



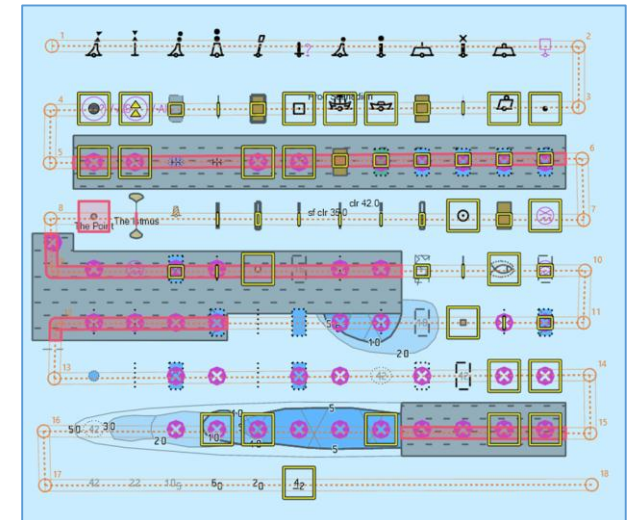
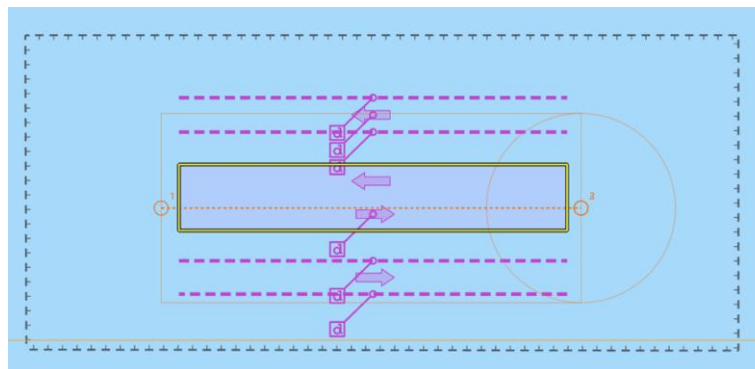
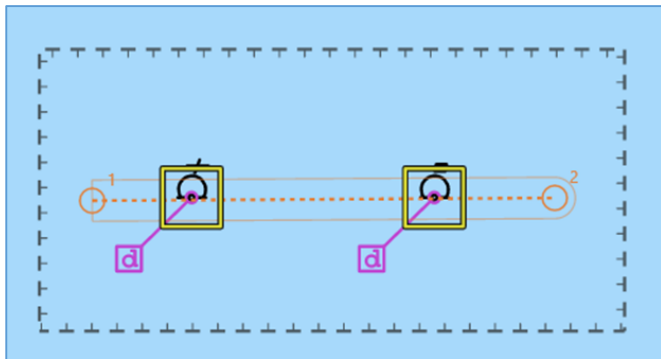
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Allowable Differences Between S-52 and S-101 Display and Functionality in ECDIS

S-101 PT Chair Thomas RICHARDSON

S-101PT11-8.2 19 Sep 2023





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OVERVIEW

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- The IHO has agreed to the adoption of the dual fuel concept where S-57 and S-101 ENCs coexist during the transition phase. This was concept endorsed by the 3rd IHO Assembly in May 2023 [A3_2023_PRO-2.1_EN_DualFuel_v1.1.pdf \(iho.int\)](#)
- At S-101PT8 KHOA submitted as paper on S-101 symbol developments [S-101PT8_07B](#)
- Associated discussions concluded that during the dual fuel period judgement would be needed to ensure that changes to symbols remained appropriate
- An action was raised on the chair and this paper seeks to progress this action;

ACTION PT8-14 Chair to include the subject of determination of allowable differences between S-52 and S-101 portrayal in the dual-fuel environment for a future S-101PT meeting.



