



## Consultancy on Matters Related to Direct Discharges to the Marine Environment

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*To enable the EPD (i.e. the Competent Authority with respect to direct discharges into the marine environment) to come in full compliance with the obligations in the EU Acquis (mainly CD 76/464).*



**Monitor** direct marine discharges;



Prepare a **National Strategy** for the control of direct marine discharges;

**Assist industrial operators** in the preparation of implementation plans with respect to the control of direct marine discharges, and **advise on the implementation of these plans.**

# **National Marine Pollution Strategy**

## ***to Control Direct Discharges into the Marine Environment***

**To protect the marine environment from the discharge of contaminants which may be hazardous to human health and marine life;**

**To satisfy Malta's obligations as stipulated by a number of relevant Council Directives and Decisions , with special reference to CD 76/464 on pollution caused by certain dangerous substances, its daughter directives, as well as the Urban Wastewater Treatment Directive taking into consideration (whenever possible) the principles of the Water Framework Directive.**

## **The present document includes:**

**A review of legislative frameworks within which this proposed NMPS has to be operative.**

**The results of the monitoring undertaken for the present consultancy;**

**A review of main industrial operations/activities and hazardous substances to be controlled through this NMPS.**

**NMPS: Sets Environmental Quality Standards**

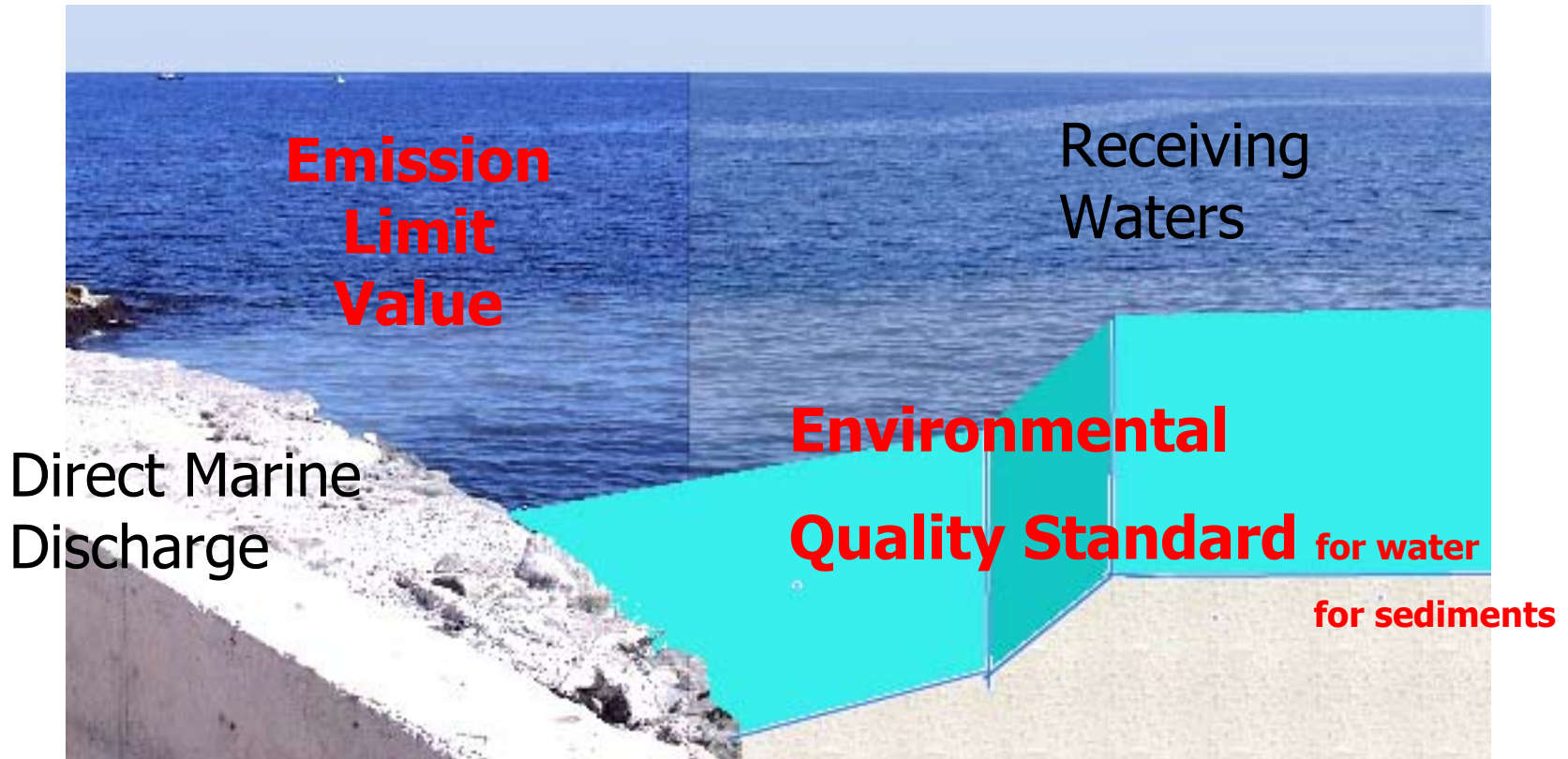
**Sets Emission Limit Values**

**Identifies Sensitive/Less Sensitive and other Areas.**

**Proposes Specific Pollution Control Programmes**

**Identifies requirements for an Authorization System**

**Identifies Monitoring Obligations**



## LEGISLATIVE FRAMEWORK

**CD 76/464** on pollution caused by certain dangerous substances discharged into the aquatic environment of the community.

**List I substances to eliminate**  
**List II substances to reduce**

**Daughter Directives** setting ELV and EQS for a number (not all) of List I substances.

