

Significant Pollution Events

1.1 Introduction

As an island state in the middle of the Mediterranean Sea, Malta's coast and marine waters are at risk from pollution incidents, either accidental or operational, involving vessels calling at Malta's ports, anchored in waiting and bunkering areas or navigating international shipping routes past the Maltese coastline.

Certain land based installations, such as fuel storage installations located on the coast or with coastal/sea-based connections for transfer of products, also constitute an element of risk, while in the future, drilling for oil extraction in Malta may present additional risks.

This report provides a review of the data available to date in relation to pollution incidents occurring in Malta during the past 25 years, focusing on the 12 year period 1999 – 2011, with a view to assess status of the marine environment in terms of this pressure, in line with the requirements of Article 8 of the EU Marine Strategy Framework Directive.

1.2 Relevant Legislation and/or Management

Transport Malta is the current National Competent Authority in matters concerning marine pollution preparedness. The Authority is responsible for policy and regulation of transport by land, sea and air, including merchant shipping, ports and marinas.

Other authorities and entities that also have a role include the following:

- Armed Forces of Malta – in relation to the receipt and dissemination of incident reports, and preliminary investigation/surveillance
- Civil Protection Department – in view of its remit regarding emergency response
- Malta Environment and Planning Authority – in view of its remit regarding environmental protection and regulation of land based installations.

The responsibilities of the above entities in relation to marine pollution contingency were formally designated by Cabinet in 2009.

1.2.1 International Legislation and Agreements

This section gives a brief overview of the main relevant international agreements, drafted within the framework of the International Maritime Organisation (IMO) and of the United Nations Environment Program, and to which Malta is a contracting party.

International Convention for the Prevention of Pollution from Ships (MARPOL) and the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78).

The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It was established within the framework of the International Maritime Organisation in recognition of the need to control and minimise the deliberate, negligent or accidental release of oil and other harmful substances from ships into the marine environment. The Convention includes six technical annexes of which Annex I – III address the release of oil and noxious substances in liquid and packaged form into the marine environment.

Annex I - Regulations for the Prevention of Pollution by Oil - covers prevention of pollution by oil from operational measures as well as from accidental discharges. The 1992 amendments to Annex I made it mandatory for new oil tankers to have double hulls and brought in a phase-in schedule for existing tankers to fit double hulls, which was subsequently revised in 2001 and 2003.

The Mediterranean Sea is designated as a special area under Annex I of the MARPOL Convention. 'Special Area' means a sea area where for recognised technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required. Discharges of oil within special areas have been completely prohibited, with minor well-defined exceptions¹. The designation of the Mediterranean Sea as a special area under MARPOL signifies that Port Reception Facilities provided for the disposal of oil are mandatory for the surrounding countries.

Annex II - Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk - details the discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk. About 250 substances were evaluated and included in the list appended to the Convention; the discharge of their residues is allowed only to reception facilities until certain concentrations and conditions (which

¹ Discharges of oil and oily mixtures from oil tankers is prohibited, as are engine room waste discharges from all other ships larger than 400 gt (tonnes gross tonnage). For ships smaller than 400 gt, excluding oil tankers, discharges are allowed when the oil content does not exceed 15ppm or if the ship is proceeding en route, oil content of discharge is less than 10ppm and discharge is made no less than 12 nautical miles from the coast.

vary with the category of substances) are complied with. In any case, no discharge of residues containing noxious substances is permitted within territorial waters.

Annex III - Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form - contains general requirements for the issuing of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications. For the purpose of this Annex, "harmful substances" are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code) or which meet the criteria in the Appendix of Annex III.

International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC Convention)

This Convention is concerned with preparing for and responding to oil pollution incidents arising from ships, offshore oil exploration and production, sea ports and oil handling facilities and to mitigate the consequences of such major pollution incidents.

Each Party is under obligation to establish a system for responding promptly and effectively to oil pollution incidents either nationally or in co-operation with other countries in accordance with the articles. Such system comprises:

- designated competent national authority or authorities with responsibility for oil pollution preparedness and response;
- national operational contact point or points, responsible for the receipt and transmission of oil pollution reports; and
- authority which is entitled to act on behalf of the State to request assistance or to decide to render the assistance requested.

Also, the system includes a national contingency plan for preparedness and response outlining the organisational relationship of the various involved bodies, public or private, taking into account guidelines developed by the IMO.

Malta first signed the OPRC90 convention on 21 January 2003 and the latter came into force on the 21 April 2003.

The Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol) augments and extends the remit of the OPRC Convention 1990 to encompass Hazardous and Noxious Substances. The Protocol, which entered into force on the 14th June 2007, will ensure that ships carrying hazardous or noxious liquid substances are covered by preparedness and response regimes similar to those in existence for oil spill incidents.

The Barcelona Convention for the Protection of the Mediterranean Sea against Pollution.

The Barcelona Convention, established with the UNEP framework, places *inter alia* an obligation on the contracting parties to individually or jointly take all appropriate measures to prevent, abate and combat pollution of the Mediterranean Sea area and to protect and enhance the marine environment in that area.

The Mediterranean Action Plan developed to implement the Barcelona Convention has seven key priorities including the following:

- to bring about a massive reduction in pollution from land-based sources;
- to make maritime activities safer and more conscious of the Mediterranean marine environment;
- to limit and intervene promptly on oil pollution.

Seven protocols addressing specific aspects of Mediterranean environmental conservation have been developed under the Barcelona Convention. The following protocols are of particular relevance to pollution events:

- Protocol for the Prevention and Elimination of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea
- Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea
- Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil²

United Nations Law of the Sea 1982 (UNCLOS)

UNCLOS is an international agreement dealing with all traditional aspects of ocean governance and uses. Under Article 192 “States have the obligation to protect and preserve the marine environment.” The powers individual states have to impose protective measures are defined by UNCLOS and will vary depending in which maritime zone the activity is taking place.

Other international conventions of relevance include the Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), often referred to as “The Rules of the Road”, and the International Convention for the Safety of Life at Sea (SOLAS) 1974. Various other conventions deal with liabilities of ship owners and compensation from incidents involving vessels³.

² Malta has not ratified the Offshore Protocol; the Offshore Protocol was however ratified by the EU and entered into force on 29 March 2013.

³ 1992 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention); 1976 Convention on Limitation of Liability for Maritime Claims as amended by the Protocol of 1996; 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage (Bunkers Convention).

1.2.2 European Union Legislation

The prevention of marine pollution, and actions taken in the event of an incident, is also addressed in legislation at a European level.

EU Ship Source Pollution Directive 2005/35/EC

This Directive relates to ship-source pollution and the introduction of penalties for infringements. The purpose of this Directive is to incorporate international standards for ship-source pollution into Community law and to ensure that persons responsible for discharges are subject to adequate penalties as referred to in Article 8, in order to improve maritime safety and to enhance protection of the marine environment from pollution by ships. The Directive applies irrespective of flag and applies to the owner, master of the vessel, vessels under charter and all classes of vessel with the exception of warships, naval vessels and any state owned vessel on government non-commercial service.

The requirements of the Directive were transposed into national legislation via Legal Notice 130 of 2008, as amended by Legal Notice 112 of 2011.

Water Framework Directive 2000/60/EC

The main purpose of the directive is to prevent further deterioration, protect and enhance the health of all water resources and by doing so, sustain the natural ecosystems that depend on them. One of the requirements of the Directive is for investigative monitoring to be carried out following episodes of accidental pollution from oils (petroleum hydrocarbons) and hazardous substances, to determine the extent and nature of impacts on coastal waters and ecosystems. The Directive was transposed into national legislation via Legal Notice 194 of 2004.

Other EU Directives

A number of other Directives contribute to the prevention of marine pollution events through regulation of land based installations. These include the so called Seveso II Directive (Directive 96/82/EC on the control of major-accident hazards involving dangerous substances, transposed via Legal Notice 37 of 2003 as amended), and the IPPC Directive (Directive 2008/1/EC concerning integrated pollution prevention and control, transposed via Legal Notice 234 of 2002 as amended).

1.2.3 National Legislation and measures⁴

This section provides an overview of national legislation that is relevant in relation to taking action on significant pollution events, other than the legislation mentioned in the previous section.

Territorial Waters and Contiguous Zone Act (Act XXXII of 1971, as amended by Acts: XLVI of 1975, XXIV of 1978, XXVIII of 1981, I of 2002 and X of 2005).

The Territorial Waters and Contiguous Zone Act extends the territorial waters of Malta and makes provision for a contiguous zone. The contiguous zone is defined as extending to twenty-four nautical miles from the baselines from which the breadth of the territorial waters is measured. *Inter alia*, the Act empowers the Maltese maritime authorities to take appropriate action if a vessel within the contiguous zone is suspected or considered to have acted in contravention of national law in matters that include actions prejudicial to the conservation of the living resources of the sea and/or the preservation of the environment and the prevention, reduction and control of pollution. Appropriate action may include arrest, detention or seizure and the levying of fines or other penalties including imprisonment of responsible parties. Ships carrying nuclear or other inherently dangerous noxious substance may be required to obtain consent or to notify the authorities prior to passage through territorial waters.