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USER NEED

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- Users of ENC's and ECDIS are generally familiar with S-52 presentation and the associated alerts and indications
- In S-101 display, alerts and indications need to be consistent with S-57 so that users are not confused, users may move between S-57 and S-101 ENC's so the safety related aspects must be consistent
- Research suggests that training and competence in ECDIS is already a challenge so introducing additional complexity must be avoided, however new symbols may benefit users by reducing the need to conduct cursor picks so a balance may need to be considered
- [Ref UK DK MAIB ECDIS Safety Study](#)



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PRINCIPLES

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1. S-101 may add new symbols where specific symbols did not exist in S-52, they must be intuitive and consistent with S-4 if applicable, they must follow established conventions for colour
2. S-101 may change symbols but changes must retain elements such as shape to ensure that confusion is not introduced
3. S-101 must not change alerts and indications - although where new specific features are created the number of indications may be reduced for users due to changes in the data e.g .CTNARE in S-57 mapping to VTS Area in S-101 (user benefit)
4. The Nautical Cartography Working Group must review new and changed symbology considering S-4 and this will be done as part of the Registry submission process



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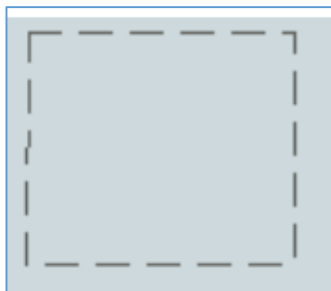
EXAMPLES – ACCEPTABLE DEVIATION

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- S-101 has modified the centred symbol for foul ground this is a minor modification and consistent with S-4 (Principle 2)

[Foul ground boundary and line element · Issue #65 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)



- S-101 has introduced a new symbol for Pilotage District (Principle 1)

[Review of Pilotage District Symbology · Issue #105 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)



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EXAMPLES – ACCEPTABLE DEVIATION

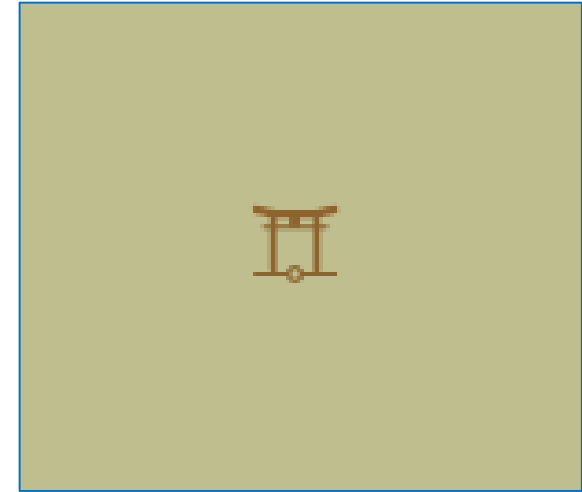
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- A new symbol has been added for Torii which is new category of landmark value
- Principle 1 applies not in S-4 but considered adequately intuitive as shape reflects the real-world feature

[Category of Landmark=25 - Torii · Issue #60 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)

- Label “man” added AtoNs operated by call/radio
- Principle 1 applies and S-4 B452.9 refers

[Signal generation - call and radio activated · Issue #38 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)





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EXAMPLES - ACCEPTABLE DEVIATION

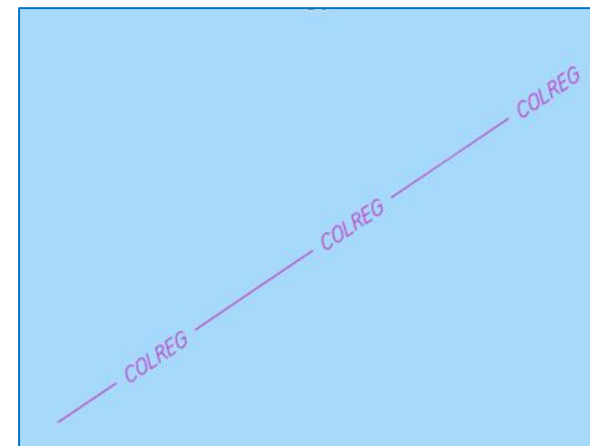
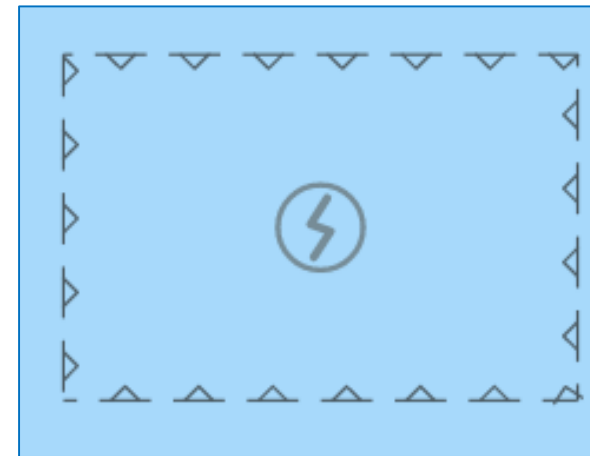
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- New symbology introduced for renewable energy farm based on INT 1 L6

