being added to OED to support these use cases. All additions are outlined in the tables below:

Transport:

	Current OED Code	Current OED Name	Current OED Description	Proposed OED Code	Proposed OED Name	Proposed OED Description
Construction	5451	Pavements, Railroads	Railroads of any kind used to carry trains.	5451	Railways, General	General railways or railroads of unknown rail typology
	5452	Pavements, Highways	Concrete, asphalt, or gravel highways.	5452	Highways, General	General highways or pavements constructed of either concrete, asphalt, or gravel
				5454	Highways, Motorways	Motorway: restricted access major divided highway (i.e., freeway), normally with 2 or more running lanes plus emergency hard shoulder
				5455	Highways, Trunk Road	Trunk: the most important roads in a country's system that aren't motorways (not necessarily be a divided highway)
				5456	Highways, Primary roads	Primary: the next most important roads in a country's system (often link larger towns)
				5457	Highways, Secondary roads	Secondary: the next most important roads in a country's system (often link towns)

				5458	Highways, Tertiary roads	Tertiary: the next most important roads in a country's system (often link smaller towns and villages)
				5459	Highways, Unclassified roads	Unclassified: the least important through roads in a country's system (often link villages and hamlets)
				5460	Highways, Residential roads	Residential: roads which serve as an access to housing, without function of connecting settlements. Often lined with housing.
				5461	Highways, Service Road	Service: access roads to, or within an industrial estate, camp site, business park, car park etc.
				5463	Railways, light rail	Light rail: a higher-standard tram system, normally in its own right-of-way. Often reaches a considerable length (tens of kilometre)
				5464	Railways, Monorail	Monorail: a single-rail railway
				5465	Railways, Standard gauge	Rail: full sized passenger or freight trains in the standard gauge for the country or state
				5466	Railways, Subway	Subway: a city passenger underground rail service running mostly grade separated
				5467	Railways, Tram	Tram: one or two carriage rail vehicles, usually sharing motor road.
Occupancy	1250	Transportation, Highway	Establishments primarily engaged in furnishing highway passenger transportation and establishments furnishing highway passenger terminal or maintenance facilities.	1250	Transportation, Highway	Highways and transportation road networks.

| | 1251 | Transportation, Railroad | Includes establishments furnishing transportation by line-haul railroad, as well as switching and terminal establishments. | 1251 | Transportation, Railroad | Railroad networks and rail tracks |

Utilities:

	Proposed OED Code	Proposed OED Name	Proposed OED Description
Construction	5961	Miscellaneous, Treatment plant	Treatment plants are structures and sites for the treatment of potable water or wastewater
	5756	Distribution Circuits	Distribution circuits designed to carry radio, TV, or cell phone transmission equipment.
Occupancy	2543	Industrial Facilities Model, IFM: Biomass plant	
	2651	Industrial Facilities Model, IFM: Transmission Systems - Other/Unknown	Miscellaneous transportation/transmission; contains assets such as trunk pipelines, pumping plants, and tank farms (these can be coded specifically by using existing OED construction codes). Oil, gas and water transmission can be specified using available occupancy codes.

Other:

Proposed Data Field	Proposed Description
CodeProvision	Code provision for energy, water and communication infrastructure
Anchorage	Anchorage of for energy, water and communication infrastructure
DiameterOfPipeline	Diameter of pipeline
VoltageOfEnergy	Voltage of energy infrastructure (applicable to substations, generation facilities and transmission)
PumpingCapacity	Capacity of water pumping and treatment plants, in MGD (millions of gallons per day)

Associated Codes:

Category	Code	Code Description
CodeProvision	1	No code/non-engineered
CodeProvision	2	Low Code
CodeProvision	3	Moderate Code
CodeProvision	4	High Code
Anchorage	1	Anchored
Anchorage	2	Unanchored
DiameterOfPipeline	1	Small (<40 cm)
DiameterOfPipeline	2	Large (≥ 40 cm)
VoltageOfEnergy	1	Low Voltage (<115 KV) Substation
VoltageOfEnergy	2	Medium Voltage (115-500 KV) Substation
VoltageOfEnergy	3	High Voltage (>500 KV) Substation
PumpingCapacity	1	Small pumping capacity (<10 millions gallons per day (MGD)

PumpingCapacity	2	Medium pumping capacity (10-50 MGD)
PumpingCapacity	3	Large pumping capacity (>50 MGD)
PumpingCapacity	4	Small Water Treatment Capacity (<50 MGD)
PumpingCapacity	5	Medium Water Treatment Capacity (50-200 MGD)
PumpingCapacity	6	Large Water Treatment Capacity (>200 MGD)

Geometry:

Adding a geometry field for the location will enable the user to highlight what type of risk it is, such as a line (road).