Merchant Shipping Act 1973

Inter alia, the Act empowers the Minister for Shipping to make regulations as necessary to give effect to international conventions and agreements that have been ratified, acceded to, or accepted by the Government of Malta. The Act also addresses such matters as measures for collision avoidance, and rules and responsibilities concerning salvage operations.

Authority for Transport in Malta Act XV, 2009

This Act established the Authority for Transport in Malta which assumed the functions previously exercised by the Malta Maritime Authority, the Malta Transport Authority (responsible for land transport) and the Director and Directorate of Civil Aviation.

All regulations, orders, and instruments brought into force under the Malta Maritime Authority Act, 1991 and Ports and Shipping Act, 1991 continued to have effect as if made under this Act.

The *Malta Maritime Authority Act, 1991* provided for the establishment of the Malta Maritime Authority (MMA) and, *inter alia*, empowered the MMA to exercise overall control in the territorial and inland waters of Malta including ports and their land and sea approaches. MMA responsibilities included the provision of advice to the Government on marine pollution prevention and control; also the cleaning and clearing of any port and the approaches thereto.

⁴ Primary Source: Malta Maritime Authority. 2009. National Marine Pollution Contingency Plan.

The Ports and Shipping Act, 1991, provided for the establishment of ports in Malta, for the registration and licensing of boats and ships and the regulation of their use within the territorial waters of Malta.

Civil Protection Act, 1999

This Act provides for the establishment of a Civil Protection Department and an Assistance and Rescue Force. The functions of the Assistance and Rescue Force include the maintenance of an adequate service for prompt intervention in the case of fire and rescue on land, flooding, sea salvage, rescue and anti-pollution support at sea, or any other natural or man-made disaster situation which requires the immediate assistance of a public force or special equipment, and to intervene in any emergency or disaster.

Dangerous Cargo Ships, Marine Terminals and Facilities and Bunkering Regulations (Legal Notice 1 of 1996, as amended)

These regulations include provisions of MARPOL, OPRC90 and the IMDG code. Essentially, L.N. 1 of 1996 regulates “the movement, transfer, storage, and handling of dangerous cargoes, bunkers, ballast and tank cleaning operations on all ships and at all marine terminals and facilities within or connected to the internal and territorial waters of Malta.” The prime obligations stemming from these regulations are the “the safety of life, the prevention of pollution to the marine environment, the effective and efficient control of such pollution and the protection of the property of others”.

Measures under the same regulations that constitute a degree of environmental management (pollution prevention and control) are addressed in the following articles relating to ship operations and procedure safety:

- Checklists in Schedule B that must be completed prior to the commencement of the operation and also “at each integral stage of every bunkering operation” that contribute to reducing the risk of spills from bunkering activities
- Provisions under article 70 under which “Marine terminal/facility operators shall provide to the Authority, from time to time, for exclusive and confidential use, full details and updated information regarding safety and pollution prevention/control, including relevant operational data, equipment and personnel resources, general and specific procedures, policies and plans in respect of fire-fighting, emergency and pollution prevention/control” . The latter article ties into the next article (71) where the marine terminal/facility operators should also provide: “full general details of [71 (1) (a)] equipment layout plans dealing with the most safety and environmentally hazardous operations that are or shall be undertaken at that marine terminal/facility and [71 (1) (b)] the routine pollution prevention/control procedures and equipment both within the terminal/facility and as required by the terminal/facility operator to be on board ships or bunker barges utilizing his facilities.

Vessel Traffic Monitoring and Reporting Requirements Regulations. Legal Notice 458 of 2004.

This establishes, in accordance with the provisions of the EU Directive 2002/59/EC, a vessel traffic monitoring and information system with a view to enhancing the safety and efficiency of maritime traffic, improving the response of authorities to incidents, accidents or potentially dangerous situations at sea, including search and rescue operations, and contributing to a better prevention and detection of pollution by ships.

National Marine Pollution Contingency Plan

The plan was drafted in 2010 and approved by Cabinet in 2011. It outlines the roles of various authorities and entities in terms of responding to major marine pollution incidents that constitute a National Emergency, as well as the management of the response in terms of preparedness, actions, and operations.

1.3 Input or Sources of Pressure and Areas at Risk

Significant pollution events are primarily assessed as such on the basis of the scale of the event and the type of contaminant involved, e.g. a large scale oil spill. The location in terms of sensitivity and potential impacts is also taken into account to determine significance.

There have been no significant pollution events recorded in Malta's marine waters during the 12 year reporting period spanning 1999 – 2011.

Notwithstanding, the initial assessment will provide an overview of known pollution events in Malta's marine waters, including medium and small scale spills, as well as discharges of bilges, in order to inform the identification of sources of pressure, areas at risk and potential cumulative effects.

1.3.1 Spatial distribution and intensity of significant pollution events (within assessment area)

In view of Malta's location at the centre of the Mediterranean, and the maritime traffic passing through its marine waters, there is a significant risk of pollution from accidental spills or illicit discharges to sea from vessels.

To date, Malta's coastline has not been affected by any major pollution events, although evidence of offshore oil pollution events does occasionally reach the shores in the form of tarballs.

The location of known oil and chemical pollution events at sea during the 12-year period spanning 1999 to 2011 is shown in Figure 1. This includes incidents reported to Malta's national transport authority (responsible for shipping and ports), events

logged in REMPEC's Alerts and Accidents online database, information from publications⁵, and pollution events confirmed following alerts received via EMSA's CleanSeaNet Service⁶. The incidents indicated involved the release of non-synthetic contaminants; incidents that did not result in the release of oil or chemicals are not included.

The following classification has been adopted for defining the scale of oil spills: Small <10 tonnes; Medium 10-100 tonnes; Large >100 tonnes. This is an adaptation of the ITOPF classification⁷ of small, medium and large oil spills (i.e. <7 tonnes, 7-700 tonnes, and >700 tonnes) taking into account the 100m³ threshold for reporting to REMPEC under the Emergency Protocol⁸. There is no classification which can be adopted or adapted for chemical spills. Furthermore, scale of recorded oil spills is not always available.

Nevertheless, it should be pointed out that this classification does not necessarily reflect 'significance' in terms of the MSFD requirements. In defining 'significance' for pollution events, the scale or extent of impacts associated with the events, which may also be a result of the location of occurrence, should also be taken into consideration. At this stage, except in cases where potential impacts can be inferred through the nature of the spill, the impacts of the recorded pollution events have not been assessed. Hence significance cannot be determined with certainty. Furthermore, scale of recorded oil spills is not always available.

Additional information on the recorded pollution events is provided in the following sections.

⁵ Primary source: Alpha Briggs. 2008. Incident Risk Assessment (prepared for the development of Malta's National Marine Pollution Contingency Plan)

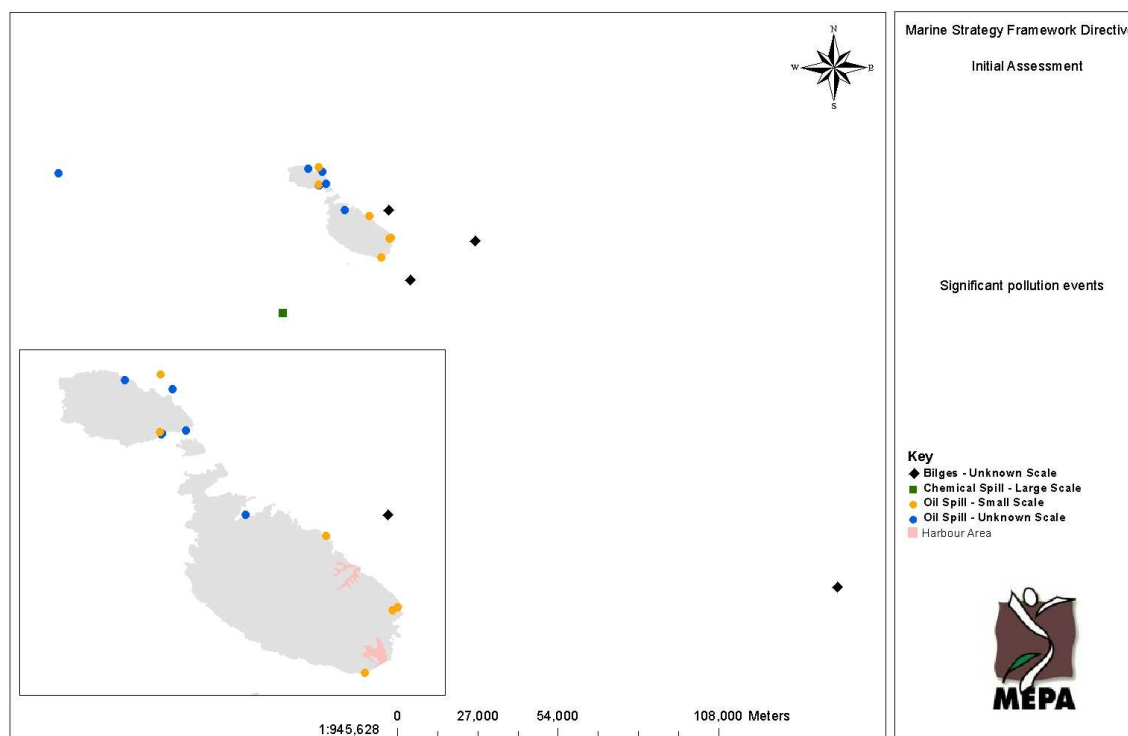
⁶ It should be noted that the latter events involved illegal discharges of bilges or observations of oil sheen.

