Paper for Consideration by ENCWG
Representation of a an artificial structure and problems of inconsistency among publications

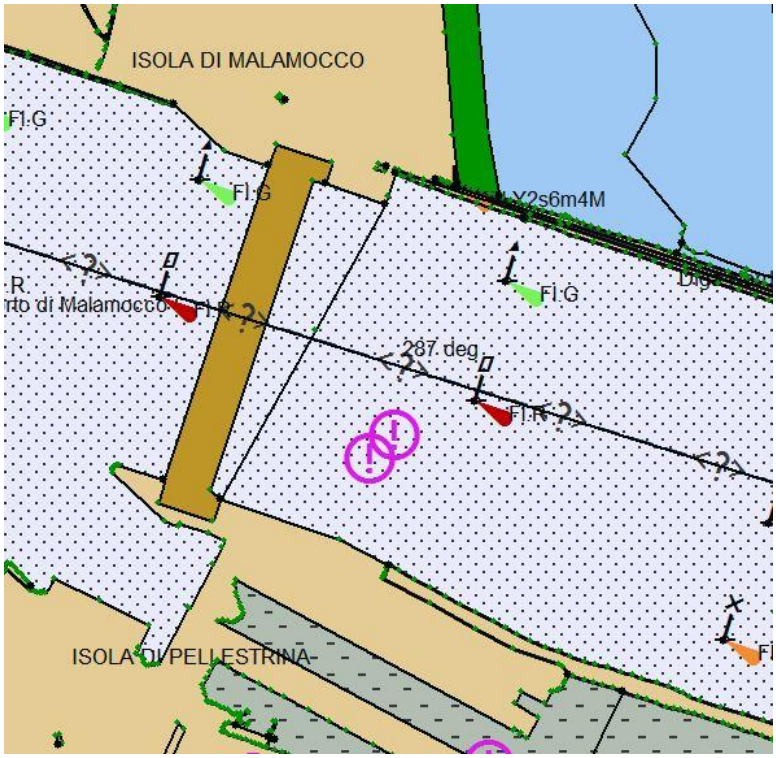
Submitted by: IIM (Italy)
Executive Summary: Proposal for the representation of an artificial structure (gates MOSE) for water flow control.
Related Documents: S-57 Appendix B.1, Annex A – Use of the Object Catalogue (UOC), S-58
Related Project:

Introduction/Background
An artificial structure (MOSE), for water flow control during high tides and adverse weather conditions, is being set up at the entrance of Malamocco Channel (northern Adriatic Sea) . It is a unique structure in Italy, therefore we have to decide how to encode it. This is a proposal and we will be grateful to other Members of the working group for their suggestions.

Analysis/Discussion
In the northern Adriatic Sea, near the entrance of Malamocco Channel, an artificial structure (MOSE) has been under construction for several years in order to control the flow of water. The structure will consist of blocks of concrete and mobile gates of metal laid on the bottom of the sea and covered by 18m. of water. The water column will be controlled to ensure the same depth. Only during particular weather and tide conditions, the gates will emerge over the sea level from the structure in order to block the flow of the water towards the entrance of the channel and to avoid flooding of the surrounding land areas.

At present the area, in which the work is in progress, has been encoded in the following way:
UNSARE (unsurveyed area) with geometric primitive of type area (to represent the object of group 1)
SLCONS (Shoreline construction) with geometric primitive of type area and attributes WATLEV = "always under water", CONDTN = "under construction";
CTNARE (Caution area) geometry area, in which the works in progress are described.

When the structure will be finished, probably by 2016-2017, a possible encoding will be:
DRGARE (Dredged area) geometry area; attributes: DRVAL 1 = 18m; QUASOU = " maintained depth"
GATCON (Gate) geometry area; attributes: GATCON "sluice" (the gate is normally 18m deep and emerges over the sea level only during high tide)
CTNARE geometry area ; attribute INFORM with a brief explanation of the structure



However, we have noticed that the publications related to the encoding of objects are not always consistent as highlighted in the table below where the object GATCON cannot be always put over a DRGARE object

	S-57 App.B.1,Ann A , UOC_Ed 4.0.0 June 2014	**S-58, ed. 4.2.0, February 2011**	**S-58 ed. 5.0.0 June 2014**	**S-101, App. A "Data classification and encoding guide" Draft _ March 2016**
GATCON with geometric primitive of type area must be covered by:	DEPARE or LNDARE object	Check 1580: DEPARE or LNDARE object of type Area (related to UOC 4.6.6.4) (categ. W)	Check 1580: DEPARE, DRGARE, UNSARE or LNDARE. (related to UOC 4.6.6.4) (categ. E)	Depth Area, Unsurveyed Area or Land Area feature

Conclusions

A) Our suggestion is:
DRGARE (Dredged area) geometry area; attributes: DRVAL 1 = 18m; QUASOU = " maintained depth"
GATCON (Gate) geometry area; attributes: CATGAT "sluice" (the gate is normally 18m deep and emerges over the sea level only during high tide)

CTNARE geometry area ; attribute: INFORM with a brief explanation of the structure

B) Emend the publications about the objects of Group 1 under GATCON for consistency

Recommendations

Add LNDARE and DRGARE objects in S57 App.B.1,Ann A , UOC_paragarph 4.6.6.4 (Ed 4.0.0 June 2014) and the feature Dredged Area in the draft of S-101, App. A "Data classification and encoding guide" Draft _ March 2016

Action required of ENCWG

The ENCWG is invited to discuss the issue outlined in this paper