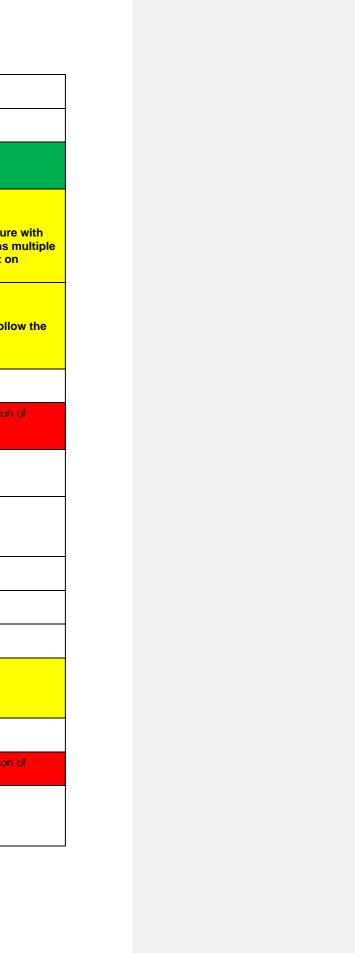**Summary of Substantive Changes in Edition 1.4.0 –** *List compiled using DCEG Edition 1.4.0.20240624*
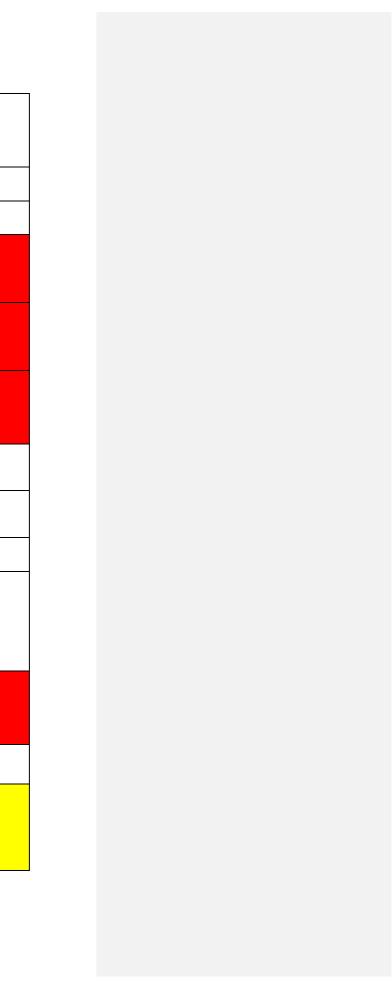
	Change Summary	Clauses Affected	Portrayal Impact Assessment			Way Ahead
			AS	**NN**	**XX**	
N	EXAMPLE - Added new Geo feature **Structure Over Navigable Water.**	2.3, 2.4.3, 8.7	**IMPACT** – ***Needs symbology.*** *Recommend use of thin black boundary line with CHGRF infill using 50% transparency*	**No Impact**	**Potential IMPACT?** *NIWC? Not sure you use this within the Rules …*	**Color Code** **Completed** / **Coded (Untested)** / **Blocked**
1	Added statement regarding the restriction of geometric primitives based on attribution of individual feature instance attribution being described in Sections 3-24.	2.3	**No Impact**		**No Impact**	
2	Removed Point as an allowable geometric primitive for the feature **Floating Dock**.	2.3, 2.5.9, **8.18**	**IMPACT** – ***Update Rule***		**IMPACT**	PC #400
3	Removed Point as an allowable geometric primitive for the feature **Pontoon**.	2.3, 2.5.9, **8.1**	**IMPACT** – ***Update Rule***		**IMPACT**	PC #401
4	Added new Geo feature **Structure Over Navigable Water**.	2.3, 2.4.3, 2.5.9, **8.7**	**No Impact** – *Already in PC 1.3.0*		**No Impact**	PC #360
5	Added new ECDIS Chart 1 custom feature **Chart 1 Feature**.	2.3, 2.4.3, **32.1**	**IMPACT** – ***New Rule***		**IMPACT**	PC #389 **Needs test data**
6	Included enhanced description of attribute types in line with changes applied at Sections 27, 28 and 30.	**2.4**, **2.4.2**	**No Impact**		**No Impact**	
7	Added new attribute type Universal Resource Identifier (URI).	**2.4.2**	**No Impact**		**No Impact**	
8	Added new attribute type Universal Resource Name (URN).	**2.4.2**	**No Impact**		**No Impact**	
9	Amended multiplicity of attribute **distance mark visible** from [0..1] to [1..1] for feature **Distance Mark**.	2.4.3, **8.10**	**IMPACT** – ***Update Rule as per*** Portrayal of Distance Mark · Issue #162 · S-101-Portrayal-subWG/Working-Documents (github.com) – Pending development of new symbol		**IMPACT**	PC #392
10	Corrected entry in Table 2-3 (Mandatory attributes) for feature **Lateral Beacon**.	**2.4.3**	**No Impact**		**No Impact**	
11	Amended multiplicity of "system" attribute **surrounding depth** from [0..1] to [1..1] for features **Marine Farm/Culture**, **Obstruction**, **Underwater/Awash Rock** and **Wreck**.	2.4.3, **13.4**, **13.5**, **13.6**, **13.10**	**IMPACT** – ***Update CSP Rules***		**No Impact** – on Obstruction, Rock, or Wreck **Potential IMPACT –** Marine Farm/Culture doesn't evaluate surrounding depth, it always generates a ProhAre alert.	**Clarify implementation for Marine Farm/Culture**
12	Amended multiplicity of complex attribute **survey date range** from [1..1] to [0..1] for feature **Quality of Bathymetric Data** and amended associated guidance.	2.4.3, **3.8**	**No Impact**		**No Impact**	
13	Corrected attributes listed in Table 2-3 (Mandatory attributes) for Meta feature **Update Information**.	**2.4.3**	**No Impact**		**No Impact**	