⁷ <http://www.itopf.com/information-services/data-and-statistics/statistics/>

⁸ in accordance with the Guidelines for Co-operation in Combating Oil Pollution, adopted by the Contracting Parties in 1987

[http://www.rempec.org/admin/store/wyswigImg/file/Tools/Operational%20tools/Alerts%20and%20accidents%20database/EN%20Introduction%20Accident%20Database\(09%2007%2010\).pdf](http://www.rempec.org/admin/store/wyswigImg/file/Tools/Operational%20tools/Alerts%20and%20accidents%20database/EN%20Introduction%20Accident%20Database(09%2007%2010).pdf)

Figure 1. Location of oil and chemical pollution events at sea during the period 1999 – 2011⁹



Pollution events within the Ports

The main ports in the Maltese Islands, namely the Grand Harbour, Marsamxett Harbour and the Port of Marsaxlokk, are included in Figure 1 in view of a number of recorded pollution events that have taken place in these areas. In fact, approximately 70% of recorded oil spills in Malta during the reporting period 1999 – 2011 occurred within these harbours¹⁰.

Spills within the ports are unlikely to go unnoticed and unrecorded, unlike spills in other coastal or offshore areas, both in view of the level of surveillance and the potential impacts of spills on port users, such as staining of vessels.

A distinction can be made between the Grand Harbour, the Port of Marsaxlokk and Marsamxett Harbour primarily in view of the number of incidents that have taken place within the individual harbours, as well as the scale of incidents.

The majority of pollution events occurred within the main harbours during the reported period, namely 75%, occurred within the Grand Harbour. From the information available, the majority of the 45 recorded incidents occurred as a result

⁹ Data sources: REMPEC - Alerts and Accidents online database; EMSA - CleanSeaNet First Generation Report 16 April 2007 – 31 January 2011; Alpha Briggs (2008) - Incident Risk Assessment (prepared for the development of Malta's National Marine Pollution Contingency Plan; Transport Malta

¹⁰ Ports and harbours in the Maltese Islands are indicated in Figure 9

of operational errors and accidents linked to port activities. The spills were primarily 'small scale' events involving less than 10 tonnes of oil products. During the reported period, only one 'medium scale' oil spill was recorded in this port, occurring in 2006 and involving 15 tonnes of fuel oil.

By comparison, the number of recorded pollution events that occurred in the other two main harbours during the reported period is significantly lower, namely 10 in Marsaxlokk and 5 in Marsamxett¹¹. Information on the scale of most of these incidents was limited; however, it can be assumed that although some are indicated as > 1 tonne, they were all small in scale (less than 10 tonnes). Available information on these incidents was insufficient for further analysis.

The difference in the number of incidents across harbours may be seen as a reflection of the level and range of uses within the harbours. The Grand Harbour is a busy and intensive-use port with an industrial history; it is utilised for various activities and installations including passenger and cargo handling, ship repair, fuel storage and bunkering, port reception facilities and a power station. While the Port of Marsaxlokk also has an industrial element, since it is home to a major transshipment port facility, a power station and three fuel terminals, the density of use is much lower. In addition, the industrial aspect of this port is a relatively recent development, since a number of the above-mentioned installations were only built during the last 25 years. Marsamxett harbour on the other hand is primarily commercial and recreational, and comprises various yacht marinas and berthing facilities for recreational boating.

Coastal and Offshore spills

Figure 1 illustrates the location of twelve oil pollution events that occurred close to the coast and two offshore pollution events, one of which involved oil (2001) and another involving chemicals (2002)¹².

The offshore pollution event involving chemicals can be considered as significant in terms of scale, since it involved the sinking of a ship carrying 2900 tonnes of phosphate granules. The incident occurred in 2002, 15 nautical miles SW of Malta. However, while phosphate can be of concern in relation to eutrophication, this incident is not considered likely to have had a significant and lasting impact on the marine environment in view of the location of the spill.

Information on the scale and extent of the oil pollution events indicated is insufficient for further assessment. However, it can be observed that a number of the coastal oil spills were noted within, or in the vicinity of, harbours (other than the two main ports), namely areas where there is a concentration of recreational vessels for berthing and refuelling.

¹¹ Sources: Transport Malta, personal communication; Alpha Briggs. 2008. Incident Risk Assessment (prepared for the development of Malta's National Marine Pollution Contingency Plan)

¹² Data source: REMPEC's Alerts and Accidents Database. Available online at <http://accidents.rempec.org/RempecAccidentsDatabase/Default.aspx> (accessed 24/01/2012)

Another two offshore events involving the release of oil to sea during the reporting period have been recorded¹³; however these could not be included in Figure 1 due to discrepancies in location data. One event involved a sizeable slick that however cleared without intervention and was not traced; no information is available regarding the scale of the other event.

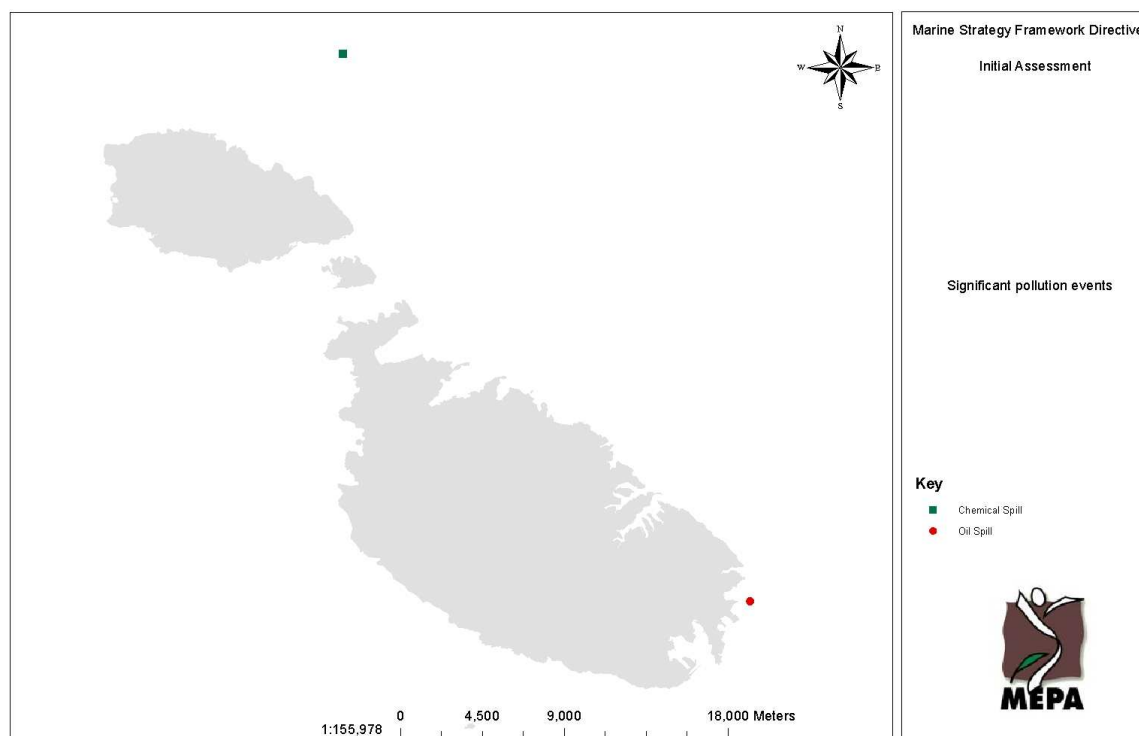
In the years prior to the reported 12-year period, two large scale pollution offshore events were recorded, details of which are provided below¹⁴. These events may have had an impact on the marine environment; however, this cannot be assessed or confirmed in view of lack of monitoring information. The location of these events is show in Figure 2.