Proposed OED Field	Proposed Name	Proposed Description
GEOM	Geometry of the location	Point, Linestring, Polygon, PolygonWithHole, Collection

Category	Code	Code Description	Notes
GEOM	1	Point	More info here: https://postgis.net/workshops/postgis-intro/geometries.html
	2	Linestring	
	3	Polygon	
	4	PolygonWithHole	
	5	Collection	

- **#76 https://github.com/OasisLMF/OpenDataStandards/issues/76 - support agriculture in OED.**

The table below highlights the updates to the OED schema to support more occupancy and construction codes for agriculture and forestry.

	Current OED Code	Current Name	Proposed OED Code	Propose name	Comments
Occupancy	1353	Forestry, Unknown	1353	Forestry, General	
			1360	Agriculture, Crops	
			1370	Livestock	
	1354	Forestry, Spruce			Remove occupancy codes
	1355	Forestry, Birch			Remove occupancy codes
	1356	Forestry, Pine			Remove occupancy codes
Construction			8000-8146	Support multiple 'crop' codes	See GitHub issue for details
			8300-8327	Support multiple 'livestock' codes	See GitHub issue for details
			8400-8419	Support multiple 'forestry' codes	See GitHub issue for details
			8420	Forestry, Spruce	Taken from current occ code
			8421	Forestry, Birch	Taken from current occ code
			8422	Forestry, Pine	Taken from current occ code

- **#77 https://github.com/OasisLMF/OpenDataStandards/issues/77 - Extended length of loc user def fields (to 200 characters).**

- **#78 https://github.com/OasisLMF/OpenDataStandards/issues/78 - Add OED peril code for off-floodplain.**

Impact Forecasting asked for a peril code to be added for 'sewage backup' coverages. It's been suggested that this should be a separate peril code named "SBU" rather than including it in the group of flood perils for "off-floodplain".

- **#79 https://github.com/OasisLMF/OpenDataStandards/issues/79 - New OED fields related to vulnerability.**

The following fields and associated codes will be added to the OED schema:

File Name	Input Field Name	Type & Description	Data Type
Loc	VulnerabilitySetID	ID allowing custom location level vulnerability to be captured	int
Loc	BuildingFloodVuln	Building relative vulnerability to flood	tinyint
Loc	BIFloodVuln	BI relative vulnerability to flood	tinyint

Associated codes:

Category	Code	Code Description	Comment
BuildingFloodVuln	0	Unknown	
	1	No Susceptibility	
	2	Very Low	
	3	Low	
	4	Moderate	
	5	High	
	6	Very High	
	7	Total Susceptibility	For sensitivity testing
BIFloodVuln	0	Unknown	
	1	No Susceptibility	
	2	Very Low	
	3	Low	
	4	Moderate	
	5	High	
	6	Very High	
	7	Total Susceptibility	For sensitivity testing
ContentsFloodVuln	0	Unknown	These are updated codes of the existing 'ContentsFloodVuln' field to mirror the new ones above. Current ones are highlighted in the table below
	1	No Susceptibility	
	2	Very Low	
	3	Low	
	4	Moderate	
	5	High	
	6	Very High	
	7	Total Susceptibility	For sensitivity testing

Current Codes for *ContentsFloodVuln:*

Current Code	Current Description	Notes
0	Unknown / default	Level of vulnerability is unknown
1	Low	An unusually large percentage of the contents is water-resistant or protected
2	Moderate	A typical percentage or the contents is water-resistance or protected
3	High	A low percentage of the contents is water-resistant or protected
4	Very High	Almost none of the contents are water-resistant or protected
5	No Susceptibility	All the contents are water-resistant or protected

- **#81 https://github.com/OasisLMF/OpenDataStandards/issues/81 - Additions to OED to support off-shore renewable energy.**