**CD 91/271** concerning urban waste water treatment.

**Controls COD,BOD,P,N,TSS** in sensitive/less sensitive areas

**CD 2000/60 Water Framework Directive** identifies Priority Hazardous Substances, Priority Substances.

## *MONITORING PROGRAMME*

### *Agreed Framework*

- To focus on relevant chemicals of CD 76/464
- To be guided only by CD 95/337 and 92/446
- EPD to control ONLY marine POINT discharges
- Most relevant Sectors:
  - SEWERS
  - POWER STATIONS
  - SHIPREPAIRING

## MONITORING PROGRAMME

Sewer Outfall at Wied Ghammieq: 24% of samples

Sewer Outfall at Cumnija: 24%

Sewer Outfall at Ras il-Hobz: 24%

Power Stations: 14%

Shipyards: 10%

Other: 3%

Total of 90 samples, 44 parameters each.



		Level of occurrence			NMPS	
		In Sewer Outfalls	In Other Direct Marine Discharges	In Marine Environment		
1	COD	high	moderate	X	1	PCP I
2	<b>BOD5</b>	high	moderate	X	1	PCP I
3	Total Nitrogen	high	low	X	1	PCP I
4	Ammonia	high	X	low	3	
5	<b>Nitrites</b>	low	X	low	3	
6	<b>Nitrates</b>			high in semi-enclosed areas	2	
7	<b>Phosphates</b>			high in semi-enclosed areas	2	
8	<b>Total Phosphorus</b>	high	moderate to low	X	1	PCP I
9	<b>TSS</b>	high	moderate to low	high in semi-enclosed areas	1	PCP I
10	<b>Mercury</b>	Generally BDL, occasionally low	low	low	1	PCP II
11	<b>Cadmium</b>	BDL	moderate to high	moderate to high	1	PCP II
12	<b>Lead</b>	moderate	moderate to high	moderate to high	1	PCP III
13	<b>Nickel</b>	low to moderate	moderate to high	X	1	PCP III
14	<b>Arsenic</b>	low	low	X	1	PCP III
15	<b>Chromium</b>	low	low	low to moderate	1	PCP III
16	<b>Copper</b>	low to moderate	moderate to high	moderate to high	1	PCP III
17	<b>Manganese</b>	low	low	X	3	
18	<b>Selenium</b>	low	low	X	1	PCP III
19	<b>Zinc</b>	moderate to high	moderate to high	moderate to high	1	PCP III
20	Antimony	X	X	X	3	
21	Barium	X	X	X	3	
22	Beryllium	X	X	X	3	
23	Boron	X	X	X	2	
24	Cobalt	X	X	X	3	
25	Molybdenum	X	X	X	3	
26	Silver	X	X	X	3	PCP III
27	Tellurium	X	X	X	3	
28	Titanium	X	X	X	3	
29	Thallium	X	X	X	3	
30	Tin	X	X	X	3	
31	Uranium	X	X	X	3	
32	Vanadium	X	X	X	3	