- In 1988, a ship carrying 2850 tonnes of lead concentrate sank off the coast of Gozo. There is no indication that the vessel or its cargo was salvaged and it is assumed that said product was lost at sea. This event is of potential concern in view of the persistent nature of heavy metal pollution and the quantity of the chemical likely to have been released; there may have been long term effects from this incident, depending on the level of dispersion and dilution that may have taken place.
- In 1989, a spill of 500 tonnes of fuel oil occurred off the east coast of Malta as a result of vessel grounding. It is indicated that the spilled fuel evaporated and dispersed naturally without causing damage.

¹³ Information provided by Transport Malta.

¹⁴ REMPEC's Alerts and Accidents Database.(accessed 24/01/2012)

Figure 2: Location of recorded large scale pollution events at sea prior to 1999



Discharges of bilges

Figure 1 also depicts the location of pollution events linked to EMSA's CleanSeaNet service. These events are related to illegal discharges of bilges, as opposed to accidental pollution events.

Since 2008, EMSA's CleanSeaNet Service has provided EU Member States with alerts concerning potential pollution events. Of the 16 alerts investigated by Malta until January 2011, 6 were confirmed. In all cases, a sheen or presence of bilges was observed; there were no cases where the presence of heavy products (such as crude oil) was noted. Additional information on the scale, extent and impacts of these events was not available.

Although such discharges are prohibited in the Mediterranean under the MARPOL Convention, they still take place as can be seen in Figure 3 - Figure 5 below which illustrate the location of possible oil spills in Malta in the 1999 - 2004.

Figure 3: Possible oil spills detected in the Mediterranean offshore environment by satellite imaging (1999-2004), from both ships and offshore installations, as an indication of the scale of existing oil pollution (Source: Ferraro et al (2009) in DG Environment News Alert Service (2012) – Future Policy. Issue Number 3 – Offshore Exploration and Exploitation in the Mediterranean. Impacts on Marine and Coastal Environments. Pg 4)

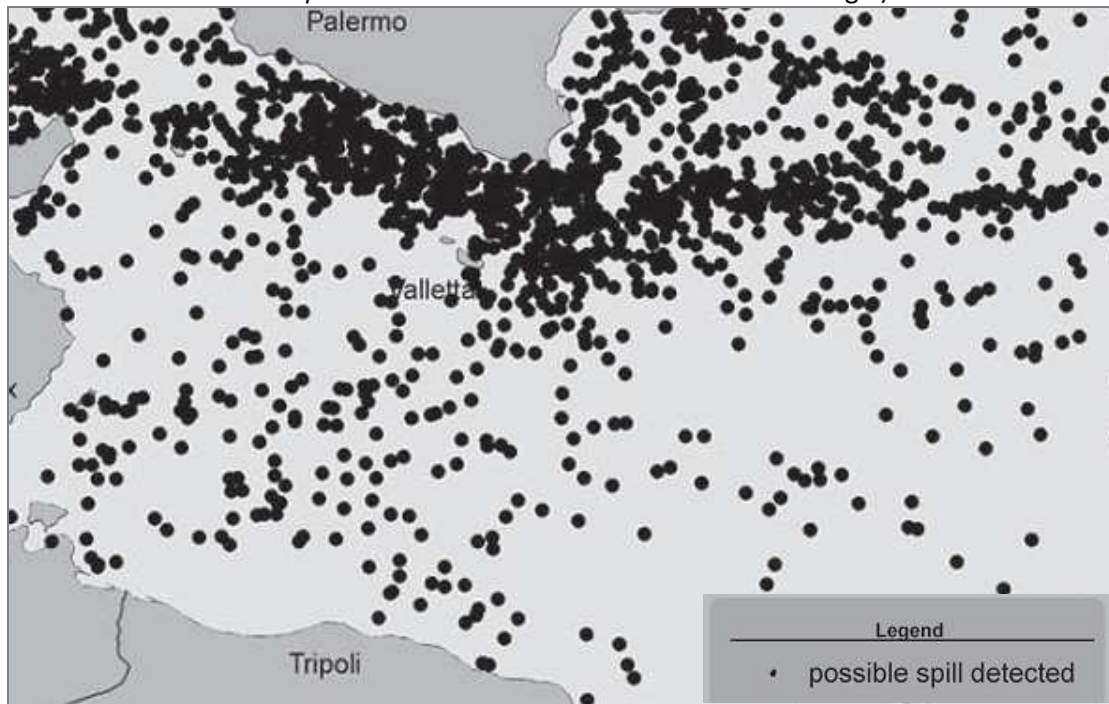
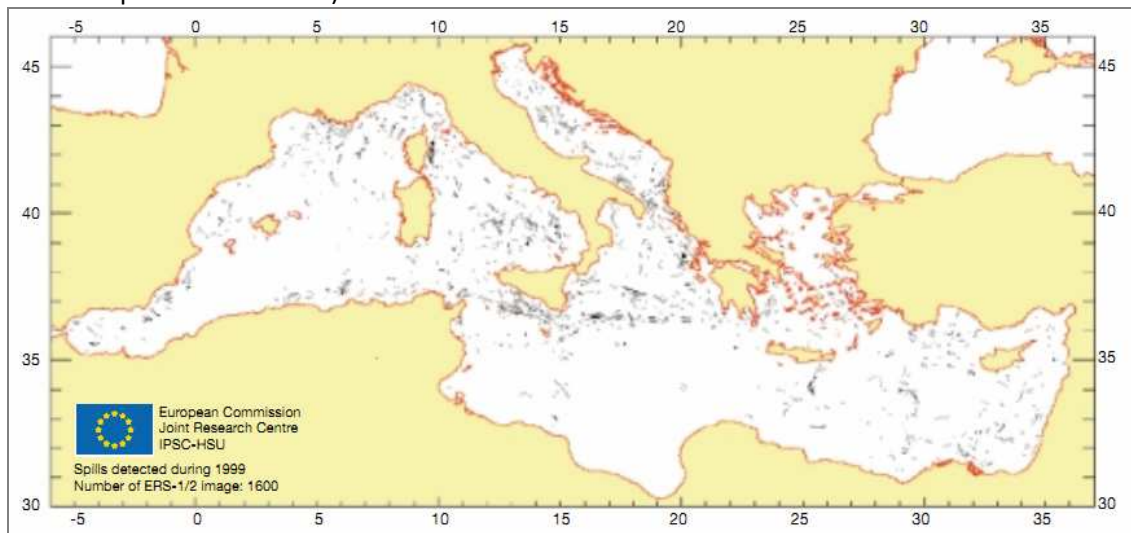
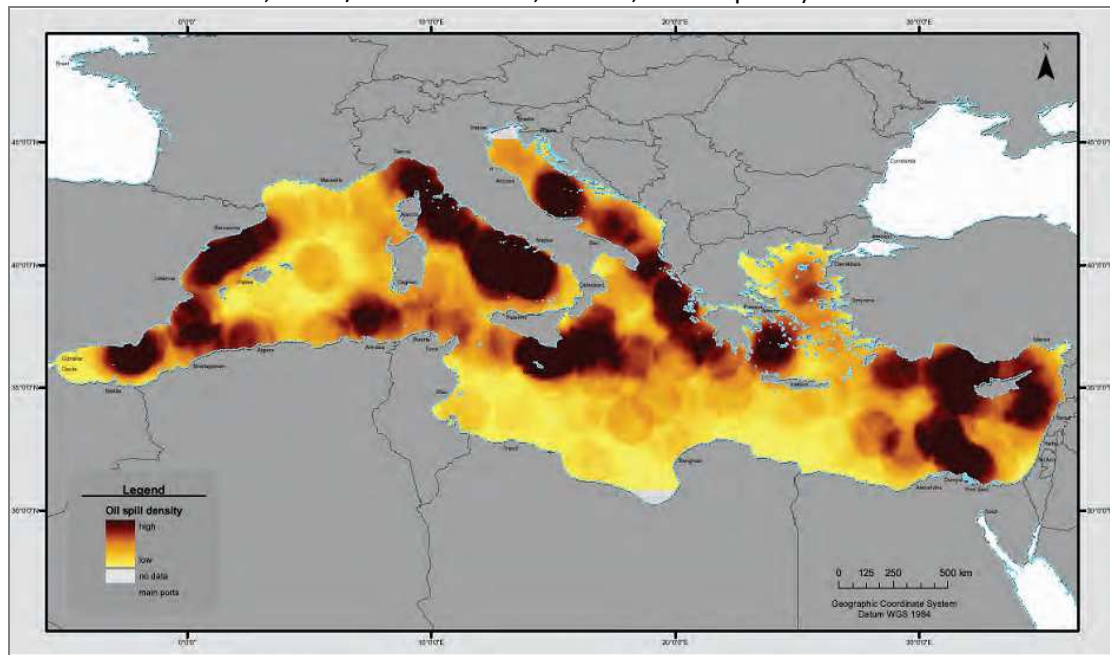


Figure 4: Fingerprints of illicit vessel discharges detected using spaceborne SAR¹⁵ technology during 1999 in the Mediterranean Sea (Source: Pavlakis P., Tarchi D., Sieber A.J. On the Monitoring of Illicit Vessel Discharges. A Reconnaissance Study in the Mediterranean Sea. European Commission)



¹⁵ Synthetic Aperture Radar

Figure 5. Localisation and density of illicit oil spills in the Mediterranean in 2004 (Source: European Commission in UNEP/MAP-Plan Bleu: State of the Environment and Development in the Mediterranean, UNEP/MAP-Plan Bleu, Athens, 2009. Pp 113)



While discharges of bilges by certain vessels are allowed under specific conditions, it is considered likely that the majority of detected spills are in fact illegal, given the scale of the spills¹⁶.

