Factsheet for new measures under Article 13 of Marine Strategy Framework Directive 2008/56/EO

This measure fact sheet is the result of coordination between the UBA project Implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria – Development of Programmes of Measures under Article 13', carried out by Fresh Thoughts/Intersus, and the EC project (DG Environment) 'Technical and administrative support for the joint implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria and Romania – Phase 2", carried out by ARCADIS-Belgium.

Measure characteristics	**Management area:** - ***Black Sea***	**Code:** ***MSFD reporting code*** **No. of measure: 20**
Measure title	Revision of areas for dredging and disposal of dredging materials (suitability of existing disposal sites and proposals for new ones)	
Short, precise description of the measure	In the Bulgarian coastal zone (up to 12-mile zone from the coast of Varna and Bourgas Bays) there are two defined areas for the disposal of dredging materials. There are no preliminary and follow-up studies on the suitability of these areas or impact on the elements of the marine environment. Also, there is a lack of data on contaminants in the dredged material. At this stage, there are no specific requirements in the Bulgarian legislation on procedures for defining such areas (including criteria), their operation and control of activities. The measure incorporates the study of the adequacy of existing disposal sites for dredging materials and proposals for new areas if necessary. This process includes collecting information on future activities in building of new or reconstruction of old marine protection facilities including dredging and disposal activities, also activities related to dredging of navigation canals for access to the Bulgarian marine ports. Research on existing dredging disposal areas is needed to determine the level of pollutants in the sediments. The last activity is very important for defining areas for the disposal of dredge materials. The measure includes the following activities: **First step:** conducting a study on the sediment composition in the existing disposal sites and potentially new ones – a subject of investment intentions. **Second step:** research on existing dredging disposal areas (hydromorphological characteristics) and assessment of its purpose suitability and proposals for new ones, if necessary. **Third step:** analysis of national legislation and preparation of proposals for revision of process of determination of such areas and permitting, conditions and control for its exploitation. (example: regular control of the quality of marine environment must be	

	carried out in the disposal areas (out of scope of the regular monitoring under MSFD Article 11). Companies carrying out dredging activities should conduct monitoring before and after the disposal of the dredging materials within the existing and new locations)
EU measure category	Categorisation of the measure in accordance with the "PoM Recommendations": **2a**
Key Types of Measures	*KTMs as defined in the „PoM Recommendations". Measures can be categorised in one or multiple KTMs.* **KTM 38 Measures related to Spatial Protection Measures for the marine environment (not reported under another KTM)**
Environmental targets	*Categorisation of the measures in accordance with the nationally defined operational environmental objectives.* **Descriptor 6:** **1.1.1, 1.1.2, 1.1.3 Target: Maintain or increase the distribution range (and pattern within the latter) of the typical zoobenthos and phytobenthos species in the MSFD predominant habitat types, relevant habitats under the Habitats directive and the associated national biotopes, according to the Bulgarian report under Art. 10 of the MSFD:** • Chthamalus stellatus (MSFD: Mediolittoral rocks. Habitats Directive: 1170; National biotope: Upper mediolittoral with Chthamalus stellatus, Melaraphe neritoides и Ligia italica) • Donacilla cornea (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Cystoseira barbata and Cystoseira crinita (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Phyllophora crispa (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • Mytilus galloprovincialis and Mytilaster lineatus (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Zostera marina and Zostera noltei seagrasses (MSFD: Shallow sands. Habitats Directive: 1110; National biotope: Seagrass meadows). • Donax trunculus (MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus). • Lentidium mediterraneum (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium

	mediterraneum). • Arenicolla marina (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: sand with Arenicolla marina и Callianassa spp.). • Chamelea gallina. (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: sands with Chamelea gallina). • Upogebia pusilla. (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: muddy sands with Upogebia pusilla). **1.2.1 Maintain the abundance and biomass of the typical zoobenthos and phytobenthos species by preventing the deterioration of marine environment resulting from sealing, nutrient enrichment , smothering, abrasion and extraction of living or non-living resources according to the threshold values specified in the Bulgarian Art. 10 MSFD Report:** • Abundance (Donacilla cornea) > 4500 individuals /m^2; Biomass (Donacilla cornea) > 2500 individuals/m2 (Table I.2.5 of the Bulgarian MSFD Art. 10 report) (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Abundance and biomass of Cystoseira barbata (thresholds: horizontal coverage: 12500 sq. cm per m2, average dry biomass: 600 grams per m^2; average fresh biomass: 3000 grams per m2); Cystoseira crinita (thresholds: horizontal area covered: 15000 sq. cm per m2, average dry biomass: 500 grams per m2; average fresh biomass: 2500 grams per m2)(MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Biomass as wet weight (Mytilus galloprvincialis) > 20000 g/m2; biomass as wet weight (Mytilaster lineatus) > 3000 g/m2 (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Abundance(Phyllophora crispa): horizontal area cover > 3800 sq. cm/m2; average dry biomass > 70 g/m2; average wet biomass > 180 g/m^2 (Source: Table I.2.12 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • Abundance (Chamelea gallina) > 400 individuals/m2; biomass > 300 g/m^2 (Source: Table I.2.18 of the Bulgarian MSFD Art. 10 report). Abundance (Upogebia pusilla) > 90 individuals per m2; biomass (Upogebia pusilla) > 100 grams per m2 (threshold > 100 g/m2) (Table I.2.18 of the Bulgarian GES report) (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: sands with Chamelea gallina). • Abundance (Donax trunculus) > 175 individuals per m^2 and biomass (Donax trunculus) > 350 g/m^2 (Source: Table I.2.16 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow sublittoral sands. Habitats Directive:

	1110; National biotope: coarse and medium sands with Donax trunculus). • Abundance (Lentidium mediterraneum) > 4500 individuals per m^2; biomass > 250 g/m^2 (Source: Table I.2.17 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium mediterraneum). • Abundance (Zostera noltii, Zostera marina) > 500 ind./m^2); Biomass, dry (Zostera noltii, Zostera marina) > 60 g/m^2 (MSFD: Shallow sands. Habitats Directive: 1110; National biotope: Seagrass meadows). • Average biomass of the Mytilus galloprovincialis: CPUA (Cape Kaliakra) = 61.337 ± 54.755 kg/ha; CPUA (Balchik) = 701.108 ± 636.879 kg/ha; CPUA (Cape Emine) = 655.208 ± 349.593 kg/ha; CPUA (Cape "Maslen Nos") = 300.291 ± 203.687 kg/ha (Source: Table I.2.21 of the Bulgarian MSFD Art. 10 report) (MSFD Shelf sublittoral rocks and biogenic reefs, HD: 1170) **1.3.1 Maintain the population demographic characteristics of the benthic habitat defining species according to the threshold values defined in Bulgarian MSFD Art. 10 report:** • Maintain the population demographic characteristics of the typical species (Chthamalus stellatus, Melaraphe neritoides, Ligia italica, Mytilaster lineatus, Mytilus galloprovincialis) within their threshold values (operational by 2018)(MSFD: Mediolittoral rocks. Habitats Directive: 1170; National biotope: Upper mediolittoral with Chthamalus stellatus, Melaraphe neritoides и Ligia italica) • Length (Donacilla cornea) > 16 centimetres (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Maintain the condition of the Cystoseira barbata and Cystoseira crinita at the present state of unaffected areas (Cape "Maslen Nos", reef of Kiten) (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Average size of Mytilus galloprvincialis is ≥ 26.5 cm (1.2.1) and the average size of Mytilaster lineatus is ≥ 9.0 cm (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Average body size in the population of Donax trunculus is maintained above the threshold values indicative of the reference condition