(Principle 1)

- [Renewable Energy Farm · Issue #67 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)

- New line style using text to present Collision Regulations Limit
- Principle 2 applies although not covered in S-4 consistent with national paper chart presentation so judged to be intuitive
- [Collision Regulations Limit · Issue #41 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)



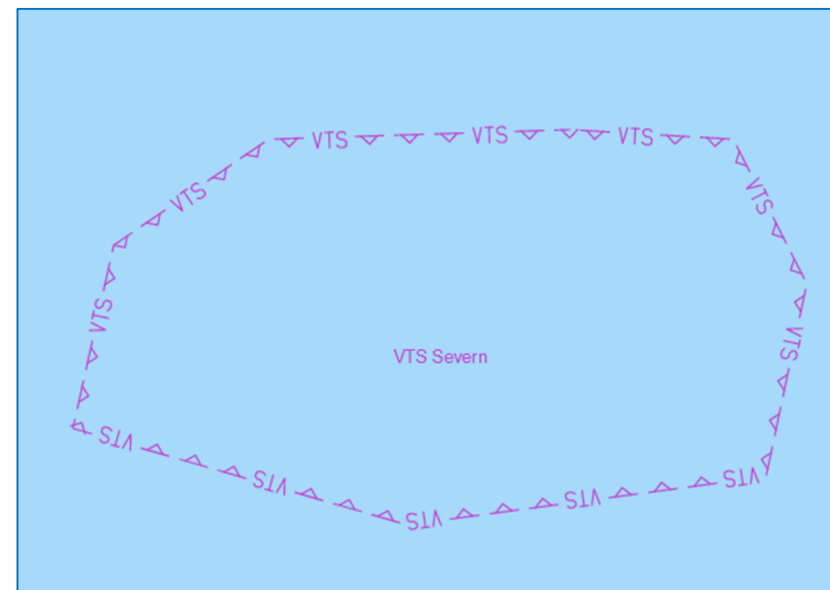


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EXAMPLES - ACCEPTABLE DEVIATION

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- New symbology has been introduced for VTS Areas as a new S-101 feature
- Principle 2 applies use of text in linestyle should ensure this is intuitive
- [Vessel Traffic Service Area · Issue #50 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)





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EMERGENCY WRECK MARKING BUOY

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- A new symbol has been introduced for Emergency Wreck Marking Buoy
- Principle 2 applies here the symbol is considered intuitive as it reflects the real-world colour of these marks and the shape of the topmark which is consistent with existing simplified symbology

[Buoy New Danger Marking · Issue #46 · S-101-Portrayal-subWG/Working-Documents \(github.com\)](#)

- Currently only a simplified symbol has been included in the Portrayal Catalogue
- It is understood that this is predicated on an assumption that colour filled buoyage symbols will be adopted

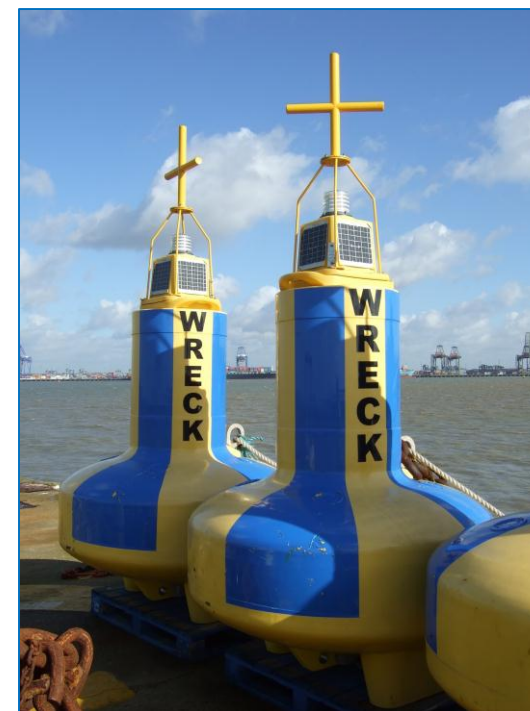
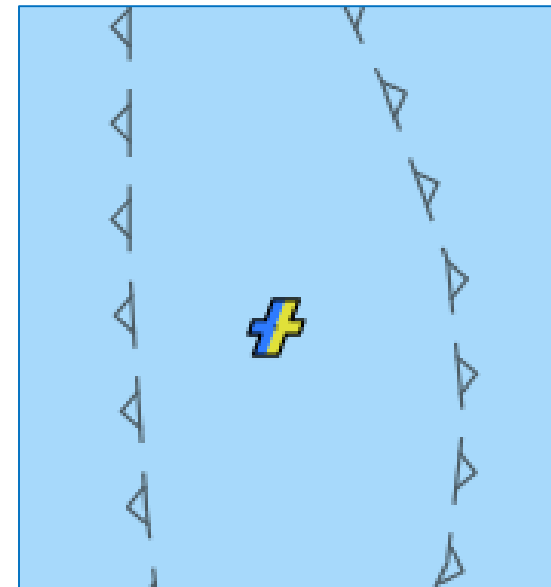