Commented [D1]: Usually because there isn't test data

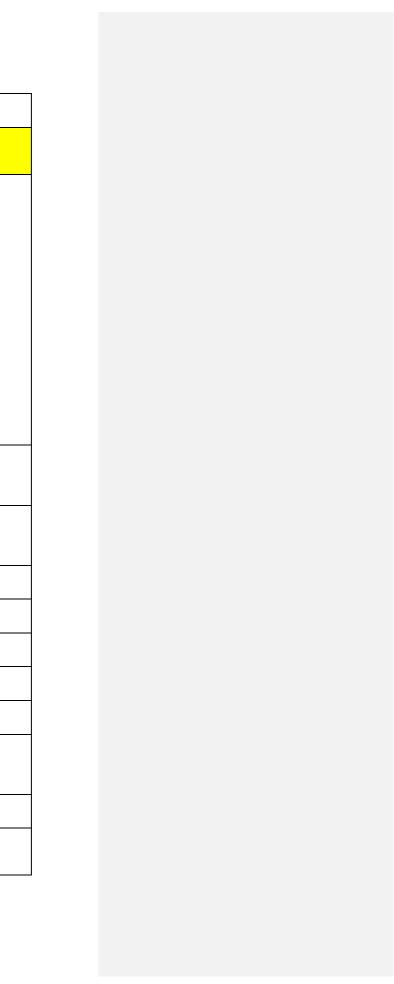| #	Description	Section				
14	Added new Meta attribute **drawing index** and associated encoding guidance.	2.4.5, 2.5.5, **3.5, 28.3**	**No Impact –** *ShoreECDIS only*		**No Impact**	
15	Included missing encoding guidance for attribute **name usage**.	**2.4.5**	**No Impact**		**No Impact (see row 94)**	
16	Included enhanced guidance on the intent and encoding requirements for the "system" attribute **flare bearing**.	**2.4.5.1, 30.2**	**Potential IMPACT?** *Review CSP logic*		**IMPACT –** revert to previous implementation	PC #361
17	Amended guidance for encoding of "system" attribute **default clearance depth** to have the calculation of the value based on the **depth range minimum value** of the shoalest depth area that the feature is covered by.	2.4.5.1, **30.1**	**IMPACT** – *Update CSP Rules*		**No Impact**	**Untested** **Create test data where a feature with default clearance depth spans multiple depth areas; evaluate impact on portrayal as isolated danger.**
18	Amended guidance for encoding of "system" attributes **default clearance depth** and **surrounding depth** to reflect that **surrounding depth** is mandatory in all cases and **default clearance depth** must be populated where **value of sounding** is populated as empty (null).	2.4.5.1, **30.1, 30.5**	**Potential IMPACT?** *Review CSP logic*		**No Impact**	**Untested** **Existing test data does not follow the amended guidance.**
19	Updated Figure 2-1 to reflect revised modelling for Information type **Spatial Quality**.	**2.4.7**	**No Impact**		**No Impact**	
20	Clarified final paragraph to add multipoint geometry and the Meta feature **Quality of Bathymetric Data** as allowed to be associated with **Spatial Quality**.	**2.4.7**	**No Impact**		**Potential IMPACT**	Need decision on implementation of MSC.530 alert requirements
21	Clarified the relationship between the population of the attributes **day of week** and **day of week is range** for Information feature Service Hours.	**2.4.9.1**	**No Impact**		**No Impact**	
22	Clarified guidance for externally referenced files that these files are "ENC dataset support" files as distinct from "system" files.	**2.4.12**, 27.97, 27.98, 27.141	**No Impact**		**No Impact**	
23	Replaced former Table 2-5 with a reference to Table 3-2.	**2.5.5**	**No Impact**		**No Impact**	
24	Added enhanced guidance for the encoding of the complex attribute **feature name**.	**2.5.8**	**IMPACT** – *Update CSP Rules*		**No Impact (see row 94)**	
25	New Remarks bullet added to clarify the encoding of the names of isolated shoals.	2.5.8, **11.3.1**	**No Impact**		**No Impact**	
26	Clarified that there is no requirement to encode **Quality of Bathymetric Data** or **Sounding Datum** meta features is there is no depth data or bathymetry in the dataset.	**3**	**No Impact**		**No Impact**	**Untested**