	(reference area: Veleka River mouth). • Maintain the average population density of Arenicolla marina is maintained above the threshold values indicative of the reference condition (reference area: "Cape Emine-Irakli" protected area) • Average shell length Mytilus galloprovincialis is within the threshold values specified in Table I.2.22 of the Bulgarian MSFD Art. 10 GES report). **1.4.1 The decline of the range of the MSFD predominant habitat types, relevant habitats under Habitats directive and associated national biotopes listed in the Bulgarian MSFD Art. 10 report should approximate zero by 2020 by implementation of appropriate management measures on sealing by man-made structures, nutrients input, associated eutrophication and bottom hypoxia, smothering by dumping, and seabed abrasion by dredging and extraction of marine living and (if applicable) non-living resources.** **1.5.1 The area of the MSFD predominant habitat types is stable or increasing and not smaller than the baseline values (Favourable Reference Area for Habitats Directive habitats), listed in the Bulgarian MSFD Article 10 Report. Indicators:** • Maintain the habitat area of the shallow sublittoral sands above the following threshold values (Source: Table I.2.15 of the Bulgarian MSFD Art. 10 report): • Sivriburun-Kaliakra Assessment Area >= 32.46 km^2; Kaliakra-Galata Assessment Area >= 43.89 km^2; Galata-Emine Assessment Area >= 35.46 km^2; Emine-Sozopol Assessment Area >= 70.71 km^2; Sozopol-Rezovo Assessment Area >= 36.11 km^2." • Maintain the habitat area of the mediolittoral rocks above the following threshold values (Table I.2.1, Bulgarian Art. 10 GES report): Sivriburun-Kaliakra Assessment Area (BLKBG-Sivriburun-Kaliakra) >= 2.162 km^2; Kaliakra-Galata Assessment Area (BLKBG-Kaliakra-Galata) >= 4.058 km^2; Galata-Emine Assessment Area (BLKBG-Galata-Emine) >= 1.762 km^2; Emine-Sozopol Assessment Area (BLKBG-Emine-Sozopol) >= 11.363 km^2; Sozopol-Rezovo Assessment Area (BLKBG-Sozopol-Rezovo) >= 3.649 km^2" • Maintain the habitat area of the mediolittoral sediments above the following threshold values (Table I.2.4, Bulgarian Art. 10 GES report): Sivriburun-Kaliakra Assessment Area (BLKBG-Sivriburun-Kaliakra) >= 3.854 km^2; Kaliakra-Galata Assessment Area (BLKBG-Kaliakra-Galata) >= 4.261 km^2; Galata-Emine Assessment Area (BLKBG-Galata-Emine) >= 67.893 km^2; Emine-Sozopol Assessment Area (BLKBG-Emine-Sozopol) >= 8.827 km^2; Sozopol-Rezovo Assessment Area (BLKBG-Sozopol-Rezovo) >= 2.146 km^2; • Maintain the habitat area of the shallow sublittoral rocks above the following threshold values (Table I.2.7. of the Bulgarian Art. 10 GES Report): Sivriburun-Kaliakra Assessment Area (BLKBG-Sivriburun-Kaliakra)

	>= 42.82 km^2; Kaliakra-Galata Assessment Area (BLKBG-Kaliakra-Galata) >= 5.06 km^2; Galata-Emine Assessment Area (BLKBG-Galata-Emine) >= 11.07 km^2; Emine-Sozopol Assessment Area (BLKBG-Emine-Sozopol) >= 81.04 km^2; Sozopol-Rezovo Assessment Area (BLKBG-Sozopol-Rezovo) >= 20.79 km^2" • Maintain the area of the habitat of Modiolula phaseolina above the following reference/threshold values (per assessment area): 2626.906 km^2; • Maintain the habitat area of the shelf sublittoral muds above to the following reference/threshold values: reference area ≥ 8753.368 km^2. • Maintain the habitat area of shelf sublittoral sands above the following reference/threshold values (per assessment area): Area (Northern shelf AA) = 32.131 km^2; Area (Central shelf AA) = 78.300 km^2; Area (Southern shelf AA) = 61.275 km^2; **1.6.1. Maintain the condition of the typical communities of Mytilus galloprovincialis and Mytilaster lineatus within the threshold values at an unaffected region (Aladja banka): Mytilus galloprovincialis (average wet weight ≥ 20000 g/sq. m; average body length ≥ 26.5 mm); Mytilaster lineatus (average wet weight ≥ 3000 g/sq. m; average body length ≥ 9.0 mm).** **1.6.1. Maintain the condition of the typical communities of Phyllophora crispa in line with the conditions in relatively unaffected reference area - the Kiten reef. Threshold values: horizontal area cover ≥ 3800 sq. cm/sq. m; average dry biomass ≥ 70 g/sq. m; average wet biomass ≥ 180 g/sq. m (Source: Table I.2.12 of the Bulgarian MSFD Art. 10 report).** **1.6.3 Maintain the physico-chemical conditions of the MSFD predominant habitat types, relevant habitats under Habitats directive and associated national biotopes listed in the Bulgarian MSFD Art. 10 report in the coastal waters within the threshold values in Ordinance No. N-4 of 14/09/2012 on the characterization of surface waters Annex № 6 from Article12 (4) (according to the requirements of the Water Framework Directive).** **6.1.1 Targets**: The area of the mediolittoral rocks and sediments, affected by human-induced change in hydrographical conditions, sealing, smothering and abrasion stays below the following threshold values (Table I.2.3 in Bulgarian MSFD Article 9 Report): Sivriburun-Kaliakra Assessment Area < 10%; Kaliakra-Galata Assessment Area - maintain the present state; Galata-Emine Assessment Area < 10 %; Emine-Sozopol Assessment Area - maintain the present state; Sozopol-Rezovo Assessment Area - maintain the present state. **6.2.1 Target**: Maintain the presence of the particularly sensitive species in the structure of macrozoobethos according to the threshold values in the Bulgarian MSFD Article 10 report. • Patella ulyssiponensis, Chthamalus stellatus, Melaraphe neritoides (MSFD: Mediolittoral rocks. Habitats Directive: 1170; National biotope: Upper mediolittoral with Chthamalus stellatus, Melaraphe neritoides и