The marine waters around the Maltese Islands can be seen to be one of the areas in the Mediterranean where such spills/discharges are most intense. Although the individual events of illegal discharge may not be considered as significant pollution events, the cumulative effect may very well be significant in terms of pressure on the marine environment. It has been estimated that the amount of oil discharged by vessels in the Mediterranean Sea is at least four times greater than the average amount spilled in the region by ship accidents¹⁷.

Comparing the spatial distribution in 1999 and 2004, illustrated in **Figure 4** Figure 4 and Figure 5 respectively, it can be seen that the illicit vessels discharges/spills are concentrated in the same areas, which corresponds to an area between Malta and Sicily through which main shipping lanes are located, as illustrated in Figure 6 (section 1.5.1).

Monitoring and enforcement of illegal discharges from vessels is an issue, both in terms of the resources needed as well as the limited action that can be taken by coastal member states outside the territorial waters, namely monitoring, collecting

¹⁶ Pavlakis P., Tarchi D., Sieber A.J. On the Monitoring of Illicit Vessel Discharges. A Reconnaissance Study in the Mediterranean Sea. European Commission.

¹⁷ Pavlakis P., Tarchi D., Sieber A.J. On the Monitoring of Illicit Vessel Discharges. A Reconnaissance Study in the Mediterranean Sea. European Commission.

evidence and reporting the polluting offence: beyond territorial waters the right of law enforcement lies with the flag state of the vessel concerned¹⁸.

1.3.2 Trends in spatial distribution and intensity inputs of contaminants from significant pollution events (within assessment area)

It is not possible to provide information on trends in the spatial distribution and intensity inputs of contaminants from pollution events in view of lack of data.

It should be noted that no significant pollution events have been recorded during the reporting period.

1.4 Output or level of pressure in the marine environment

It is currently not possible to provide information on the level and trend of this pressure in the marine environment, namely spatial distribution and concentration of contaminants from significant pollution events, in view of lack of data.

It should be noted that no significant pollution events have been recorded during the period under assessment.

1.5 Activities contributing to the pressure

As indicated in section 1.3.1, no significant pollution events have been recorded in Malta during the reporting period 1999 - 2011.

However, the risk of such events remains, as well as the risk of impacts from cumulative pollution. This section provides an overview of the main activities that may contribute to this pressure.

1.5.1 Shipping

Vessel Traffic

The Mediterranean Sea is the major route for oil and cargo vessels from the Middle East and North Africa towards Europe and North America, and it is estimated that approximately 30% of sea-borne trade passes through these waters¹⁹.

¹⁸ Pavlakis P., Tarchi D., Sieber A.J. 2001. On the Monitoring of Illicit Vessel Discharges. A Reconnaissance Study in the Mediterranean Sea. EC DG - Joint Research Centre.

¹⁹ Malta Maritime Authority. 2009. National Marine Pollution Contingency Plan.

There are two main offshore maritime routes through the Mediterranean, the West bound route, North of Malta, plied by most oil and chemical tankers, sailing from the Mediterranean to the Atlantic and in the opposite direction, and the North bound route, East and West of Malta, which is especially plied by oil tankers coming from Libya²⁰.

Trade carried in tankers represents the largest portion of Mediterranean littoral States' trade and dominates intra Mediterranean trade. Tanker trade represents just under 60% of all seaborne trade between littoral Mediterranean States²¹. In terms of oil transport, transits across the Mediterranean accounted for 20% of the global volume in 2006, i.e. 493 million tonnes out of a global 2600 million tonnes²². Crude oil accounts for the bulk of the oil products shipped in the Mediterranean, e.g. out of these 493 million tones of oil in 2006, 421 million tonnes were crude oil, involving 4224 laden oil tanker movements²³.

Figure 6 depicts the major shipping routes through the Mediterranean, while Figure 7 depicts the laden port to port routes in the Mediterranean which carried the most crude oil in 2006.

²⁰ Malta Maritime Authority. 2009. National Marine Pollution Contingency Plan.

²¹ Lloyd's Marine Intelligence Unit. 2008. Study of Maritime Traffic Flows in the Mediterranean Sea (July 2008). A report prepared for the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) by Lloyd's Marine Intelligence Unit under Task 2.3 O of Activity 2 of the European Union financed MEDA regional project "Euromed co-operation on Maritime Safety and Prevention of Pollution from Ships – SAFEMED".

²² Plan Bleu: Maritime Transport of Goods in the Mediterranean. Plan Bleu, Valbonne, 2010 (Blue Plan Papers 7)

²³ Malta Maritime Authority. 2009. National Marine Pollution Contingency Plan; Lloyd's Marine Intelligence Unit. 2008. Study of Maritime Traffic Flows in the Mediterranean Sea.

Figure 6. Major tanker routes - 2006 (Source: Lloyd's Marine Intelligence Unit for REMPEC. July 2008. SAFEMED Project. *Study of Maritime Traffic Flows in the Mediterranean Sea – Final Report*; 17pp)

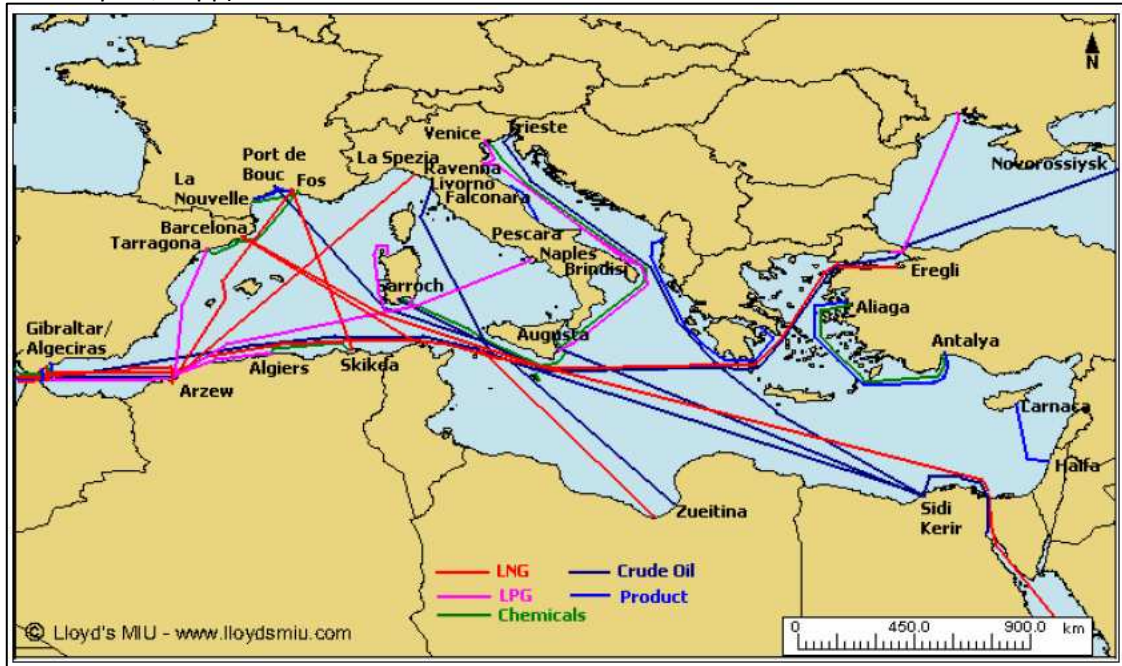
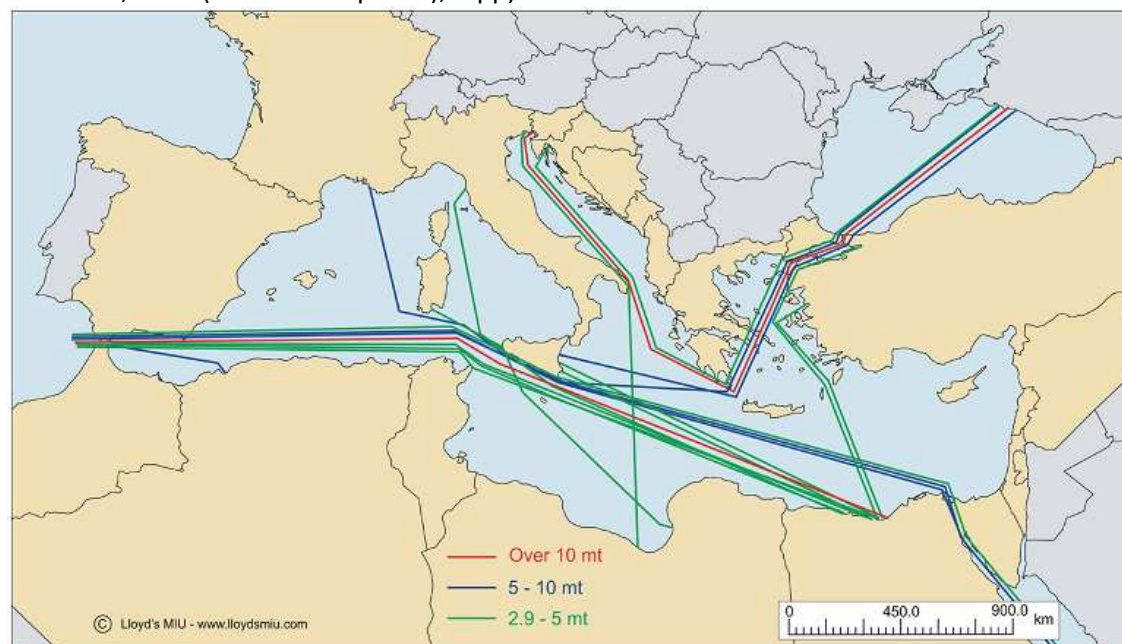