27	Added attribute **interoperability operator** as an allowable attribute for all Meta and Geo features.	**Sections 3-22**	**No Impact**		**No Impact -** (assume this should be "interoperability identifier")	
28	Included enhanced guidance for hierarchy of metadata.	**3.3**	**No Impact**		**Potential IMPACT**	Need decision on implementation of MSC.530 alert requirements
29	Amended cross-reference to S-57 attribute POSACC to be aligned with the complex attribute **horizontal position uncertainty** (formerly aligned to attribute **uncertainty fixed**).	3.4, 24.5, **28.26, 29.8**	**No Impact**		**No Impact**	

#	Description	Ref				
30	Allowed **Update Information** to be associated to S-101 Meta features using the association **Updated Information**.	3.4, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, **25.21**	No Impact		No Impact	
31	Removed allowable value restriction for attribute **maximum display scale**.	**3.5.1**	No Impact		No Impact	
32	Included enhanced guidance for the encoding of the scale attributes for the Meta feature **Data Coverage**.	3.5.1	No Impact		No Impact	
33	Added **horizontal position uncertainty** and **vertical uncertainty** as sub-complex attributes of complex attribute **zone of confidence** for Meta feature **Quality of Bathymetric Data**.	3.8, **29.42**	Potential IMPACT? *For logic in the gathering of POSACC/SOUACC during management of Alerts if MSC 530 'Uncertainty' use requirement is implemented*		Potential IMPACT	Need decision on implementation of MSC.530 alert requirements
34	Added condition that the sub-complex attribute **fixed date range** is mandatory if more than one instance of the complex attribute **zone of confidence** is populated for a **Quality of Bathymetric Data** instance.	3.8	Potential IMPACT? *For logic in the gathering of POSACC/SOUACC during management of Alerts if MSC 530 'Uncertainty' use requirement is implemented*		Potential IMPACT	Need decision on implementation of MSC.530 alert requirements
35	Added revised guidance on population of complex attributes **horizontal position uncertainty** and **vertical uncertainty** on **Quality of Bathymetric Data** or on Information feature **Spatial Quality** associated to **Quality of Bathymetric Data**.	**3.8.1**, 24.5.1	No Impact		Potential IMPACT	Need decision on implementation of MSC.530 alert requirements
36	Added clarification that the vertical CRS defined in the ENC dataset header is only applicable to soundings (features **Sounding** and **Depth – No Bottom Found**).	3.9.1	No Impact		No Impact	
37	Added clarification that the vertical CRS defined in the ENC dataset header is not utilized by the ECDIS in conveying sounding datum information to the Mariner.	3.9.1	No Impact		No Impact	
38	Clarified that meta features **Sounding Datum** and **Vertical Datum of Data** may overlap.	**3.9.1**, **3.10.1**	No Impact		No Impact	
39	Added value *13* (low water) as an allowable value for attribute **vertical datum** for use as the reference datum for heights and vertical clearances.	**3.10**, 6.7, 6.8, 6.9, 6.10, 6.11, 6.16, 7.4, 8.11, 8.13, 19.2, 19.3, 19.4, 19.5	No Impact		No Impact	