	Ligia italica) • Ophelia bicornis, Donacilla cornea (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • The relative abundance of the sensitive species from I ecological group % ESC IA => 30% (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Maintain the presence of sensitive species in the benthic communities • Particularly sensitive species of macroalgae % ESC IA => 60% (Source: Table I.2.9 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Apoglosium ruscifolium and Polysiphonia elongata (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • The relative abundance of sensitive species (% ESG IA) of macroalgae (Apoglosium ruscifolium and Polysiphonia elongata) => 60 60% of the total biomass of the species of macroalgae (Source: Table I.2.9 Bulgarian MSFD Art. 10 report)((MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa).) • Lepidochitona caprearum, Lepidochitona cinerea, Acanthochitona fascicularis, Gibbula divaricata, Eriphia verrucosa, Pilumnus hirtellus, Pachygrapsus marmoratus, Xantho poressa, Pisidia longicornis, Clibanarius erythropus, Palaemon adspersus, Palaemon elegans, Hippolyte leptocerus, Athanas nitescens (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Hesionura coineaui, Magelona papillicornis, Microphthalmus similis, Scolelepis squamata, Eurydice dollfusi are present in the benthic communities(MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus). • Pestarella (Callianassa) candida, Tellina tenuis, Hesionura coineaui, Magelona papillicornis, Scolelepis squamata (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium mediterraneum). **6.2.2 Target.** Multimetric indexes show high biodiversity and domination of the sensitive and tolerant species over the opportunistic species, according to the threshold values of the Bulgarian MSFD Article 10 report**.** • In 95% of the area of infralittoral rocks and biogenic reefs, the multi-metric indexes are within the following GES threshold values: EEI = 6, EEI-

	c = 6, according to table I.2.10 the Art. 10 MSFD report (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • Multi-metric indexes: AMBI < 3.3; Average species abundance S < 14 species/0.1 sq. m; M-AMBI≤0.85; Shannon biodiversity index H' < 2.44 (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • In 80% of the national area of the habitats, the multi-metric indexes are within the following GES threshold values: average species abundance S ≥ 40 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.5; AMBI (Borja et al. 2000) ≤ 3.3; M-AMBI (Muxica et al. 2007) ≥ 0.55. Reference conditions in the end of 1990-s and the beginning of 2000-s (Source: Table I.2.20 of the Bulgarian MSFD Art. 10 report) (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Ecological Evaluation Index (EEI) (Panayotidis et al., 2004) > 6; Ecological Evaluation Index-continuous formula (EEI-c) (Orfanidis et al., 2011) > 6; (Source: Table I.2.10 of the Bulgarian MSFD Art. 10 report)(MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • The average species richness per 0.1 sq. cm (S) and the index of Shannon in the shallow sublittoral rocks and biogenic reefs with Mytilus galloprvincialis and Mytilaster lineatus within the reference/threshold values of an unaffected area (operational by 2018) (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • In 95% of the area of the shallow sublittoral rock and biogenic reefs, the multi-metric indexes are within the following GES threshold values: Ecological Evaluation Index (EEI) (Panayotidis et al., 2004), EEI > 6; Ecological Evaluation Index-continuous formula (EEI-c) (Orfanidis et al., 2011), EEI-c>6 (Source: Table I.2.10 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Multi-metric indexes: S ≥ 15 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.9; AMBI ≤ 3.3; M-AMBI >= 0.85 (MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus); • Multi-metric indexes (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium mediterraneum) are within the following GES threshold values: Species