Proposed OED Field Name	Proposed Description
OffShoreWaterDepth	Depth of water for offshore structures - in metres
SectionLength	Length of line element associated with point location in kilometres (km). Intended for line-assets, such as roads, railways and cables. Such an asset can be defined as a series of points along its length, and the 'Section Length' field describes the length associated with each point. E.g., if a road is coded as points at 2km intervals, then the 'Length' value is 2, and the TIV presents the value for that 2km stretch of road.
PowerCapacity	The electrical capacity (in MW) associated with an infrastructure asset. Intended for power generation and power transmission assets. E.g., power stations, turbines, cables, etc. Provide the generating capacity of each asset (e.g., for a turbine, this is the capacity of the turbine, not the windfarm).

Category	OED Code	Name	Description
Occupancy	3032	Offshore renewables - general	
	3033	Offshore Wind	All assets associated with offshore wind. Use Construction codes to differentiate between turbines, cables and substations (both offshore and onshore substations)
	3034	Offshore Tidal	All assets associated with offshore tidal energy
	3035	Offshore Ocean Wave	All assets associated with offshore ocean wave energy
	3036	Floating Solar PV	All assets associated with floating solar PV
Construction	7014	Offshore Renewables - General	Covers offshore wind, hydrogen, ocean wave, tidal, thermal and salinity gradient technologies and floating solar PV. It is preferred to separate these items if possible.

	7015	Offshore Wind - General	Covers Turbines, cables and substations. It is preferred to separate these items if possible.
	7016	Offshore Wind - Turbine	Offshore wind turbine. Key Loc fields to define the turbine are: Capacity and FoundationType.
	7017	Offshore Wind - Cable - General	Covers Infield, Export, Transmission, and Interconnector cables. It is preferred to separate these items if possible.
	7018	Offshore Wind - Cable - Infield	Array cables connect wind turbines to each other and to the offshore substation. Also called 'inter-aray cables'.
	7019	Offshore Wind - Cable - Export	Export cables transfer power from offshore wind farms to connect to an onshore grid network typically via intermediate AC substations or DC converters. In some instances, export cables can connect to an offshore grid system, as seen in Germany, or alternative end-use such as oil and gas platforms or industrial facility.
	7020	Offshore Wind - Cable - Transmission	Transmission cables connect an offshore shared platform to the onshore substation/converter.
	7021	Offshore Wind - Cable - Interconnector	Interconnectors are submarine cables that transfer electricity between two grids. They can be both domestic and international. 4C Offshore interconnectors database also contains 'oil and gas electrification' projects, which refer to subsea cables that powers oil and gas platform from shore.
	7022	Offshore Wind - Onshore Substation	Generally, the onshore substation will consist of switchgear, metering, transformers and associated plant. The onshore substation may also have reactive compensation equipment, depending on the network operator requirements and the design of the offshore network
	7023	Offshore Wind - Offshore Substation	Offshore substations are the systems that collect and export the power generated by turbines through specialized submarine cables.

Category	Proposed Codes	Proposed Code Descriptions
FoundationType	13	Monopile (offshore)
FoundationType	14	Tripod (offshore)
FoundationType	15	Jacket (offshore)
FoundationType	16	Tripile (offshore)
FoundationType	17	Gravity-based (offshore)
FoundationType	18	Floating: spar (offshore)
FoundationType	19	Floating: Semisubmersible (offshore)

- **#84 https://github.com/OasisLMF/OpenDataStandards/issues/84 -** Currently in OED there are the *NumberOfBuildings* and *IsAggregate* (true/false) fields for representing aggregate data, however they are not used other than for some models. The requirements for disaggregating exposures in Oasis and how these fields would be used or whether additions are required, are being reviewed. A list of use cases is currently being prepared to investigate this.

The aim is to confirm any additional OED fields before the end of September and feed these into ODS v3.0.0

- **#85 https://github.com/OasisLMF/OpenDataStandards/issues/85 - Additional OED currency and rate of exchange fields.**

Road Map for ODS v3.1.0 (New Year 2023)

The following additions are still in progress with the aim to include them as a minor update for v3.1.0 in early 2023.

- #69 https://github.com/OasisLMF/OpenDataStandards/issues/69 - Hazard meta data and intensity types in ORD.

- #72 https://github.com/OasisLMF/OpenDataStandards/issues/72 - New convergence reports in ORD.