Figure 7: Crude Oil traffic in major Mediterranean ports²⁴ (Lloyd's Marine Intelligence Unit in Plan Bleu (May 2010) *Maritime Transport of Goods in the Mediterranean*. Plan Bleu, Valbonne, 2010 (Blue Plan Papers 7);15pp)



Source : Lloyd's MIU (data 2006)

²⁴ The routes are colour coded to give an indication of the quantity of oil carried in DWT tonnes (as million tonnes).

As can be seen, Malta is situated along a number of main shipping lanes. Annually, over 65,000 vessels pass within 20 nautical miles of the Maltese Islands; the main types of these vessels are identified as Container (25%) and Merchant (26%) vessels, while tanker vessels account for about 16% of the total number of vessels²⁵.

The majority of the identified vessels are visiting the Grand Harbour, accounting for 45% of the total traffic volume, whereas 35% are visiting Marsaxlokk. International routes that navigate past the Maltese Coastline, using the Strait of Gibraltar and the Suez Canal contribute about 25% of the total number of vessels²⁶.

In terms of risk, tanker shipping routes represent potential areas of higher risk since significant pollution events may occur as a result of vessel collisions, groundings and other accidents.

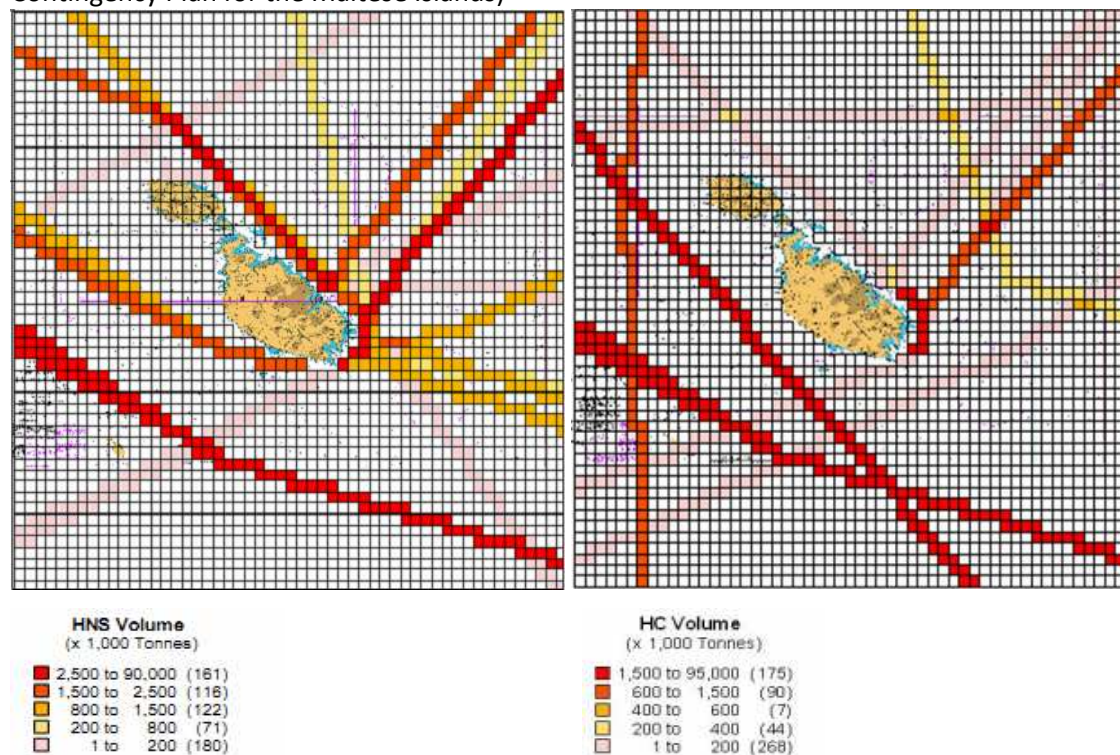
Figure 8 gives an overview of HNS and hydrocarbon cargo volume on shipping routes around the Maltese coast, up to 20 nautical miles. A number of these areas / routes are also relevant in relation to bunkers carrying capacity for vessels with bunker capacities of at least 1000 tonnes (i.e. ships over 40,000 DWT)²⁷.

²⁵ Malta Maritime Authority. 2009. National Marine Pollution Contingency Plan

²⁶ Malta Maritime Authority. 2009. National Marine Pollution Contingency Plan

²⁷ Alpha Briggs.2008. Incident Risk Assessment (Prepared for the National Marine Pollution Contingency Plan for the Maltese Islands)

Figure 8. Overview of HNS and Hydrocarbon cargo volumes around the Maltese Coast up to 20nm²⁸ (Alpha Briggs. 2008. Incident Risk Assessment for the National Marine Pollution Contingency Plan for the Maltese Islands)



The volume of HNS transported within 20 nautical miles is estimated to be 101 million tonnes per year while 937 million tonnes of hydrocarbons are estimated to be transported over the same period²⁹.

The routes with the highest traffic and cargo volumes are also those with the highest bunker volumes. These routes are assumed to follow the shipping lanes which pass around Malta. The Malta-Adriatic Sea, which is the busiest route with 27600 vessel transits per annum, is the route with the highest bunker volume for vessels above 40,000 DWT (65% of the traffic in the area). This route accounts for all vessels visiting Valletta/Malta. The Suez-Marsaxlokk route, through which approximately 10300 vessels transit annually, has the second highest total bunker volume (29%) for ships greater than 15,000 DWT, accounting for the vessels visiting Marsaxlokk.

Vessel activity within the Mediterranean has been steadily increasing and is expected to continue to increase, coupled with the deployment of even larger vessels. Deployed maritime transport capacity increased by 50% between 1997 and 2006, due to an increase in ship traffic frequency (15%) and an increase in ship size (reportedly 30%). Port traffic related to oil transport increased by 6% per annum

²⁸ Each cell of the grid represents 1nm x 1nm. The cells colour-coding is associated with a different range of volume. The number represented in brackets shows the number of cells within the 20nm range that satisfies this volume range.

²⁹ Alpha Briggs.2008. Incident Risk Assessment (Prepared for the National Marine Pollution Contingency Plan for the Maltese Islands)

between 1996 and 2006; oil transport deploys the larger ships (125,000 DWT on average³⁰), which size has increased by 26% within 10 years³¹.

Projections are for an increase of 18% in vessel activity over ten years from 2008, with chemical tanker and container vessels showing the highest rates of growth in respect of port callings within the Mediterranean. Transits through the Mediterranean are also expected to rise by 23%, and be most pronounced in the product and crude tanker sector³².