40	Clarified that the vertical uncertainty associated with survey reliability is to be encoded using an instance of **Spatial Quality** associated to the geometry of individual geo features or an instance of **Quality of Bathymetric Data**.	3.11.1	No Impact		Potential IMPACT	Need decision on implementation of MSC.530 alert requirements
41	Added new feature association **Update Aggregation** and associated guidance.	3.12, **25.20**	No Impact – *ShoreECDIS only?*		IMPACT	PC #406 **(needs test data)**
42	Added enhanced guidance for encoding **Update Information**, including new guidance that the use of **Update Information** may be extended for inclusion in New Editions to highlight substantive changes that have been included in a New Edition.	3.12.1	No Impact – *Understand Mariners will visualize Updated features by simply turning the associated VG ON/OFF and using Pick report to get more info.*		No Impact	Untested

43	Added attribute **reported date** as an allowable attribute for feature **Land Area**.	**5.4**	No Impact		No Impact	
44	Added "system" attribute **in the water** and amended corresponding encoding guidance for feature **Built-Up Area**.	**6.1**, 6.1.1	No Impact – *Already in PC 1.3.0*		No Impact	PC #365
45	Corrected the Type for the Component of Role for the **Aids to Navigation Association** to Aggregation for the target feature.	6.2, 6.6, 6.7, 6.8, 6.9, 6.11, 6.12, 7.2, 7.3, 7.4, 7.5, 8.3, 8.4, 8.6, 8.13, 8.15, 8.18, 8.19, 13.9, 14.1, 20.1, 20.2, 20.3, 20.4, 20.5, 20.9, 20.10, 20.11, 20.12, 20.13, 20.14, 20.15, 20.16, **25.2**	No Impact		No Impact	
46	Added **Helipad** as an allowable equipment feature on structure features **Building**, **Landmark** and **Offshore Platform** for inclusion in the association **Structure/Equipment**.	6.2, 6.5, 7.2, 14.1, 18.1, **25.16**	No Impact		No Impact	
47	Clarified encoding guidance for roofed structures over navigable water to provide protection of vessels or their cargo as it applies to the features **Building** and **Harbour Facility**.	**6.2.1**, **22.7.1**	No Impact		No Impact	
48	Added new encoding examples (Figures) for the **Bridge** feature.	**6.2.2**	No Impact		No Impact	
49	Added **Helipad** as a distinction for the feature **Airport/Airfield**.	**6.3.1**	No Impact – *Already in PC 1.2.0*		No Impact	
50	Added **Helipad** as an allowable feature for inclusion in the association **Structure/Equipment**.	6.5, 14.1, **25.16**	No Impact		No Impact	
51	Removed value *6* (pontoon bridge) as an allowable value for attribute **category of opening bridge**.	6.6, **27.46**	No Impact		No Impact	
52	Added value *21* (cement) as an allowable enumerate value for attribute **product** on feature **Conveyor**.	**6.9**	No Impact		No Impact	
53	Replaced attribute **category of cable** values *4* (telephone) and *5* (telegraph) with value *10* (telecommunications) as allowable values for feature **Cable Overhead**.	**6.10**	No Impact		No Impact	
54	Added new feature association **Roofed Structure Association**.	6.12, **25.14**	No Impact		No Impact	