		Level of occurrence			NMPS	
		In Sewer Outfalls	In Other Direct Marine Discharges	In Marine Environment	Priority Level	
1	<b>Parathion</b>	BDL	BDL	X	1	PCP VI
2	<b>Malathion</b>	BDL	BDL	X	1	PCP VI
3	<b>Cypermethrine</b>	BDL	BDL	X	3	PCP VI
4	Dichlorvos	BDL	BDL	X	2	PCP VI
5	<b>Aldrin</b>	BDL	BDL	X	1	PCP IV
6	<b>Dieldrin</b>	BDL	BDL	X	1	PCP IV
7	<b>Endrin</b>	BDL	BDL	X	1	PCP IV
8	<b>Isodrin</b>	BDL	BDL	X	1	PCP IV
9	<b>Hexachlorocyclohexane</b>	BDL	BDL	X	1	PCP IV
10	<b>DDT</b>	BDL	BDL	X	1	PCP IV
11	<b>PCB</b>	low	BDL	X	1	PCP IV
12	1,2 Dichloroethane	BDL	BDL	X	1	PCP IV
13	<b>Trichloroethylene</b>	trace	trace	X	1	PCP V
14	<b>Carbon Tetrachloride</b>	BDL	BDL	X	1	PCP IV
15	<b>Pentachlorophenol</b>	BDL	BDL	X	1	PCP IV
16	<b>Hexachlorobenzene</b>	BDL	BDL	X	1	PCP IV
17	<b>Hexachlorobutadiene</b>	BDL	BDL	X	1	PCP IV
18	<b>Trichlorobenzene</b>	BDL	BDL	X	1	PCP IV
19	<b>Chloroform (Trichloromethane)</b>	trace	trace	X	1	PCP V
20	<b>Perchloroethylene (Tetrachloroethylene)</b>	trace	trace to moderate	X	1	PCP V
21	<b>Petroleum Hydrocarbons</b>	moderate	moderate to high	moderate to high (sediments)	1	PCP VII
22	<b>Tributyltin compounds</b>	moderate to occasionally high	moderate to occasionally high	moderate to high (sediments)	1	PCP VIII
23	Cyanides	moderate	BDL	X	1	PCP IX
24	Fluorides	moderate	moderate	X	1	PCP IX
25	Heptachlor	X	X	X	1	PCP VI
26	Toxaphene (Campheclor)	X	X	X	1	PCP VI
27	Methoxychlor	X	X	X	3	PCP VI
28	Chlordane	X	X	X	1	PCP VI
29	Alachlor	X	X	X	2	PCP VI
30	Anthracene	X	X	X	3	
31	Atrazine	X	X	X	1	PCP VI
32	Benzene	X	X	X	1	(PCP VII)

		Level of occurrence			NMPS	
		In Sewer Outfalls	In Other Direct Marine Discharges	In Marine Environment	Priority Level	
1	Brominated diphenylethers	x	x	x	3	
2	Chloroalkanes, C10-13	x	x	x	3	
3	Chlorfenvinphos	x	x	x	1	PCP VI
4	Chlorpyrifos	x	x	x	1	PCP VI
5	Dichloromethane	x	x	x	3	
6	Di(2-ethylhexyl)phthalate (Phthalic Acid)	x	x	x	3	
7	Diuron	x	x	x	1	PCP VI
8	Endosulfan	x	x	x	1	PCP VI
9	(alpha-endosulfan) as an example of endosulfans	x	x	x		(PCP VI)
10	Fluoranthene as an example of polyaromatic hydrocarbons	x	x	x	1	(PCP VII)
11	Isoproturon	x	x	x	1	PCP VI
12	Naphthalene	x	x	x	1	(PCP VII)
13	Nonylphenols	x	x	x	3	
14	Octylphenols	x	x	x	3	
15	Pentachlorobenzene	x	x	x	3	
16	Polyaromatic hydrocarbons	x	x	x	3	(PCP VII)
17	Simazine	x	x	x	1	PCP VI
18	Trifluralin	x	x	x	1	PCP VI

The NMPS adopts:

the 'combined approach', in which emissions to the receiving waters should comply with **both**

**ELV** (mainly technologically-BAT- based) and at the same time ensure that

**EQS** are complied with.

## Environmental Quality Standards

Set as annual mean level which is not to be exceeded;

Set for seawater and in some cases for sediments;

Different EQS set for industrial and non-industrial areas;

EQS to be considered as MINIMUM standards to be achieved. Control should not RELAX because an EQS is being met;

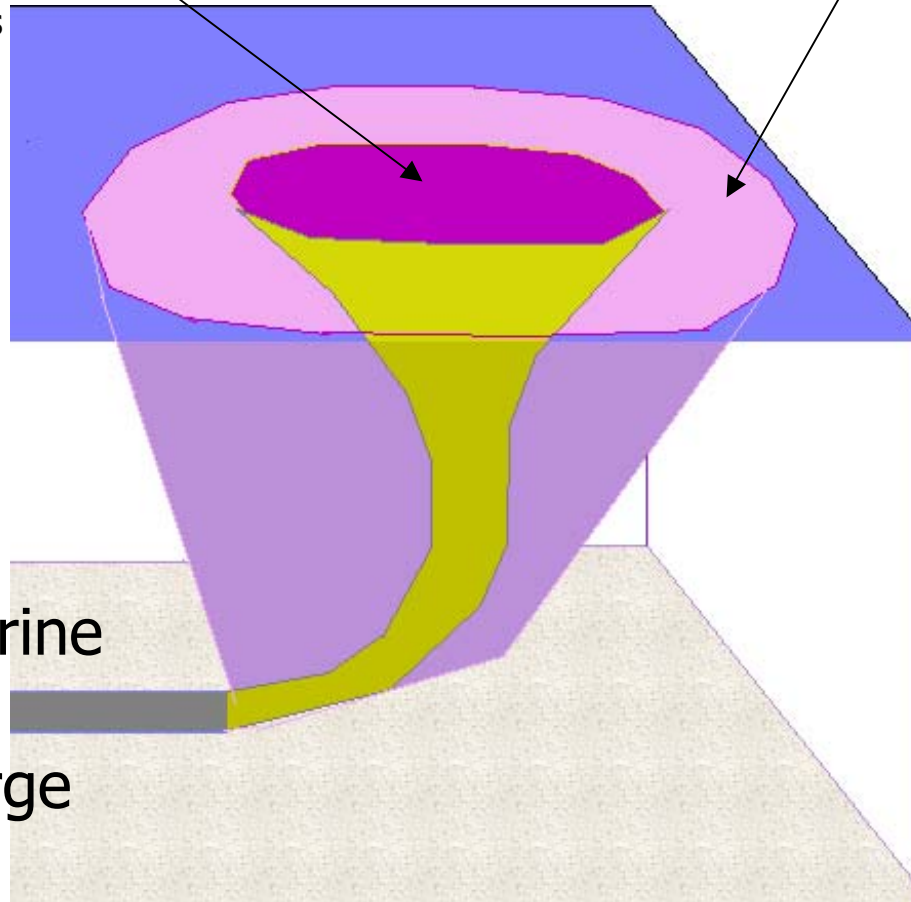
Phased Application of EQS in some cases.

Allows for application of Dilution Factor and Mixing Zone (at the discretion of EPD)

*To be revised periodically.*

	<b>Proposed EQS in water <sup>1</sup></b>		<b>Proposed EQS in sediments <sup>1</sup></b>	
	<b>For Non-industrial Areas</b>	<b>For Industrial Areas</b>	<b>For Non-industrial Areas</b>	<b>For Industrial Areas</b>
<b>Mercury</b>	0.3 ug/l total dissolved		no increase by 2005; 0.2 mg/kgDW by 2007.	no increase up to 2007; 1 mg/kgDW by 2010
<b>Cadmium</b>	2.5 ug/l total dissolved		no increase by 2005; 0.6 mg/kgDW by 2007.	no increase up to 2007; 3 mg/kgDW by 2010
<b>Lead</b>	0.01 mg/l total dissolved		30 mg/kgDW	no increase up to 2007; 100 mg/kgDW by 2010
<b>Copper</b>	0.005 mg/l total dissolved.		16 mg/kgDW	no increase up to 2007; 70 mg/kgDW by 2010
<b>Zinc</b>	0.01 mg/l total dissolved		120 mg/kgDW;	no increase up to 2007; 220 mg/kgDW by 2010
<b>Parathion</b>	not traceable			
<b>Petroleum Hydrocarbons</b>	not traceable;	by 2004: 1mg/l, by 2007: 0.25 mg/l, by 2010: 0.1 mg/l	4 mg Chrysene Equivalent/kgDW;	no increase by 2007; 30 mg Chrysene Equivalent/kgDW thereafter
<b>Tributyltin compounds</b>	<b>FOR TBT:</b> Up to 2007: 0.002 ug Sn/l maximum acceptable concentration at any one time. Not traceable thereafter.	<b>FOR TBT:</b> no increase up to 2007. Not traceable thereafter.	<b>For TBT</b>	<b>For TBT</b>
			<b>For total butyltins</b> (TBT+DBT+MBT) up to 2007: 40 ug Sn/kgDW. Not detectable for non-industrial areas, thereafter.	up to 2007: no increase for industrial areas. 200 ug Sn/kgDW for industrial areas, thereafter. <b>For total butyltins</b> (TBT+DBT+MBT) up to 2007: no increase; 380 ug Sn/kgDW, thereafter.

**the minimum initial dilution factor**, defined as the reduction, expressed as a percentage or fraction, which must be achieved by the time the discharge plume reaches the surface or stops rising.



**mixing zone** defined by that area within which:

the EQS may be exceeded provided that;

the plume will not produce any visible slicks or other aesthetic impact and;

no acute lethal toxicity on marine life will be evident.

mixing zone should not reach the shoreline;

It will pose no environmental risks to any protected area or to identified sites of ecological importance.

Submarine  
marine  
discharge

## Emission Limit Values

Set as monthly mean level which is not to be exceeded;

In some cases set at a *not traceable level*;

In some cases, different ELV set for industrial and non-industrial areas;

ELV never to be reached through DILUTION;

Phased Application of ELV in some cases.

*To be revised periodically*



	<b>ELV <sup>1</sup></b>
<b>COD</b>	125 mg/l for all areas. Compliance in 11 out of 12 samples over 1 year
<b>BOD5</b>	25 mg/l for all areas
<b>Total Nitrogen</b>	10 mg/l for sensitive areas. Compliance in 11 out of 12 samples over 1 year.
<b>Total Phosphorus</b>	2 mg/l for sensitive areas (on an annual mean basis)
<b>TSS</b>	35 mg/l. Compliance in 11 out of 12 samples over 1 year.
<b>Mercury</b>	0.1 mg/l by 2004; 0.05 mg/l by 2007. Not traceable by 2020.
<b>Cadmium</b>	0.3 mg/l by 2007; 0.2 mg/l. Not traceable by 2020
<b>Lead</b>	0.5 mg/l up till 2005, 0.1 mg/l thereafter
<b>Nickel</b>	0.5 mg/l up till 2005, 0.2 mg/l thereafter
<b>Arsenic</b>	0.05 mg/l
<b>Chromium</b>	0.1 mg Cr VI ; 0.5 mg Cr total/l
<b>Copper</b>	0.5 mg/l
<b>Zinc</b>	0.5 mg/l
<b>Silver</b>	0.1 mg/l
<b>Tin</b>	2 mg/l

	<b>ELV <sup>1</sup></b>
<b>Parathion</b>	not traceable
<b>Malathion</b>	0.4 ug/l (guideline)
<b>Dichlorvos</b>	0.8 ug/l (guideline)
<b>Aldrin</b>	not traceable
<b>Dieldrin</b>	not traceable
<b>Endrin</b>	not traceable
<b>Isodrin</b>	not traceable
<b>Hexachlorocyclohexane (Lindane)</b>	3 mg/l by 2004; 2 mg/l by 2007. Not traceable by 2020.
<b>DDT(Dichlorodiphenyl trichloroethane)</b>	not traceable
<b>PCB</b>	0.003mg/l by 2004, not traceable by 2007
<b>Trichlorobenzene</b>	
<b>TCB</b>	1.5 mg/l by 2004; 0.75mg/l by 2007; Not traceable by 2020.
<b>Chloroform (Trichloromethane)</b>	1 mg/l by 2004; 0.5mg/l by 2007; Not traceable by 2020.
<b>Perchloroethylene (Tetrachloroethylene)</b>	0.1 mg/l by 2004; 0.05mg/l by 2007; Not traceable by 2020.
<b>Petroleum Hydrocarbons</b>	5 mg/l on a 24-hour mean basis or as determined by EPD for intermittent discharges. (At the discretion of EPD, this may be substituted by the application of a site-specific dilution factor and a mixing zone, to achieve set EQS in water and sediment)
<b>Tributyltin compounds</b>	Up to 2007: for non-industrial areas: 0.01 ug Sn/l ; for industrial areas: 5ug Sn/l on a monthly mean basis. Not traceable for all areas thereafter.

## Designated Areas as per CD 91/271 covering COD,BOD,N.P TSS.

<b>Sensitive Area</b>	Xlendi Bay including Kantra Creek
	Mgarr ix-Xini
	Mgarr Harbour *
	Mellieha Bay
	St. Paul's Bay, including Mistra
	Salina Bay
	St. George's Bay
	St. Julian's Bay
	Marsamxett *
	Grand Harbour *
	Marsascala
	Hofra iz-Zghira
<b>Candidate Sensitive Area</b>	Marsalforn
	St. Thomas Bay
	Receiving waters: Cumnija Outfall *
<b>Less-Sensitive Area</b>	Receiving Waters: Ras il-Hobz Outfall *
	Receiving Waters: Wied Ghammieq (Xghajra) Outfall *

Table 15: List of Pollution Control Programmes being proposed in the present N

<b>PCP1</b>	COD, BOD, Total Nitrogen, Total Phosphorus, Total Suspended Solids.
<b>PCP2</b>	Compounds of Mercury and Cadmium
<b>PCP3</b>	Lead, Nickel, Arsenic, Chromium, Copper, Silver, Selenium and Zinc.
<b>PCP4</b>	Aldrin, Dieldrin, Endrin, Isodrin, Hexachlorocyclohexane, DDT, PCB, 1,2 Dichloroethane, Carbon Tetrachloride, Pentachlorophenol, Hexachlorobenzene, Hexachlorobutadiene, Trichlorobenzene,
<b>PCP5</b>	Trichloroethylene, Perchloroethylene, Chloroform
<b>PCP6</b>	Alachlor, Atrazine, Chlordane, Chlorfenvinphos, Chlorpyrifos, Cypermethrine, Dichlorvos, Diuron, Endosulfan, Heptachlor, Isoproturon, Malathion, Methoxychlor, Parathion, Simazine, Toxaphene (Campheclor), Trifluralin.
<b>PCP7</b>	Petroleum hydrocarbons
<b>PCP8</b>	Tributyltin
<b>PCP9</b>	Cyanides and Fluorides

# AUTHORIZATION SYSTEM FOR DIRECT MARINE DISCHARGES

General Responsibilities

Conditions for Permit

Administrative and Other Requirements

Training Requirements

## MONITORING OBLIGATIONS

Assess environmental quality status:

80 fixed stations, water and sediments

By 2005, will include biomonitoring.

Spot checks on compliance with ELV on specific discharges.

*"Long-term environmental monitoring is the basis for assessing environmental quality status. Without such assessment, the general aims of the present NMPS will not be achieved. An ineffective and incomplete monitoring programme will render this NMPS as well as its component PCP as merely "paper exercises" of no importance and relevance to the environment."*