	abundance S ≥ 17 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.1; AMBI ≤ 3.3; M-AMBI ≥ 0.85. • In 95% of the habitat area of the shelf sublittoral mixed sediments , the multi-metric indexes are within the following GES threshold values: S ≥ 22 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.7; AMBI ≤ 3.3; M-AMBI ≥ 0.55 (Source: Table I.2.26 of the Bulgarian MSFD Art. 10 report) (MSFD: Shelf mixed sediments; National biotope: shelly muds with Modiolula phaseolina). • In 80% of the shelf sublittoral muds, the multi-metric indexes are within the following GES threshold values: S ≥ 31 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.5; AMBI ≤ 3.3; M-AMBI ≥ 0.55 (Source: Table I.2.24 of the Bulgarian MSFD Art. 10 report) (MSFD: Shelf muds; National biotope: shelf muds with Nephthys, Pitar, Spisula, Abra). • In 95% of the shelf sublittoral muds, the multi-metric indexes are within the following GES threshold values: the average species abundance S ≥ 22 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.6; AMBI (Borja et al. 2000) ≤ 3.3; M-AMBI (Muxica et al. 2007) ≥ 0.55 (Source: Table I.2.25 of the Bulgarian MSFD Art. 10 report). (MSFD: Shelf muds; National biotope: muds of the lower circalittoral with Terebellides stroemi). **Descriptor 7: Hydrographical conditions** **7.1.1 Target**: A decreasing trend of spatial extent (area) of regions affected by permanent modifications as a result of human activities, leading to large-scale and permanent changes in the hydrographical conditions (such as coastal protection structures, large aquaculture facilities, etc.). **7.2.1 Target**: Decreasing trend of the spatial extent of the predominant habitat types affected by permanent alterations resulting from human activities. Prevention of large-scale alterations leading to the permanent sealing of seabed habitats through regulation of the construction of coastal protection structures. **7.2.2 Target**: Reduction of the already existing negative alterations in the predominant habitat types (spawning, rearing and feeding areas and migration routes of fish, birds and mammals) as a result of the altered hydrographical conditions. Preventing the future deterioration of habitats. **Descriptor 8 Contaminants in marine environment** Revised environmental targets in comparison with the reported ones under the national report of Bulgaria under Article 10 MFSD in 2018. These are described in the monitoring program under Descriptor 8 (Article 11 of the Directive) reported to the EC and EEA in January 2015. **Pressure targets on Criterion 8.1.:** - Limiting the pressure from point and diffuse sources of pollution, including from the atmosphere; **Targets on state / impact:**

	Target for matrix "water" (indicator 8.1.1): Concentrations observed pollutants (priority substances and specific pollutants) in water are in accordance with their maximum and average annual values according to environmental quality standards for the marine environment, implemented under the Water Framework Directive 2000/60 / EC and Directive 2008/105/EC, as amended by Directive 2013/39/EU, transposed into national legislation by Ordinance EQS for priority substances and certain other pollutants, adopted by Decree 256/2010. **Target on matrix "sediments" (indicator 8.1.1):** the trends in concentrations of contaminants in sediments decrease in the long term, according to the WFD 2000/60/EC and Directive 2008/105/EC, transposed into national legislation by Ordinance EQS for priority substances and certain other pollutants, adopted by Decree 256/2010**.** **Target on matrix "biota" (indicator 8.1.1):** The concentrations of the observed contaminants (priority substances and specific pollutants) in biota are equal to or below the specified environmental quality standards for the marine environment, applied in accordance with Directive 2008/105 / EC, as amended by Directive 2013/39/EU. **Target on matrix "biota"** (**indicator 8.2.1):** establishment and evaluation of the links between the maximum levels of contaminants in the marine environment and possible biological effects on marine organisms. **Descriptor 9** **Target on Descriptor 9**: All measured contaminants in fish and shellfish for human consumption in concentrations below the maximum levels permitted under national and Community legislation (EC Regulation № 1881/2006, transposed into national law in Regulation № 31 / 29.07.2004 on maximum levels for contaminants in food); **9.1.1 Targets for fish species** – The levels of contaminants in the following fish species: European sprat (Sprattus sprattus sulinus), Anchovy (Engraulis encrasicholus ponticus), Turbot (Psetta maxima maeotica), Blue whiting (Merlangius merlangus), Spiny dogfish (Squalus acanthias), Goby (Neogobius melanostomus), Bonito (Sarda sarda) и Horse mackerel (Trachurus mediterraneus ponticus) are maintained below the following threshold values (Commission Regulation (EC) No 1881/2006, transposed in the national legislation in Order No 31/29.07.2004): • Pb < 0.20 mg/kg; (for Horse mackerel (Trachurus mediterraneus ponticus) Pb < 0.4 mg/kg); • Cd < 0.05 mg/kg; (for Bonito (Sarda sarda) and for Horse mackerel (Trachurus mediterraneus ponticus) Cd < 1 mg/kg) • Hg < 0.05 mg/kg; (for Bonito (Sarda sarda Hg <1 mg/kg) • Al < 30 mg/kg; • As < 5 mg/kg; • Cu < 10 mg/kg; • Ni < 0,5 mg/kg; • Cr < 0,3 mg/kg; • Zn < 50 mg/kg; • Dioxins < 4 pg WHO-PCDD (F-TEQ) g live weight;

	• Benzo(a) pyrene < 2 µg/kg. Explanation: WHO - World Health Organization; PCDD -Polychlorinated dibenzodioxins (dioxins); F-TEQ - toxic equivalent concentration. The levels of contaminants in the following seafood are maintained below the threshold values in with the following threshold values of contaminants in the fish (Directive 2013/39/EC as regards priority substances in the field of water policy): • Hg < 20 µg/kg; • HCB < 10 µg/kg; • HCBD < 55 µg/kg; • Heptachlor and heptachlor epoxide <6,7*10-3 µg/kg; • Dicofol < 33 µg/kg; • PFOS < 9,1 µg/kg; • BDEs < 0,0085 µg/kg; • HBCDD < 167 µg/kg; below the following threshold value in accordance with Directive 2013/39 / EC for fish and shellfish: Dioxins (PCDD+PCDF+PCB-DL) < 0.0065 µg/kg TEQ (toxic equivalent concentration). **9.1.1 Targets for shellfish species** – The levels of contaminants in the following shellfish species: Veined rapa whelk (Rapana venosa), Mediterranean mussel (Mytilus galloprovincialis) are maintained below the following threshold values (Commission Regulation (EC) No 1881/2006, transposed in the national legislation in Order No 31/29.07.2004 and Black Sea Monitoring and Assessment Programme): • Pb < 1.5 mg/kg; • Cd < 1 mg/kg; • Hg < 0.5 mg/kg; • As < 2 mg/kg; • Cu < 30 mg/kg; • Zn < 200 mg/kg; • Benzo(a)pyrene < 10 µg/kg. below the threshold values set in Directive 2013/39/EC regarding the water policy on priority substances in shellfish species: • Benzo(a) pyrene < 5 µg/kg; • Fluoranthene < 30 µg/kg. below the following threshold value in accordance with Directive 2013/39 / EC for fish and shellfish: • Dioxins (PCDD+PCDF+PCB-DL) < 0.0065 µg/kg TEQ (toxic equivalent concentration). **9.1.1 Target for radionuclides in fish and shellfish products used as seafood** – the concentration of radionuclides in the Black Sea fish and shellfish species like Mediterranean mussel (Mytilus galloprovincialis) and Veined rapa whelk (Rapana venosa) is below the threshold values (thresholds based on the values set in Council regulation (EURATOM) No 3954/87, transposed in the national legislation through Order No. 11 from 18.04.2002): • The levels of the isotopes of strontium, notably Sr-90, is below 750 Bq/kg; • All other radionuclides of half-life greater than 10 days, notable Cs-134 and Cs-137 is below 1250 Bq/kg;

	Target on indicator 9.1.1 for contaminants relevant to fish and shellfish products for which regulatory levels have not been set: • Polychlorinated biphenyls (PCBs) - decreasing trend in the concentration of Non dioxin-like Polychlorinated biphenyls (PCBs) in fish and shellfish; • Decreasing trends in the concentration of p,p'-DDE, p,p'-DDD, p,p'-DDT. Target on indicator 9.1.1 on the number of contaminants which have exceeded maximum regulatory levels – the number of contaminants, which have exceeded maximum regulatory levels, is decreasing. **Target on indicator 9.1.2 on the frequency of regulatory levels being exceeded** – Frequency of regulatory levels being exceeded is decreasing.
Descriptors	Categorisation of the measures to the descriptors in line with Annex 1 MSFD. The descriptors are identified by their short form: **Descriptor 6 – Seabed** **Descriptor 7 – Hydrographic conditions** **Descriptor 8 – Pollutants** **Descriptor 9 – Contaminants in seafood**
Main pressures	*Using the analysis carried out in 2012 as a basis, categorisation of the measures in accordance with the pressures defined in Annex 3 MSFD, Table 2:* • Physical loss (smothering (e.g. by disposal of dredge spoil) • Physical damage changes in siltation (e.g.by dredging/disposal of dredge spoil • Other physical disturbance / Marine litter and Underwater noise • Interference with hydrological processes • Contamination from hazardous substances - Introduction of synthetic compounds (e.g. priority substances under Directive 2000/60/EC which are relevant for the marine environment such as pesticides, antifoulants, pharmaceuticals, resulting, for example, from losses from diffuse sources, pollution by ships, atmospheric deposition and biologically active substances); - introduction of non-synthetic substances and compounds (e.g. heavy metals, hydrocarbons, resulting, for example, from pollution by ships) - introduction of radionuclides. • Systematic and / or intentional release of substances
Main drivers	*The sectors/activities targeted by the measure* Extraction of non-living resources (i.e. dredging)
Characteristics	Using the analysis carried out in 2012 as a basis, categorisation of the measures in accordance with the characteristics defined in the "PoM Recommendations": - Marine mammals - Fish - Benthic habitats - Pelagic habitats

Link to other directive/legislation/policy	Aligning objectives with other legal commitments Directive on Maritime Spatial Planning. Directive 2001/42/EC of the European Parliament and the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment - SEA Directive; Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. The last one has been amended by Directive 2014/52/EU of the European parliament and of the Council of 16 April 2014 (Environmental Impact Assessment (EIA) Directive). **National legislation:** Environmental protection Law Biological Diversity Act Protected Areas Act Law of the Sea, inland waterways and ports of the Republic of Bulgaria Regulation on the conditions and requirements for environmental assessment of plans and programs, transposed Directive 2001/42/EC (SEA Directive) Regulation on the conditions and the order for implementing environmental impact assessment, transposed Directive 2014/52/EC (EIA Directive)
Necessity for transnational regulation	Information as regarding the necessity for regulations at EU, regional and international level to achieve MSFD environmental objectives. There is no necessity for transnational regulations to achieve MSFD environmental objectives.
Mode of implementation	*Stating the implementation process in line with the „PoM Recommendations"; multiple options possible:* • Technical • Legislative
Implementation zones	*i.e. the spatial impact of the measure: MS land/FW, WFD TW, WFD CW, Territorial waters, EEZ, CS (beyond EEZ), Beyond MS waters* MS land/FW, WFD Coastal (CW) and Territorial waters of Republic of Bulgaria сухоземната част / пресните води, крайбрежни (РДВ) води и териториални води на Р България
Contribution of the measure to achieving the target	The measure "Revision of areas for dredging and disposal of dredging materials (suitability of existing disposal sites and proposals for new ones)" aims at improving the status of the marine environment for **4 Descriptors**: **D6, D7, D8 and D9.** For **Descriptor 6**, a reduction of the impacts due to the disposal of dredging materials will help to maintain and protect typical zoobenthos and phytobenthos species in the MSFD predominant habitat types and the associated national biotopes. A quantitative assessment of the contribution to achieve the targets, however, does not exist.

	As the disposal of dredging materials is only one out of several (more important) pressures (e.g. abrasion through bottom trawling, sealing through infrastructure developments), and does not have the same spatial dimension, **the contribution of the measure to achieve D6 targets is estimated to be low**. Nevertheless, it is a crucial measure that can be of great importance for the protection of specific threatened or otherwise important local sites, especially in the context of maritime spatial planning. For **Descriptor 7**, the measure will contribute to a decreasing trend in the spatial extent (area) of regions and predominant habitat types affected by permanent modifications as a result of human activities, as well as decrease the already existing negative alterations in the predominant habitat types (spawning, rearing and feeding areas and migration routes of fish, birds and mammals). A quantitative assessment of the contribution to achieve the targets, however, does not exist. As the disposal of dredging materials is only one out of several pressures (e.g. large-scale alterations through coastal protection structures, large aquaculture facilities etc.), **the contribution of the measure to achieve D7 targets is estimated to be low to medium**. Nevertheless, it is a crucial measure that can be of great importance for the protection of specific threatened or otherwise important local sites, especially in the context of maritime spatial planning. For **Descriptors 8 and 9**, the measure will contribute to the reduction of contaminants in the marine environment and of measured contaminants in fish and shellfish for human consumption. A quantitative assessment of the contribution to achieve the targets, however, does not exist, as it is unclear how much contaminants are emitted by dredging materials into the marine environment and fish and shellfish. Other sources of contamination, such as shipping, inland sources, offshore installations etc., seem much more important with regard to the quantities emitted. **Hence, the contribution of this measure to achieve the targets is estimated to be low**. In addition to these contributions to achieving the targets, the measure may have further positive side-effects (see field "socio-economic assessment" below).
Transboundary impact	*Information on the impact of the measures on transboundary neighbours* The implementation of the measure is not expected to have negative transboundary impact on the waters of other countries shared the Black sea marine region.
Costs	The implementation of the measure "Revision of areas for dredging and disposal of dredging materials (suitability of existing disposal sites and proposals for new ones)" will impose the following administrative costs on the Bulgarian authorities involved: - gathering of information on old disposal sites, including pplanning and implementation of the study (tender procedure, costs for contracting or projects, potentially costs for monitoring equipment); - determining the need for new sites;

	- amendment of maritime planning documents, possibly including a limited stakeholder participation process and determining the new sites, as per Bulgarian national procedures, expert meetings; - costs for enforcement/controls. Possibly the process can go hand-in-hand with transposing the Maritime Spatial Planning Directive into national law (until September 2016), thus saving costs. Additional costs are linked to the evaluation of the quality of the environment on or close to old and new dredging material disposal sites; such an evaluation/monitoring would incur yearly costs, but if private companies are using the sites to dispose dredging materials, the costs should be transferred to them as condition for using the site (as planned). **In summary, the costs of the measure are estimated to be low (<50.000 €/year) *(please, see section Socio-economic assessment").***
Effectiveness	The measure "Revision of areas for dredging and disposal of dredging materials (suitability of existing disposal sites and proposals for new ones) " aims at improving the status of the marine environment for 4 descriptors: D6, D7, D8 and D9. The measure has a potentially high effectiveness regarding the maintenance and protection of typical zoobenthos and phytobenthos species in the MSFD predominant habitat types, by locating new disposal sites in areas where negative impacts on important habitats and species are not possible or low. Similarly, the measure has a potential medium (locally limited) effectiveness regarding the reduction of the spatial extent (area) of regions and predominant habitat types affected by permanent modifications as a result of human activities (D7). In addition, the measure has a potential medium effectiveness to decrease the already existing negative alterations in the predominant habitat types (spawning, rearing and feeding areas and migration routes of fish, birds and mammals) by limiting new disposal sites in general and to areas where negative impacts on important habitats and species are not possible or low. Regarding the reduction of contaminants in the marine environment and of measured contaminants in fish and shellfish for human consumption (D8 and D9), the measure has only a low effectiveness, as it does not include any provisions on the substances being disposed at the existing (old) and potentially new sites.
Indicator(s) to measure effectiveness	Should be based on existing indicators. D6: abundance of species and habitats (e.g. individuals or square cm per m² or ha/dry and wet weight per m² or ha/average size or length of individual species/area covered by habitats, presence of sensitive species, multi-metric indices). D7: areas affected by human-induced change in hydrographical conditions, sealing, smothering and abrasion (e.g. percentage of areas affected, trend in areas affected). D8: concentration of pollutants in water, sediments, biota. D9: concentration of contaminants in fish and shellfish species.

Socio-economic assessment	The measure "Revision of areas for dredging and disposal of dredging materials (suitability of existing disposal sites and proposals for new ones) " has a **comparably low effectiveness** in reaching MSFD objectives/environmental targets, as the extent/relative importance of the pressure (disposal of dredging materials) is low compared to other pressures affecting D6, D7, D8 and D9 (this low overall effectiveness is not offset by the probable high specific effectiveness in protecting certain specific, local sites). At the same time, the public **costs of the measure are also low,** as the costs for evaluation of the quality of the marine environment are transferred to the private sector. Hence, the cost-effectiveness of the measure, i. e. comparing costs with potential benefits in terms of reaching MSFD objectives, can be described as being of **medium level**. Unfortunately, no quantitative assessment of the cost-effectiveness could be conducted, as especially the information on the benefits (in a quantified form) is not available. Additional socio-economic effects of the measure are: - incurring costs for the evaluation of the quality of the marine environment on the companies using the disposal sites; - possibly improving the abundance of economically important marine species (e.g. through protecting spawning areas), positively impacting related sectors (fishing, recreational fishing, shellfish etc.).
Coordination level	*Selection of the governance level that will coordinate the implementation of the measures, i.e. Local, Sub-national, National, Bilateral, Sub-regional, Regional, EU level, International* National and local level
Technical feasibility	*Options:* • Applied; limited experience / uncertainties
Body responsible for the measure implementation	Ministry of Environment and Waters (MoEW), Black Sea Basin Directorate (BSBD), Bulgarian Ports Infrastructure Company (BPI Co.) to the Ministry of Transport, Information technology and communications
Financing opportunities	National funding; Operational Programme "Environment" 2014-2020, Operational Programme "Transport" 2014-2020 LIFE-Programme (in the context of establishing Spatial Protection Areas, and concepts for protecting species and habitats)
Temporal coverage	**2017**
Difficulties in implementation	Provide information on the potential challenges that could likely faced in implementation.