55	Corrected complex attribute **vertical clearance open** for feature **Gate** to be consistent with feature **Span Opening** (addition of mandatory sub-attribute **vertical**	**8.11**	**IMPACT** – *Update CSP Rule to display 'clr' text as per Bridges*		**IMPACT**	PC #407 **Needs test data**

	clearance unlimited and amendment of multiplicity of sub-attribute **vertical clearance value**).				
56	Added **Pontoon** as an allowable feature for inclusion in the association **Bridge Aggregation**.	8.19, **25.4**	No Impact	No Impact	
57	Added complex attribute **fixed date range** to relevant "no geometry" features (consistency)	**8.23**, **15.6**, **15.11**, **15.15**, **15.23**	No Impact	No Impact	**Untested**
58	Remove attribute **display uncertainties** and associated guidance from S-101.	11.3, 13.4, 13.5, 13.6, **27.89** (Edition 1.2.0)	No Impact	No Impact	
59	Removed value *5* (position doubtful) as an allowable value for attribute **quality of horizontal measurement**.	11.3.1, 13.3, 24.5,	No Impact	No Impact	
60	Added complex attribute **vessel speed limit** as an allowable attribute to all features having attribute **restriction** = *27* (speed restricted) as an allowable value.	**11.4**, **13.10**, **14.3**, **14.4**, **14.6**, **15.7**, **15.14**, **15.16**, **15.17**, **15.18**, **15.21**, **15.22**, **16.3**, **16.6**, **16.7**, **16.8**, **16.10**, **16.18**, **16.24**, **22.7**,	No Impact	No Impact	
61	Amended Remarks 16th bullet to distinguish between FAD and a wreck deliberately sunk to perform the function of a fish haven.	**13.6.1**	No Impact	No Impact	
62	Added new Remark prohibiting **Obstruction** of geometric primitive curve where attribute **category of obstruction** is populated s *23* (mangrove).	**13.6.1.1**	No Impact	No Impact	
63	Amended attribute type for attribute **interoperability identifier** from TE to URN.	15.4-31, 19.2-5, 20.1-19, 21.2-5, **27.113**	No Impact	No Impact	
64	Added attribute **communication channel** and amended encoding guidance to specify single communication channel instances should be encoded on the relevant feature but multiple instances of the same communication channel should be encoded using an associated **Contact Details** feature.	**15.27**, **15.30**, **15.31**, **16.26**, **22.1**, **22.3**, **22.4**, **22.5**, **22.6**, **22.7**	Potential IMPACT? *Make sure all related features display the text 'chnn' when linked to one Contact Details feature.*	No Impact (assuming 'ch nnn' should only be displayed on RadarStation and RadioCallingInPoint)	PC #368
65	Added Information type **Contact Details** as allowable for inclusion in the information association **Additional Information**.	**15.30**, **15.31**, **16.26**, **21.4**, **22.4**, **22.5**,	No Impact	No Impact	
66	Added note to clarify that encoding of **Anchorage Area** of type curve or surface and having attribute	**16.3.1**	No Impact	No Impact	

Commented [DG2]: Curve is not valid for AnchorageArea

	category of anchorage = *15* (reported anchorage) is prohibited.				