Bunkering and Vessel Related Port Activities

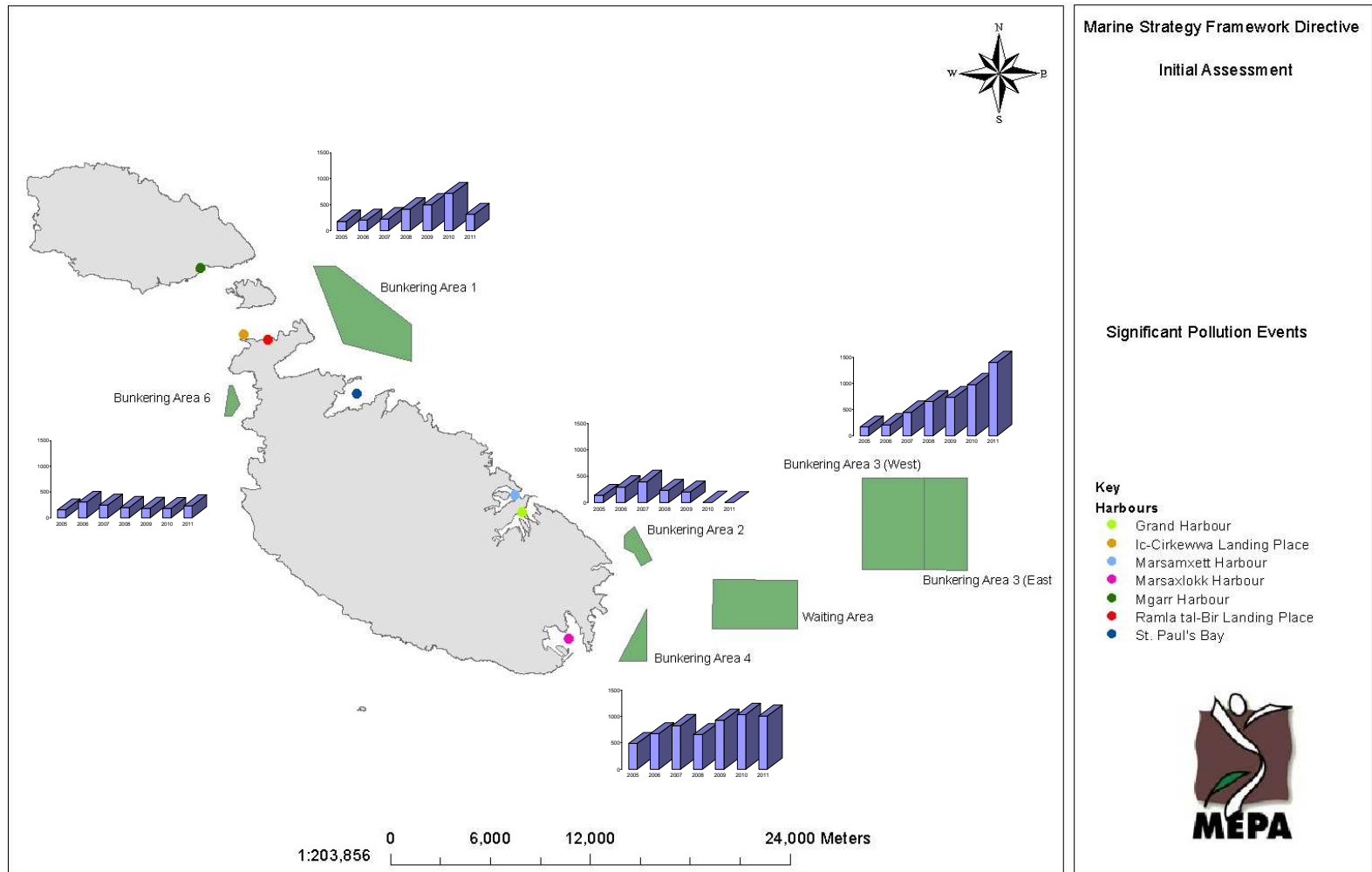
Other specific areas that are at risk for pollution events include the two ports of Grand Harbour and Marsaxlokk, the five offshore areas designated for bunkering, and the waiting area for vessels *en route* to Malta, which area is used on a regular basis by vessels waiting to enter the Malta Freeport or Marsaxlokk Harbour for bunkering. These areas are illustrated in Figure 9.

³⁰ DWT: Dead Weight Tonnage – the total weight that a ship can carry while maintaining its water level; 1DWT = 1000 kg

³¹ Plan Bleu: Maritime Transport of Goods in the Mediterranean. Plan Bleu, Valbonne, 2010 (Blue Plan Papers 7)

³² Lloyd's Marine Intelligence Unit. 2008. Study of Maritime Traffic Flows in the Mediterranean Sea (July 2008). A report prepared for the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) by Lloyd's Marine Intelligence Unit under Task 2.3 O of Activity 2 of the European Union financed MEDA regional project "Euromed co-operation on Maritime Safety and Prevention of Pollution from Ships – SAFEMED".

Figure 9: Ports, bunkering and waiting areas in Malta, including trend in number of bunkering vessels per year (2005-2011)³³

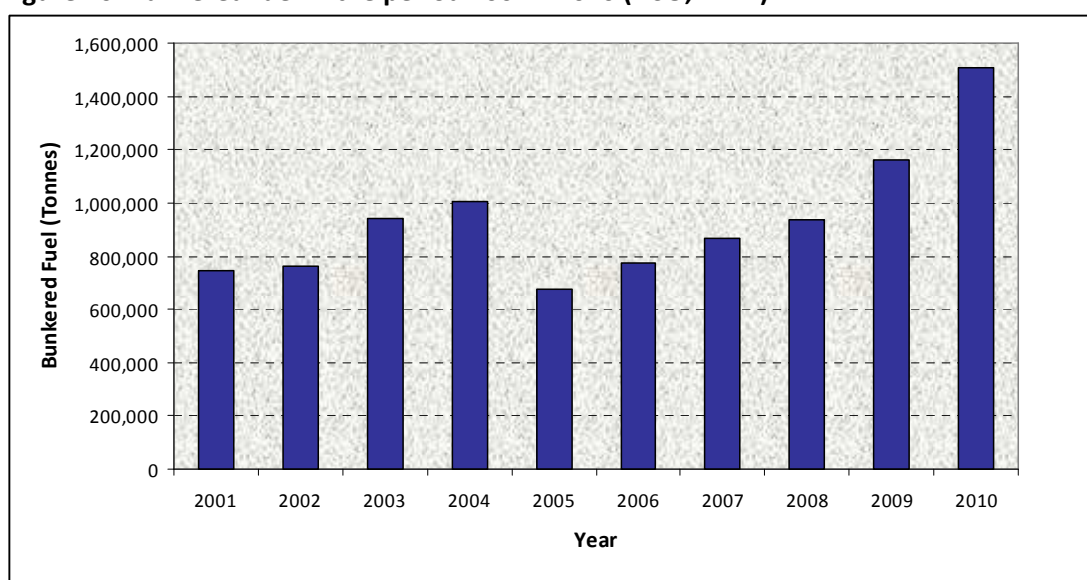


³³ Quantities of bunkering vessels was provided by Transport Malta.

Within the ports and bunkering areas, pollution may occur in connection to errors and accidents during the various operations that take place involving transfer of fuel as cargo or for bunkering. As can be seen from Figure 9, certain bunkering areas, such as Area 3 and Area 4, are more heavily used than others, and Area 3 in particular can be seen to be experiencing a steady growth in use. The areas are used depending on the weather to provide safer conditions for operations, e.g. shelter from the strong North Westerly in the case of the areas positioned in the South East.

Figure 10 below shows the quantity of fuels bunkered for international navigation in Malta in the period 2001 – 2010.

Figure 10. Bunkered fuel in the period 2001 – 2010 (NSO, MRA)³⁴



As can be seen, there has been a steady increase over the last decade, with the quantity bunkered in 2010 (1.5 million tonnes) double that bunkered in 2001. With an increase in activity, comes an increase in risk.

Within the ports, there is an additional risk of pollution as a result of the predominant activities and operations of port installations and the probability of accidents, which is addressed in section 1.5.2.

³⁴ Data submitted for the compilation of the Greenhouse Gas Emissions Inventory (pursuant to Decision 280/2004/EC) and the National Emission Inventory (pursuant to Directive 2001/81/EC).

1.5.2 Land-based Activities / Industry

Pollution events affecting the marine environment may occur as a result of accidental leakage or operational incidents from industry.

In Malta, the main areas at risk of oil / chemical spills from land based sources are the two ports of Grand Harbour and Marsaxlokk. As indicated in Section 1.3, a substantial share of all recorded oil spills within Malta in the last 12 years occurred within the Grand Harbour and Marsaxlokk, 55% and 12% respectively.

It should be noted that while this data may not necessarily provide a full picture of spills in Malta, the element of risk is greater in ports than in other areas in view of the number and type of land based installations present within the ports and the related vessel activity: Malta's two power stations are located within these ports, and most of the large fuel storage installations in Malta are either located within these ports or have a direct link to the ports for fuel transfer and effluent discharge purposes. Certain risks may be reduced through infrastructural measures such as adequate secondary containment for chemicals and fuel storage tanks, breakaway valves at loading points, automatic shutdown systems, as well as strict control on operations and adequate emergency response systems. Implementation of certain measures and upgrading of infrastructure is necessary for a number of port installations, primarily in view of the period in which they were built. These requirements are being pursued through the regulations that transpose the Seveso II Directive and through the environmental permitting system.