Image courtesy of Trinity House

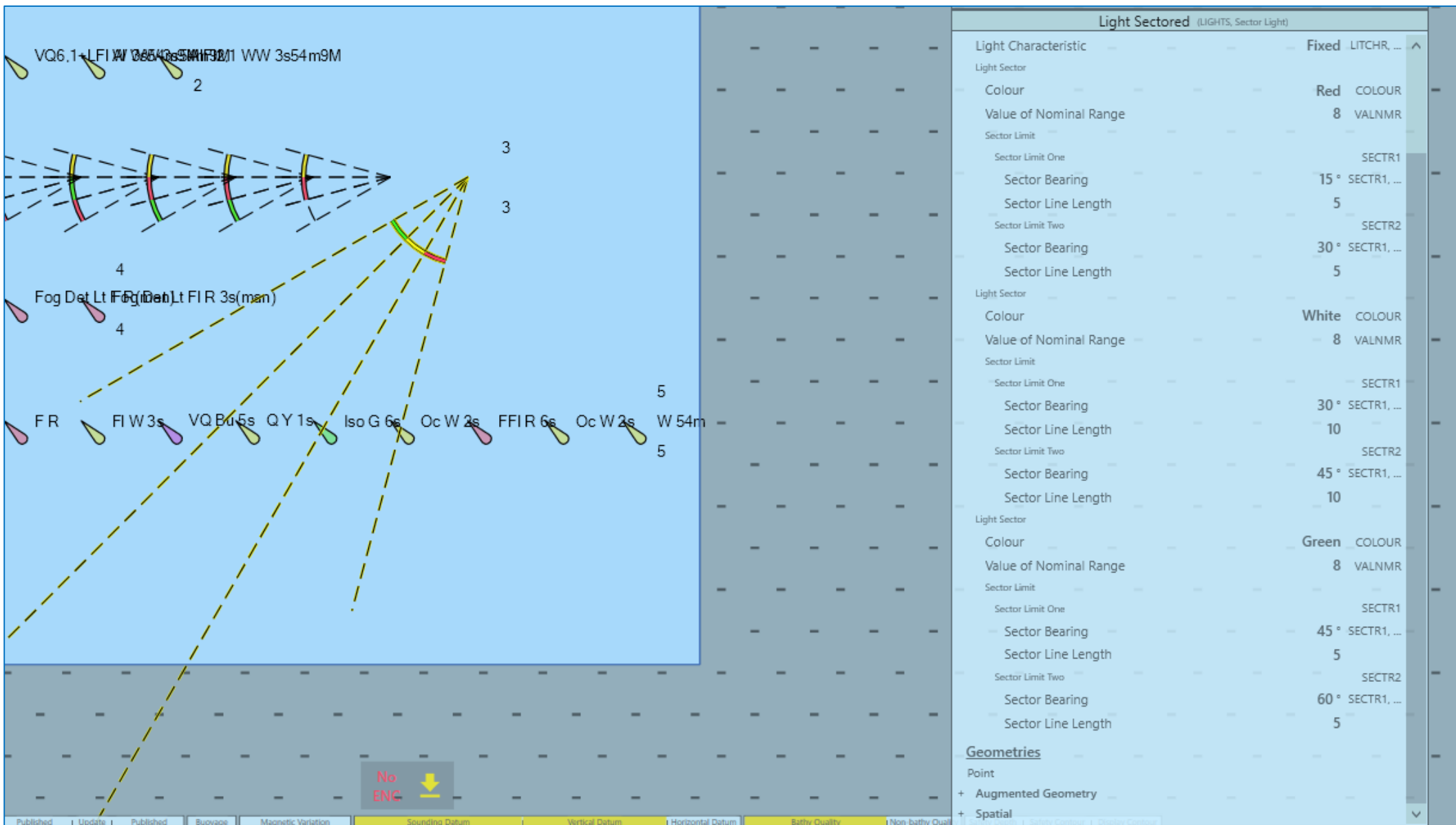
[Emergency wreck buoys | Trinity House](#)



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SECTOR LINE LENGTH

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Light Sected (LIGHTS, Sector Light)	
Light Characteristic	Fixed LITCHR, ... ^
Light Sector	
Colour	Red COLOUR
Value of Nominal Range	8 VALNMR
Sector Limit	
Sector Limit One	SECTR1
Sector Bearing	15° SECTR1, ...
Sector Line Length	5
Sector Limit Two	SECTR2
Sector Bearing	30° SECTR1, ...
Sector Line Length	5
Light Sector	
Colour	White COLOUR
Value of Nominal Range	8 VALNMR
Sector Limit	
Sector Limit One	SECTR1
Sector Bearing	30° SECTR1, ...
Sector Line Length	10
Sector Limit Two	SECTR2
Sector Bearing	45° SECTR1, ...
Sector Line Length	10
Light Sector	
Colour	Green COLOUR
Value of Nominal Range	8 VALNMR
Sector Limit	
Sector Limit One	SECTR1
Sector Bearing	45° SECTR1, ...
Sector Line Length	5
Sector Limit Two	SECTR2
Sector Bearing	60° SECTR1, ...
Sector Line Length	5
Geometries	
Point	
+ Augmented Geometry	
+ Spatial	

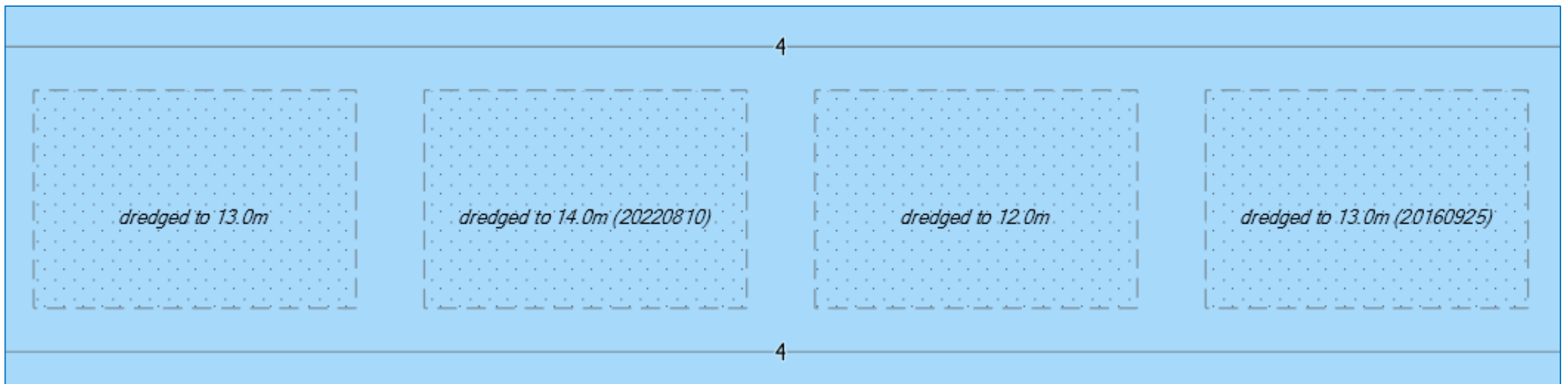


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DREDGED AREAS

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- The text displayed for dredged areas has changed from S-52 which displayed no text
- Principle 1 applies and S-4 B-414 refers, suggest that review is needed
- Need to confirm rules reflect distinction between areas regularly maintained and those not, also need to consider the potential for clutter here and use of Scale Minimum on the text may need consideration (Text Placement currently limited to Point features)





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RECOMMENDATIONS

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The S-101 PT is invited to

- a) Review the proposed principles and consider their inclusion in the S-101 Data Product Specification during the transition period
- b) Portrayal SG to develop a list of new and changed symbology as a reference list
- c) Testing should seek to validate new symbology with end users
- d) A mechanism for communication of changes and inclusion in training content should be established and be executed during the Operational period



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QUESTIONS ?