67	Amended guidance to reflect that complex attribute **vessel speed limit** can be populated for features other than **Restricted Area**.	**17.4**	No Impact	No Impact	
68	Added new Remarks bullet specifying that large offshore structures carrying helipads erected offshore as light supports must be encoded as **Landmark**.	**18.1**	No Impact	No Impact	
69	Corrected Table 19-1 to remove columns for IQ and IVQ (no longer valid light characteristics in S-4).	**19.1.1**	No Impact	No Impact Could remove entries from look up table if desired.	
70	Added attribute **exhibition condition of light** value *3* (fog signal) as an allowable value for feature **Light Sectored**.	**19.3**	No Impact – *On a related issue, I can't find display of* ***FogDetectorLight*** *Text script (*Fog Det Lt *) as per S-52 PL Part I 10.6.3 (CATLIT Table).* **NIWC to check please.**	No Impact	
71	Added complex attribute **multiplicity of features** as an allowable attribute for feature **Light Sectored**.	**19.3**	No Impact	No Impact	
72	Clarified encoding guidance for population of attribute **estimated range of transmission** for AIS aids to navigation.	**21.2.1, 21.3.1**	No Impact	No Impact	
73	Added new guidance for encoding virtual AIS aids to navigation intended to serve a purpose other than those defined in attribute **virtual AIS aid to navigation type**.	**21.3.1**	No Impact	No Impact	
74	Amended attribute **text type** value *2* from "light characteristic" to "feature characteristic" and amended guidance accordingly.	23.1, 27.180	Potential IMPACT - *Update terminology in associated Rule?*	**IMPACT** Implementation needs updating to place feature characteristics such as clearance values.	[PC #397](#)
75	Amended multiplicity for cartographic feature **Text Placement**, attribute **text type** from [0..1] to [0..2].	23.1	**IMPACT** – *Update CSP Rule to present multiple text strings*	**IMPACT**	[PC #398](#)
76	Included guidance that the population of the cartographic feature **Text Placement** attribute **text offset bearing** determines the alignment (justification) for the text relative to the feature.	23.1.1	**IMPACT** – *Update to implement text position when in 'Heads-Up' mode.*	**IMPACT**	[PC #396](#)
77	Amended attribute type for attribute **linkage** from TE to URI.	24.1, 27.120	No Impact	No Impact	
78	Included features **Pilotage District**, **Radar Range**, **Radar Station**, **Radio Station**, **Signal Station Traffic** and **Signal Station Warning** as features that that may be associated to the Information type **Contact Details** using the association **Nautical Information**.	24.1, 25.1	No Impact	No Impact Assuming the contact details should not be portrayed.	
79	Added condition that the sub-complex attribute **fixed date range** is mandatory if more than one instance of the complex attribute **spatial accuracy** is populated for a **Spatial Quality** instance.	24.5	No Impact	Potential IMPACT	Need decision on implementation of MSC.530 alert requirements
80	Enhanced guidance added for encoding associations. Figures updated.	25	No Impact	No Impact	

Commented [DG3]: It's in LITDSN02.lua, corresponding to categoryOfLight = 7. Although this value can no longer be encoded for CATLIT, it's passed in as a hard-coded value from LightFogDetector.lua to LightFlareAndDescription.lua (as the 3rd parameter).

It is true that "Dir " will never be displayed.

81	All Associations and Association Role names reviewed and amended to improve consistency and comprehension.	**25**, **26** (corresponding changes applied throughout)	**No Impact**		**Potential IMPACT –** needs full review of changes to determine impact.	PC #408
82	Corrected association **Text Association** to add missing feature **Swept Area** to the identifies Role.	**25.17**	**No Impact**		**No Impact**	
83	Reformatted attribute tables to be consistent with S-100 and the IHO Geospatial Information Registry syntax for attribute precision and value range.	**27**, **28**, **30**	**No Impact**		**No Impact**	
84	Removed **category of cable** values *4* (telephone) and *5* (telegraph) as allowable values.	**27.12**	**No Impact –** *Previously addressed in this document*		**No Impact –** see row 53	
85	Amended definition of value *3* (current farm) for attribute **category of offshore production area**.	**27.44**	**No Impact**		**No Impact**	
86	Amended definition for attribute **category of radio station** value *20* (AIS base station) and removed Remark.	**27.55**	**No Impact**		**No Impact**	
87	Added new simple attribute **category of structure**.	**27.68**	**No Impact**		**No Impact**	
88	Corrected definition for **category of zone of confidence in data** value *1* (zone of confidence A1) to add "+ 5% depth" to the positional accuracy component.	**27.74**	**No Impact**		**Potential IMPACT**	Need decision on implementation of MSC.530 alert requirements
89	Corrected Note 1 for attribute **category of zone of confidence in data** to include the Information type **Spatial Quality** in providing additional quality information.	**27.74**	**No Impact**		**Potential IMPACT**	Need decision on implementation of MSC.530 alert requirements
90	Amended definitions for enumerate values of attribute **day of the week**.	**27.85**	**No Impact**		**No Impact**	
91	Removed guidance for population of attribute **file reference** related to XML and HTML file formats.	**27.97**	**No Impact**		**No Impact**	
92	Amended name and definition for attribute **marks navigational – system of**, value *11* from CEVNI to Main European Inland Waterway Marking System.	**27.123** (corresponding changes applied throughout)	**No Impact**		**No Impact**	
93	Corrected the definition of attribute **maximum permitted vessel length** to refer to length rather than draught.	**27.125**	**No Impact**		**No Impact**	
94	Removed value *3* (no chart display) as an allowable value for attribute **name usage**.	**27.133** (corresponding changes applied throughout)	**Potential IMPACT –** *Check attribute is not used in any portrayal rule*		**IMPACT**	PC #409 Needs test data
95	Removed generic definition for "rectangle" from attribute **topmark shape** values *20* (rectangle (horizontal)) and *21* (rectangle (vertical)) and added to Remarks.	**27.184**	**No Impact**		**No Impact**	

96	Amended resolution of attribute **value of sounding** from 0.01 metres to 0.1 metres.	**27.192**	**No Impact**		**No Impact**	
97	Amended attribute type for attribute **measurement distance maximum** from type Real to type Integer.	**28.10**	**No Impact**		**No Impact**	
98	Amended attribute type for attribute **measurement distance minimum** from type Real to type Integer.	**28.11**	**No Impact**		**No Impact**	
99	Amended cross-reference to S-57 attribute POSACC to be aligned with the complex attribute **horizontal position uncertainty** (formerly aligned to attribute **uncertainty fixed**).	**29.8** (corresponding changes applied throughout)	**No Impact**		**No Impact**	
100	Removed redundant complex attribute **update description**.	**29.35** (Edition 1.2.0)	**No Impact**		**No Impact**	
101	Amended cross-reference to S-57 attributes SOUACC and POSACC to be aligned with the complex attribute **vertical uncertainty** (formerly aligned to attribute **uncertainty fixed**).	**29.40** (corresponding changes applied throughout)	**No Impact**		**No Impact**	
102	Amended definition for "system" attribute **surrounding depth** to remove the condition that the encoded feature instance must be of unknown depth.	**30.5**	**Potential IMPACT – *Review CSP logic against expected attribute values coming pre-populated (by software or cartographer) in an ENC***		**No Impact**	
103	Added new DCEG Section **ECDIS Chart 1 Features and Attributes**.	**32**	**IMPACT** – ***Requires implementation***		**IMPACT –** see row 5	PC #389 ==Needs test data==
104	Added new ECDIS Chart 1 custom attribute **drawing instruction**.	**32.2**			**IMPACT –** see row 5	PC #389 ==Needs test data==