Other cargo handling to/from vessels is also carried out within these ports. Cargo transfer has the potential to result in the release of either hydrocarbons through a vessel collision or HNS from the actual cargo. These risks are reduced respectively through compulsory pilotage for all vessels wishing to enter the port and managing of cargo movements, as is the case in Marsaxlokk and Grand Harbour³⁵.

1.5.3 Energy Production³⁶

Activities related to marine hydrocarbon exploration in Malta have to date been limited to drilling of exploratory wells and carrying out of seismic surveys. Presently, there are no production installations offshore Malta.

Most of oil exploration activity in Malta is conducted offshore on its continental shelf. Currently, three areas within the continental shelf are licensed for oil exploration. These licences are still in the exploration phase during which geological

³⁵ Alpha Briggs. 2008. Incident Risk Assessment (Prepared for the National Marine Pollution Contingency Plan for the Maltese Islands)

³⁶ Main source: Oil Exploration Department within the Malta Resources Authority

and geophysical data is acquired and analysed and eventually exploratory wells may be drilled.

Since the 1970s, ten exploratory wells have been drilled offshore, and specifically in the 12 year period 1999 – 2011, one offshore well was drilled in 2002³⁷. However none of these led to the commercial extraction of oil or gas. The next well is expected to be spudded by the first quarter of 2014.

There has never been a significant pollution event from oil exploration in Malta. Presently, the risk of significant pollution events associated with the oil and gas sector occurring in Malta is low, since no oil production currently takes place and there is overall a low level of offshore drilling activity. Government ensures that exploration companies are contractually obliged to carry out all petroleum operations in accordance with best industry practise to protect the environment and minimise the risk of pollution.

Future projections of activities within this sector are difficult to predict and an increase in the frequency of oil drilling cannot be excluded.

1.6 Impacts on Ecosystems and Species

It is currently not possible to provide information on the impacts of this pressure on ecosystems and species in view of lack of data.

However, as indicated previously, no significant pollution events have been recorded in Malta during the period under assessment.

1.7 Assessment of Status

1.7.1 Criteria and Indicators

Assessment of status in terms of significant pollution events is based on the MSFD criteria and indicators for Descriptor 8 '*Concentration of contaminants are at levels not giving rise to pollution effects*', specifically indicator 8.2.2 reproduced hereunder:

Indicator 8.2.2: Occurrence, origin (where possible), extent of significant acute pollution events (e.g. slicks from oil and oil products) and their impact on biota physically affected by this pollution

³⁷ http://www.mra.org.mt/Oil_exploration.shtml (accessed August 2012)

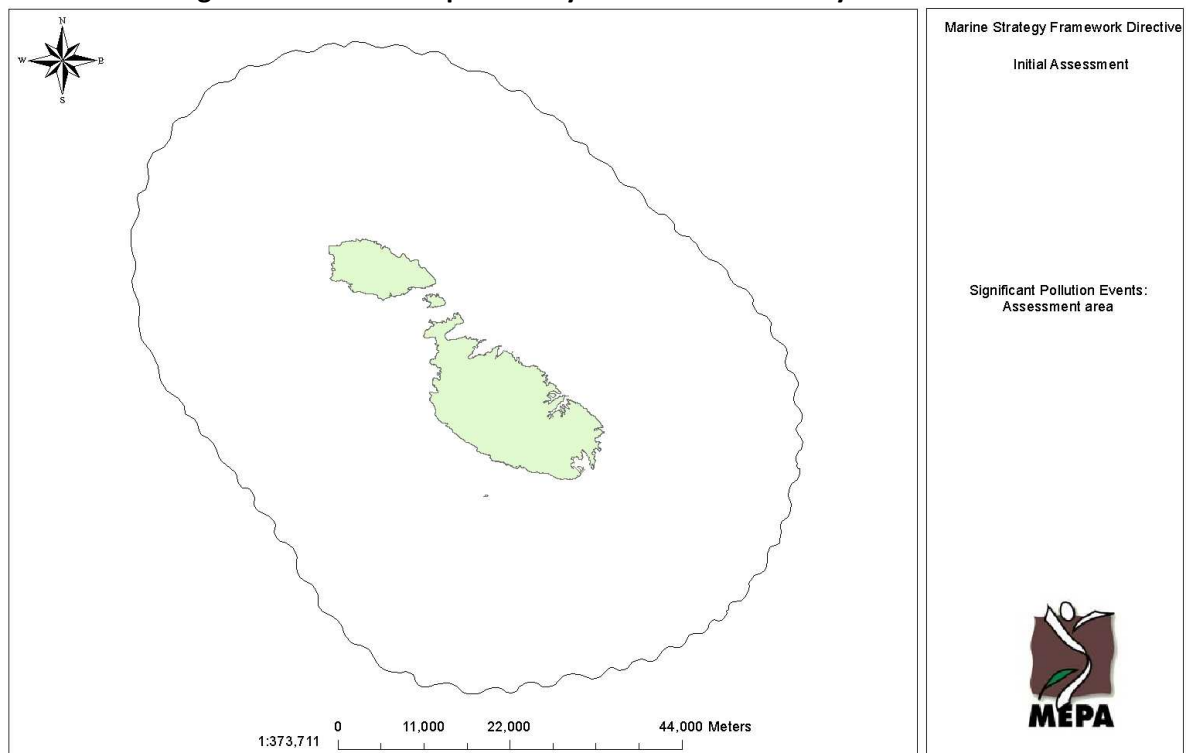
Full application of this indicator for assessment of status was not possible at this stage, mainly as a result of the fact that the information collected for the purposes of recording/reporting pollution events to date would not satisfy the requirements of this indicator. In particular, no data is currently available with respect to the impact of pollution events on biota.

On the other hand, the data currently at hand was interpreted to the extent possible for the purposes of Indicator 8.2.2, in terms of occurrence, origin and extent of pollution events.

1.7.2 Assessment Areas

The assessment area used for the purposes of defining status in terms of significant pollution events is indicated in Figure 11. This assessment area incorporates the majority of pollution events which have been recorded in the period 1999-2011 (excluding those which could potentially be associated with hydrocarbon extraction). This area is thus deemed to represent marine waters which are most at risk from such events.

Figure 11: Proposed Assessment Area for assessing status in terms of significant pollution events excluding those which could potentially be associated with hydrocarbon extraction.



1.7.3 Status

While the current data scenario does not allow determination of the significance of the recorded pollution events, the majority of the reported spills are of small scale, pointing towards a scenario whereby no significant pollution events have been recorded during the past twelve years. The only event which could be considered 'significant' in terms of scale was the chemical spill occurring in 2002; however the impacts may not have been significant due to the nature of the spilled chemical and the offshore location of the spill. Therefore once again, the significance of this chemical spill is overall low. Other major spills which may have been associated with potential impacts on marine ecosystems, and hence have been of significance to the marine environment, occurred prior to 1999.

In view of the above, the current status of occurrence of significant pollution events is deemed to be 'Good', given that no significant pollution events have occurred in Malta during the twelve year period under assessment.

The trend status cannot be assessed, in view of the relatively limited period under assessment, limited data availability and low-medium confidence in available data.

The current status and the trend status of impacts of significant pollution events on seabed habitats and functional groups has not been assessed.

1.8 Data Gaps

As has been indicated previously, no significant pollution events have been recorded in Malta during the period under assessment. Other pollution events are likely to have occurred which have gone undetected and/or unrecorded. However such events would most likely involve small–medium spills and illicit discharges to sea from vessels of oil and oily mixtures from ships, rather than large pollution events that would occur as a result of accidental damage to vessels from collisions, sinking or groundings.

Available data on known pollution events was collated and assessed with the aim of identifying sources of pressure, areas at risk, and associated data gaps. This data was obtained from a number of sources, and it was observed that there was little or no overlap of data and that the level of available information on each incident varied, depending on the source of the data.

In general, only basic information had been logged, such as the date or month and year, the location (although not necessarily with coordinates), the type of pollutant and the quantity spilt (if known). Details on action taken and the fate of the spill/ outcome was only available for a subset of recorded pollution events, primarily those occurring within the ports.

Another reason for the above data-gaps lack may be the changing remits of various entities over the past years in relation to receiving marine pollution alerts and taking action, as well as the lack of a centralised database and formal procedure detailing the information to be logged.

Investigation of the environmental impacts of spills, in terms of chemical or ecological degradation, was also not a requirement in the past; furthermore such an assessment would necessitate the availability of baseline information for comparison.

Abbreviations used in the report

EMSA	European Maritime Safety Agency
HNS	Hazardous and noxious substances
IMO	International Maritime Organization
ITOPF	International Tanker Owners Pollution Federation Ltd.
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea