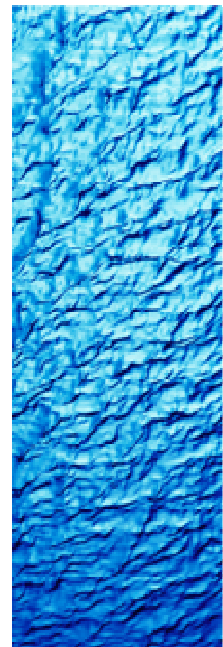
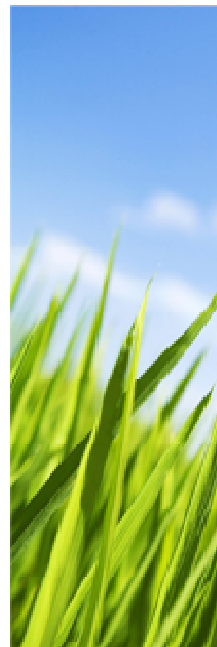
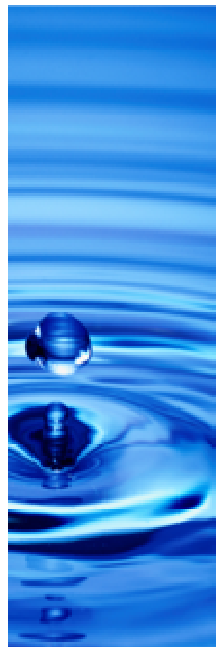
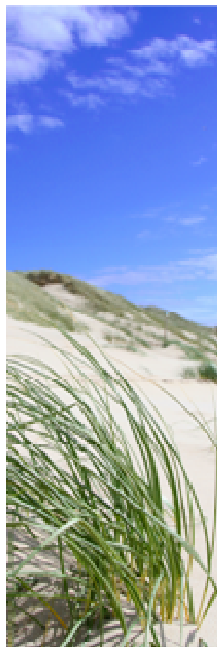
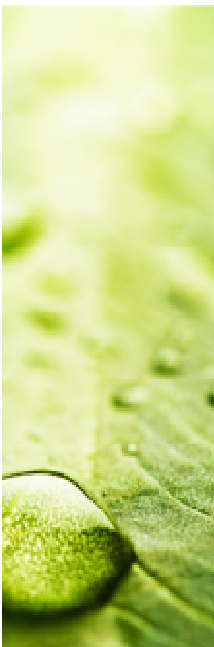


Victorian Desalination Project



D&C Marine Area Environmental Management Plan Attachment I2 – Hazardous Materials Sub Plan

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Definitions and acronyms

The following Acronyms are used in this document and relevant attachments:

A1MT	Area 1 Marine Team
AMSA	Australian Maritime Safety Authority
D&C	Design and Construct Phase of the VDP
DPs	Design Packages
EIRP	Environmental Incident Response Plan
EMS	Environment Management System
EMP	Environment Management Plan
EPA	Victorian Environment Protection Authority
EP Act	Environment Protection Act, (1970)
FRC	Fast Rescue Craft
GRP	Glass Reinforced Plastic
HAZCHEM	Hazardous Chemicals
Hazardous Materials	'Hazardous Materials' is an umbrella term used to describe any substance that, because of its chemical, physical or biological properties, can cause harm to people, property or the environment. It is a term that collectively describes substances which are classified according to the hazard they present, including but not limited to 'dangerous goods', 'combustible liquids', and 'hazardous substances'.
HSRA	Hazardous Substance Risk Assessment
HSE	Health Safety and Environment
JSEA	Job Safety and Environment Analysis
JUB	Jack-up barge
Marine Area	The marine component of the VDP. Includes the drilling of vertical holes in the seabed, installation of risers and marine structures, mobilisation and use of vessels for marine monitoring activities and construction.
Marine Works Area (onsite)	Refers to a locality where marine area activities take place. This includes all vessels when in use by TDJV, the area bounded by the temporary marine exclusion zone, the seabed where the marine structures are installed and monitoring locations where monitoring or devices are placed.
MSDS	Material Safety Data Sheet
NOHSC	National Occupational Health and Safety Commission
OH&S	Occupational Health and Safety
OSV	Offshore Support Vessel
PC	Performance Criteria
PR	Performance Requirements
SEPs	Site Environmental Plans



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SEI	Site Environmental Inspection
SEPP	State Environment Protection Policy
SEPP (WoV)	State Environment Protection Policy (Waters of Victoria)
SOPEP	Shipboard Marine Pollution Emergency Plans
TDJV	Thiess Degrémont Joint Venture
TSV	Transport Safety Victoria (previously Marine Safety Victoria)
VDP	Victorian Desalination Project
WAP	Work Area Packages
WP	Work Packs

1 Purpose and scope

This Hazardous Materials Sub Plan describes the hazardous materials likely to be encountered on site with a particular focus on any substance that, because of its chemical, physical or biological properties, can cause harm to the environment. The sub plan also describes management measures required to ensure that avoidance and mitigation of potential impacts of hazardous materials are incorporated into the design and construction (D&C) of the Victorian Desalination Project (VDP) Marine Area Works. This does not specifically include the Occupational Health and Safety (OH&S) aspects of hazardous materials, which are addressed in the project-wide OH&S Management Plan (PL-TDV-PM-0-X-605-0004).

This sub plan must be read in conjunction with the Environmental Management System (EMS) Manual, D&C Environmental Management Plan (D&C EMP) and D&C Marine Area EMP. This sub plan forms an attachment to the D&C Marine Area EMP and addresses requirements listed in the Environmental Compliance Tracker (TDV-0-EV-RP-0001-01), including licence conditions, performance requirements (PRs), performance criteria (PC) and other obligations which may impact marine operations.

Specific management measures from this and other environmental sub plans have been incorporated into Work Area Packages (WAP) and Work Packs (WPs), which are also referred to as management procedures, Site Environmental Plans (SEPs) and Job Safety and Environmental Analysis (JSEA's) where applicable.

Waste management is addressed in the Resource Efficiency and Waste Management Sub Plan (Attachment I3).

2 Objectives and targets

The objective of this Hazardous Materials Sub Plan is to ensure there are no environmental risks or loss of amenity arising from the use of hazardous materials during the construction of the VDP Marine Area Works and to ensure project objectives, targets and obligations, including PRs and associated criteria, are met.



Attachment I2 – Hazardous Materials Sub Plan

Table 2-1 outlines the relevant hazardous materials objectives and targets nominated to be achieved during the D&C phase of the VDP. Numbered entries are applicable performance requirements taken from Schedule A of Appendix S3 of the Project Deed.

Table 2-1. Environmental objectives, targets and performance requirements

Issue	Objective/Performance Criteria	Target/Performance Requirements
Hazardous Materials	<p>Minimise the use of chemicals during project activities Minimise adverse effects of chemicals on the receiving environment (PR#12089) D</p> <p>Protect beneficial uses of air, land, water, human and environmental health, from the impacts of hazardous materials and dangerous goods. Manage, store, handle and dispose any hazardous substances and dangerous goods in accordance with relevant policies, regulations and guidelines including the Victorian WorkCover Authority and Australian Standard AS1940 Storage and Handling of Flammable and Combustible Liquids, EPA Best Practice Environmental Management - Environmental Guidelines for Major Construction Sites (1996) and EPA Publication 347 - (Bunding Guidelines) (PR#19126) D, C.</p>	<p>Design the pre-treatment, desalination and potabilisation systems to minimise chemical usage and to select chemical products that are proven to have minimal adverse effect on the receiving environment. (PR#12091) D*</p> <p>Develop and implement methods and management systems (including contingency plans) that:</p> <ul style="list-style-type: none"> • Limit the on-site and on-vessel storage and/or use of hazardous substances and dangerous goods • Manage hazardous materials and dangerous goods to avoid environmental damage • Install bunds (if appropriate) and take precautions to reduce the risk of spills entering the stormwater drainage system • Seek to contain any spills captured by the stormwater drainage system • Provide for management of hydrocarbon spills (PR#19128) D, C. <p>Undertake routine maintenance of construction equipment and monitor fuel storage tanks to reduce the potential for spills to occur (PR#19129) C.</p>

* Managed through the D&C Plant and General Area EMP

D = Design phase requirement; C= Construct phase requirement

All PRs from Project Deed Schedule A of Appendix S3 are contained within the D&C Marine Area EMP Attachment G – Environmental Obligations Register. The Environmental Compliance Tracker tracks conformance with these PRs and is updated regularly by the TDJV Environmental Coordinator and Area Environmental Managers.



3 Legal, regulatory, licence, permits and approval requirements

This sub plan has been developed in accordance with the following legislation and standards:

- *Health and Safety Act, (2004)*
 - Occupational Health and Safety Regulations, 2007
 - Occupational Health and Safety (Hazardous Substances) Regulations 1999
- *Dangerous Goods Act, (1985)*
 - Occupational Health and Safety (Asbestos) Regulations 2003 (Victoria).
 - Dangerous Goods (Storage and Handling) Regulations 2000
 - Code of Practice for the Storage and Handling of Dangerous Goods, No. 27, 2000
- *Pollution of Waters by Oil and Noxious Substances Act, (1986)*
 - Pollution of Waters by Oil and Noxious Substances Regulations 2002
- *Environment Protection Act, (1970)*
 - State Environment Protection Policy (Waters of Victoria) (SEPP WoV)
- *Protection of the Sea (Harmful Anti-fouling Systems) Act, (2006)*
- Australian Dangerous Goods (ADG) Code 7th edition
- EPA Best Practice Environmental Management – Environmental Guidelines for Major Construction Sites 1996
- EPA Publication 347 – Bunding Guidelines
- International Safety Management (ISM) Code 2002

The legislative and contractual requirements for the D&C Marine Area Works are summarised in:

- D&C Marine Area EMP – Attachment E – Environmental Legislation Register
- D&C Marine Area EMP – Attachment F – Environmental License, Permit and Approval Register
- D&C Marine Area EMP – Attachment G – Environmental Obligations Register.

The applicable PRs from Project Deed Schedule A of Appendix S3 are provided in table 2-1.

Under the Project Deed the D&C EMP, all sub plans and any changes to these must be endorsed by the State, who may refer aspects to relevant agencies.



Attachment I2 – Hazardous Materials Sub Plan

The EPA and any other relevant agencies will be consulted with regard to any specific approval requirements of this environmental sub plan. The requirements of any permits, licences or approvals obtained will be placed in the Environmental Licence, Permit and Approval Register on receipt and updated in the Environmental Compliance Tracker.

4 Existing conditions and issues

The VDP Marine Area Works will be primarily focussed around the drilling and installation of Intake and Outlet Risers approximately 1 kilometre offshore adjacent to the Plant site. Additional works will include load out of the concrete base structures and velocity caps from the Port of Burnie, Tasmania. Finally, JUB Mobilisation and initial Glass Reinforced Plastic (GRP) Riser Load out will occur from Westernport, Victoria.

This sub plan refers to the storage and use of materials on site. The Marine Area site is defined as follows: A locality where marine area activities take place. This includes all vessels when in use by TDJV, the area bounded by the temporary marine exclusion zone, the seabed where the marine structures are installed and locations where monitoring or devices are placed. Further details of vessels to be used during the project are included in Attachment B – Project Components of the D&C Marine Area EMP.

4.1 Hazard identification

'Hazardous Materials' is an umbrella term used to describe any substance that, because of its chemical, physical or biological properties, can cause harm to people, property or the environment. It is a term that collectively describes substances which are classified according to the hazard they present, including but not limited to 'dangerous goods', 'combustible liquids', and 'hazardous substances'.

Example sources of hazardous materials used and/or produced onsite in the marine works area (onboard vessels) during construction works include (but are not limited to):

- Oils and lubricants
- Fuels (diesel and marine oils)
- Solvents
- Gas cylinders (argon gas if required for welding)
- Sewage
- Cleaning products
- Preservative chemicals (e.g. for biological and/or water samples)

These substances collectively possess corrosive, flammable, explosive, poisonous and/or oxidising characteristics and classifications. Environmental hazards associated with these materials have been identified because their chemical, physical or biological properties can cause harm to the environment.



Attachment I2 – Hazardous Materials Sub Plan

Grout (cement-water mix) is not considered a hazardous material in terms of harm to the environment, provided it is managed in accordance with planned offshore grouting procedures i.e. any release is of small volume and under controlled conditions. In these situations grout is dealt with as a construction waste and is considered within the Resource Efficiency and Waste Management Sub Plan. However, it is recognised that if grout is released due to a failure of procedures i.e. uncontrolled, it may present a risk to the environment, through smothering of habitat, albeit highly localised.

4.2 Material Safety Data Sheet (MSDS) register

A MSDS Register has been compiled and relevant MSDSs are included with JSEAs attached where applicable. A MSDS Register will be contained on the JUB and OSV and is readily accessible to all employees as well as emergency services and relevant public authorities on request.

While the MSDS Register contains all substances used onsite that have an MSDS, Table 4-1 below focuses on those substances that pose more significant hazard.

Table 4-1. Hazardous materials used onsite in the marine works area (onboard vessels)

Hazardous Materials and Substances	General Use	Further Information	Volumes Anticipated to be stored on site
Fuels (diesel, unleaded petrol and marine oils)	Used to power site-based plant including vessels, vehicles, machinery and generators	Emergency Response Manual, MSDS Register	OSV:~ 800 m ³ (maximum storage during operations) JUB: ~ 100 m ³ (maximum storage during operations) Other:~40l petrol for Fast Rescue Craft (FRC) which is located on the deck of the JUB
Oils and lubricants	Vessels, vehicles and plant maintenance & repairs	Emergency Response Manual, MSDS Register	~3200l oil
Cement	Used for mixing grout (riser installation)	MSDS Register	~206 m ³ Equivalent to ~265 Te

5 Environmental risk

An environmental risk assessment has been carried out for the D&C Marine Area works. This assessment is contained in the Environmental Risk Register, Attachment C of the D&C Marine Area EMP and includes risks with an initial risk assessment (prior to the application of controls) of moderate and above. Table 5-1 summarises the potential hazards from project activities, potential impacts of these hazards and the risk of occurrence as rated by the environmental risk assessment.

Table 5-1. Summary of Marine Area risk assessment for Hazardous Materials

Activity Posing Hazard	Risk / Potential Impact	Inherent Risk (before controls)	Control Measures Reference (Att I2.1)
Fuel storage, bunkering, refuelling, vessel movements: <ul style="list-style-type: none"> • Small hazardous material spill to the ocean. e.g: <ul style="list-style-type: none"> • Hazardous material storage and disposal • Incorrect separation and segregation of hazardous materials • Careless/negligent act leading to a spill to the ocean • General operation of shipping (JUB, OSV etc) 	Localised impact on marine biota and ecosystems, benthic habitats, sea birds, mammals etc	Moderate	1-22
Fuel storage, bunkering, refuelling, vessel movements: <ul style="list-style-type: none"> • Medium or significant hazardous material spill to the ocean, e.g: <ul style="list-style-type: none"> • Tank rupture • Bund failure/inadequate design • Incorrect separation and segregation of hazardous materials • General operation of shipping (JUB, OSV etc) 	<ul style="list-style-type: none"> • Pollution of foreshore, receiving waters or potential harm / injury to personnel • Impact on marine parks • Impact on flora and fauna (marine biota and ecosystems, benthic habitats, sea birds, mammals etc) • Damage to habitat • Reduced survival or reproductive success 	High	1-22
Fuel storage, bunkering, refuelling, vessel movements: <ul style="list-style-type: none"> • Significant hazardous material spill to the ocean, e.g: <ul style="list-style-type: none"> • Navigation operations including supply ships and support vessels • Transportation of bulk hazardous materials and dangerous substances • Collisions at sea 	<ul style="list-style-type: none"> • Pollution of foreshore, receiving waters or potential harm / injury to personnel • Impact on marine parks • Impact on flora and fauna (marine biota and ecosystems, benthic habitats, sea birds, mammals etc) • Damage to habitat • Reduced survival or reproductive success. 	High	1-22
Use of hydraulic equipment: <ul style="list-style-type: none"> • Burst hydraulic hoses 	<ul style="list-style-type: none"> • Localised impact to water quality. • Localised impact to Westernport RAMSAR water quality (mobilisation). 	Moderate	14



Attachment I2 – Hazardous Materials Sub Plan

Attachment C of the D&C Marine Area EMP should be consulted for a comprehensive assessment of these risks.

5.1 Hazardous Substance Risk Assessment (HSRA)

The Vessel Master will compile a Hazardous Substance Risk Assessment (HSRA) for all hazardous materials and substances within the scope of D&C activities relating to Marine Area Works. The D&C Safety Manager is responsible for approving the HSRA and ensuring it is kept current. The D&C marine Area Environmental Team will assist the D&C Safety Manager and Vessel Master where applicable during this process.

The purpose of the HSRA is to:

- Identify each hazardous substance used or stored on-site
- Obtain the MSDS and determine hazardous properties, storage and safe handling requirements, appropriate first aid and pollution controls for each hazardous substance, storage classification triggers, requirements for health surveillance, signage and training, permit and approval requirements, waste disposal classifications, and any other special requirements
- Assess the hazardous substance for compatibility with other hazardous substances present
- Assess the environmental conditions relevant to using and storing each substance, including proximity and transmission flowpaths of spilled material to sensitive receptors.
- Encourage alternative materials and substances which are less hazardous.

The HSRA has implications for additional control measures, induction and training, monitoring and health surveillance as required by Victoria's *Occupational Health and Safety (Hazardous Substances) Regulations 1999* and other industry standards.

6 Control, management and mitigation measures

Attachment I2.1 describes a range of mitigation and control measures that will be used to minimise and manage potential hazardous material impacts.

The measures in Attachment I2.1 are designed to address potential impacts from the risks outlined in Section 5 as well as deliver on the objectives, targets and in particular the PRs listed in Section 2. They include requirements and responsibilities for design, construction, evaluating performance and reporting.

Attachment I2.1 also references Design Packages (DPs) in design-related control measures where applicable. PRs that relate to design are addressed in accordance with the Design Management Plan (PL-TDV-PM-0-X-000-0011-0-00).

The Occupational Health and Safety Regulations and Approved Code of Practice for the Control of Workplace Hazardous Substances specify the requirements for the identification and management of hazardous substances. Substances used during construction that may be classed as hazardous will include all chemicals brought onto site and may come in the form of solids, liquids, gases, fumes and fibres. They include products such as strong acids and alkalis, solvents and reactive chemical agents.



Attachment I2 – Hazardous Materials Sub Plan

All work involving the use of chemical substances shall be subject to the JSEA process. The JSEA process will address the hazardous qualities of the material to be used. No work shall be undertaken without known risk to both environment and human health being understood and adequate control measures in place. Work shall only be conducted with a copy of the relevant MSDS attached to the JSEA.

7 Site environmental plans

Site Environmental Plans (SEPs) have been developed for Marine Area Works that detail practical environmental management measures implemented to minimise potential impacts of construction activity on the environment and community.

The information contained in the SEPs is presented in pictorial and tabular drawing format. This is to make them easy to use by all site personnel, consultants and subcontractors. SEPs are updated to reflect operating practices on a regular basis.

The hazardous material controls set out in the Jack up Barge (JUB) SEP (TDV-0-EV-PL-0017) and Offshore Support Vessel (OSV) SEP (TDV-0-EV-PL-0018) are drawn from this sub plan.

SEPs are held by the Marine Area Environment Manager and are provided on site (onboard TDJV and subcontractor vessels) as applicable. The Jack up Barge (JUB) SEP (TDV-0-EV-PL-0017) and Offshore Support Vessel (OSV) SEP (TDV-0-EV-PL-0018) will be held onboard the JUB and OSV respectively at all times.

8 Evaluating performance and reporting

Environmental audits and site environmental inspections (SEIs) are scheduled to detect where PRs are not being met with appropriate corrective actions developed to address these issues as they arise. Schedules, responsibilities and reporting procedures are set out in the Monitoring, inspection, audit and reporting schedule - Attachment L of the D&C Marine Area EMP.

Monitoring will be undertaken by appropriately qualified personnel, in accordance with the appropriate standards and guidelines as specified in Attachment L of the D&C Marine Area EMP.

9 Contingency measures

Contingency measures have been developed and are detailed below. The control measures table (Attachment I2.1) focuses on preventative measures.

All environmental incidents will be responded to in accordance with the Marine Area Environmental Incident Response Procedure (EIRP). The EIRP provides project specific details for the identification of and response to potential environmental related incidents for Marine Area Works during the D&C phase of the VDP. It provides guidance on strategies to manage potential and actual incidents as well as classification, notification, follow-up and reporting requirements.

The environmental risk assessment has identified the following circumstances that could occur outside normal operating conditions:



Attachment I2 – Hazardous Materials Sub Plan

- Contamination of the marine environment due to an overboard (uncontrolled) hazardous material spill/release (e.g. rupture of tank, uncontrolled release of grout etc)
- Inadequate bund design to accommodate the maximum volume of material stored.

If these circumstances occur, the contingency measures outlined in Figure 9-1 will be implemented.

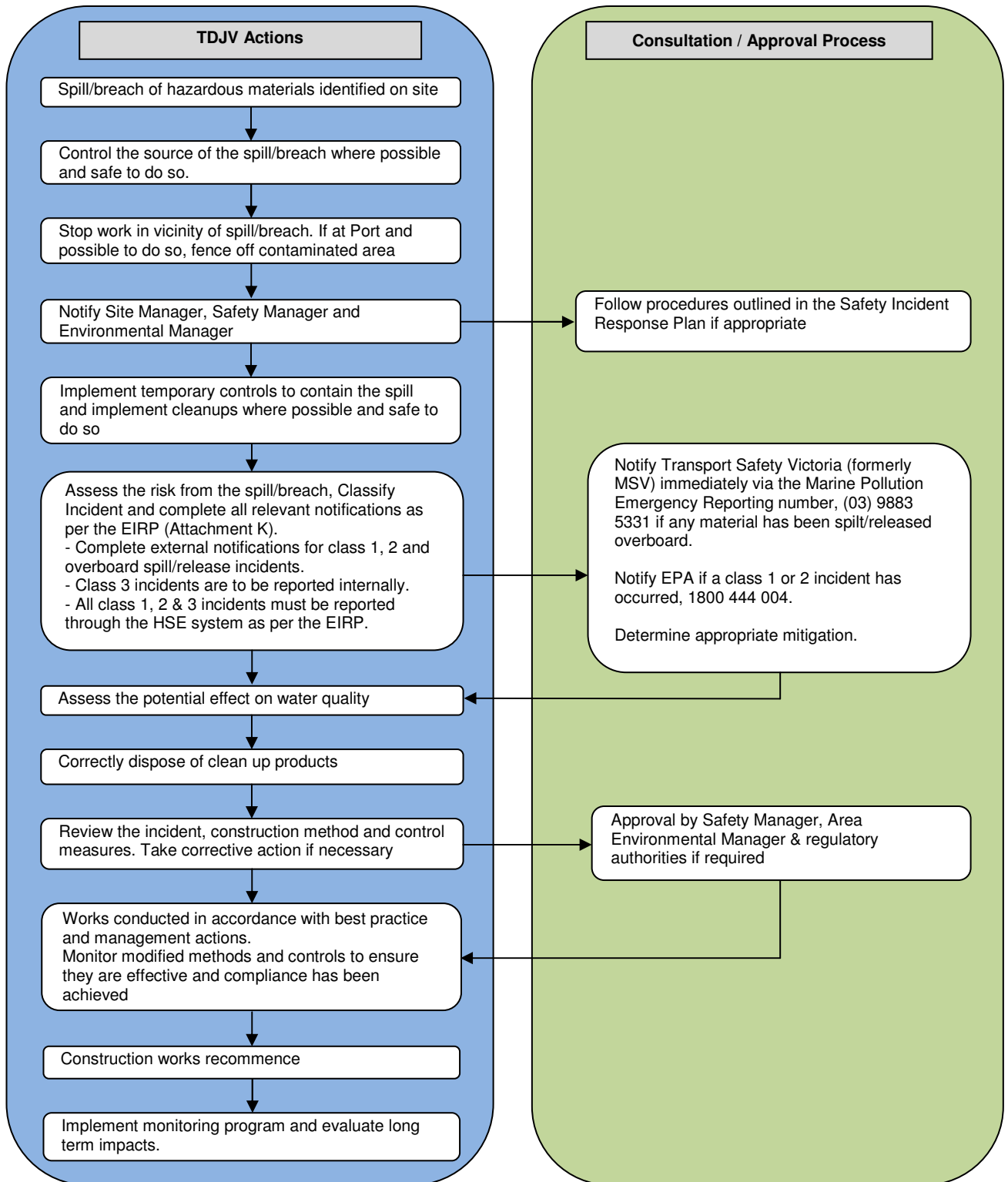


Figure 9-1. Unforeseen contamination of the marine environment due to an overboard (uncontrolled) hazardous material spill/release.



Attachment I2 – Hazardous Materials Sub Plan

10 References

- Occupational Health and Safety Regulations 2007:
http://www.austlii.edu.au/au/legis/vic/consol_reg/ohasr2007382/
- Approved Criteria for Classifying Hazardous Substances, 2004, NOHSC:1008(2004), 3rd Edition: http://www.safeworkaustralia.gov.au/NR/rdonlyres/C3F31984-D009-415E-A5BA-F6CD5638A7EF/0/approved_criteriaNOHSC1008_2004.pdf
- Code of Practice for the Storage and Handling of Dangerous Goods, No. 27, 2000:
[http://www.worksafe.vic.gov.au/wps/wcm/connect/WorkSafe/Home/Forms+and+Publications/Publications/import_Dangerous+Goods+Storage+and+Handling+\(Code+of+Practice+No.27,+2000\)](http://www.worksafe.vic.gov.au/wps/wcm/connect/WorkSafe/Home/Forms+and+Publications/Publications/import_Dangerous+Goods+Storage+and+Handling+(Code+of+Practice+No.27,+2000))
- Dangerous Goods (Storage and Handling) Regulations 2000:
http://www.austlii.edu.au/au/legis/vic/consol_reg/dgahr2000435/
- Australian Dangerous Goods (ADG) Code, 7th edition:
http://www.infrastructure.gov.au/transport/australia/dangerous/dg_code_6e.aspx#7e
- Occupational Health and Safety (Hazardous Substances) Regulations, 1999:
[http://www.dms.dpc.vic.gov.au/Domino/Web_Notes/LDMS/PubStatbook.nsf/0/2d0893364c664e8bca256e5b0021a795/\\$FILE/99-143sr.pdf](http://www.dms.dpc.vic.gov.au/Domino/Web_Notes/LDMS/PubStatbook.nsf/0/2d0893364c664e8bca256e5b0021a795/$FILE/99-143sr.pdf)
- National Code of Practice for Labelling of Workplace Hazardous Substances, 1994, NOHSC: 2012: http://www.safeworkaustralia.gov.au/NR/rdonlyres/47214656-0AEB-4568-9DF8-4A147CF3AB2E/0/LabellingCOPNOHSC_2012_1994.pdf
- AS 1940 – 1993 The Storage and Handling of Combustible and Flammable Liquids:
<http://www.saiglobal.com/PDFTemp/Previews/OSH/As/as1000/1900/1940.pdf>
- Western Port Region Marine Pollution Contingency Plan:
[http://www.marinesafety.vic.gov.au/doi/doielect.nsf/2a6bd98dee287482ca256915001cff0c/bf99894593f95210ca256bf001971b3/\\$FILE/Western%20Port%20Region%20PDF%20for%20web%20page.pdf](http://www.marinesafety.vic.gov.au/doi/doielect.nsf/2a6bd98dee287482ca256915001cff0c/bf99894593f95210ca256bf001971b3/$FILE/Western%20Port%20Region%20PDF%20for%20web%20page.pdf)
- Transport Safety Victoria (Marine Safety Victoria) website: <http://www.marinesafety.vic.gov.au/>
- Chemwatch: <http://full.chemwatch.net>



Attachment I2 – Hazardous Materials Sub Plan

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Attachment I2 – Hazardous Materials Sub Plan

**ATTACHMENT I2.1 Hazardous Materials
– Control Measures Table**



Attachment I2 – Hazardous Materials Sub Plan

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ATTACHMENT I2.1 HAZARDOUS MATERIALS – CONTROL MEASURES TABLE

#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
1	Minimise / Avoid Hazardous Materials	12089	<p>Limit, to the extent practicable, the on-site and on-vessel storage and/or use of hazardous substances and dangerous goods.</p> <ul style="list-style-type: none"> Fuel stores transported to site as required for larger vessels (OSV and JUB). This is managed through the Marine Bunkering – Fuel Oil Procedure Storage in accordance with vessel registration requirements. <p>Hazardous material storage areas will be detailed in the Jack up Barge (JUB) SEP (TDV-0-EV-PL-0017) and Offshore Support Vessel (OSV) SEP (TDV-0-EV-PL-0018).</p>	Offshore Construction Manager	Construct	<p>Inspections & Checklists</p> <p>SEPs</p> <p>Construction Logs, Records and Checklists</p>	
2	Navigation and Handling Procedures	19128	<p>Navigation and handling procedures and policies to reduce the risk of hazardous material spills/discharges:</p> <ul style="list-style-type: none"> Grouting Procedure JUB Tow and Positioning Procedure JUB Mobilisation Procedure Marine Bunkering – Fuel Oil Procedure Small Vessel Refuelling Guidance (Attachment I2.2) <p>NB. All of the above procedures include measures to minimise incidents and spills etc.</p>	Offshore Construction Manager	Construct	<p>Construction Logs, Records and Checklists</p>	



Att I2.1 D&C Marine Area – Hazardous Materials Sub Plan

#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
3	Hazardous materials induction / training	19126 & 19128	<p>All employees and sub contractors will receive induction training which will include the safe use of hazardous substances being used at the workplace. The training provided shall be commensurate with the associated risks and will include (but not be limited to) the following (as outlined in the Approved Code of Practice for Workplace Hazardous Substances):</p> <ul style="list-style-type: none"> • The labelling of containers of hazardous substances, the information that each part of the label provides and why the information is being provided • The availability of MSDS for hazardous substances, how to access the MSDS and the information that each part of the MSDS provides • Information about hazardous substances to which employees are or may be exposed in the course of their work (information should include the nature of the hazards and risks to the environment) • The assessment process and how the employee can contribute • The work practices and procedures to be followed in the use, handling, processing, storage, transportation, cleaning up and disposal of hazardous substances • The procedures to be followed in case of an emergency involving hazardous substances, including any special decontamination procedures to be followed • Requirement to limit the on-site and on-vessel storage and/or use of hazardous materials. Enforcement that only the hazardous materials required to do the task are to be brought on to site. 	Area Safety Manager; Marine Area Environment Manager;	Construct	Induction Records Toolbox Talks Prestart Records	



Att I2.1 D&C Marine Area – Hazardous Materials Sub Plan

#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
4	MSDS Availability	19126	<p>MSDS to be readily available for all hazardous substances used and stored at the Marine Works Area site (onboard vessels) at all times. The site is defined as follows:</p> <ul style="list-style-type: none"> Marine Works Area (onsite): Refers to a locality where marine area activities take place. This includes all vessels when in use by TDJV, the area bounded by the temporary marine exclusion zone, the seabed where the marine structures are installed and monitoring locations where monitoring or devices are placed. <p>Locations of the MSDS register will be detailed in the Jack up Barge (JUB) SEP (TDV-0-EV-PL-0017) and Offshore Support Vessel (OSV) SEP (TDV-0-EV-PL-0018).</p>	Offshore Construction Manager;	Construct	Inspections & Checklists	
5	Planning and Use of hazardous materials	19128	<p>Completion of HSRA and JHA (Job Hazard Analysis) specific to each hazardous material used or stored.</p> <p>Locations of the outputs of the HSRA and JHA will be detailed in the Jack up Barge (JUB) SEP (TDV-0-EV-PL-0017) and Offshore Support Vessel (OSV) SEP (TDV-0-EV-PL-0018).</p>	Offshore Construction Manager	Design & Construct	HSRA & JHA Records	
6	Chemical Awareness and Procedures	19126	<p>All work involving the use of hazardous substances shall be subject to the Job Safety and Environment Analysis (JSEA) process. The JSEA process will address the hazardous qualities of the material to be used. No work shall be undertaken without the known risks to the environment and human health being understood and implementation of adequate control measures. A copy of the Material Safety Data Sheet (MSDS) shall be attached to the JSEA.</p>	Vessel master / Safety Officers	Construct	JSEA Records	
7	Material identification	19126 & 19128	<p>Identify and record the type, volume, and concentration of chemicals that are used and stored</p>	Vessel Master / Safety Officers	Construct	Current Hazardous Materials Records	
8	MSDS requirements	19126	<p>Each chemical substance will be stored and disposed of in accordance with the requirements specified by the MSDS.</p>	Offshore Construction Manager	Construct	Inspections & Checklists	



Att I2.1 D&C Marine Area – Hazardous Materials Sub Plan

#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
9	Storage – Isolation	19126 & 19128	Dangerous goods storage areas will be isolated from sources of ignition, and appropriate fire extinguisher coverage provided Hazardous material storage areas will be detailed in the Jack up Barge (JUB) SEP (TDV-0-EV-PL-0017) and Offshore Support Vessel (OSV) SEP (TDV-0-EV-PL-0018).	Vessel Master / Safety Officers	Construct	Inspections & Checklists SEPs	
10	Segregation and separation of hazardous materials	19126, 19128 & 19129	Hazardous materials shall be separated and segregated as appropriate during storage	Vessel Master / Safety Officers	Construct	Construction Logs, Records and Checklists Inspections & Checklists	
11	Refuelling	19126 & 19128	Refuelling will be appropriately managed in order to minimise the risk of spill. <ul style="list-style-type: none"> Refuelling of large vessels (e.g. JUB/OSV) at sea is managed through the Marine Bunkering – Fuel Oil Procedure. Refuelling of small vessels is managed through Attachment I2.2 – Small Vessel Refuelling Guidance. Refuelling at major port sites will be completed in accordance with the requirements of the specific port. 	Offshore Construction Manager; and Site Supervisors	Construct	Fuel Transfer Checklist	
12	Bunding	19126, 19128 & 19129	As required: <ul style="list-style-type: none"> Bulk fuel storage areas (drums or bulk storage tanks) will be banded in accordance with EPA Bunding Guidelines. The ground around the storage area will be kept clear of combustible material for a distance of not less than 3 metres. 	Offshore Construction Manager	Construct	Inspections & Checklists	
13	Secure Storage	19128 & 19129	<ul style="list-style-type: none"> Hazardous substances not in use will be sealed and safely stored in a secure area. Gas cylinders shall be stored and secured. 	Offshore Construction Manager	Construct	Inspections & Checklists	



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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
14	Equipment Maintenance	19128 & 19129	Undertake routine maintenance of construction equipment and monitor fuel storage tanks to reduce the potential for spills, fuel leaks, visible exhaust emissions, or other maintenance issues.	Offshore Construction Manager	Construct	Maintenance Records Tagging Inspections & Checklists	
15	Labelling and Signposting	19128	All original containers are to be labelled to accurately identify the hazardous contents (product name and chemical name) and include appropriate risk and safety phrases, first aid and emergency procedures and the manufacturers or importers details (National Code of Practice for Labelling of Workplace Hazardous Substances NOHSC: 2012 (1994)).	Offshore Construction Manager	Construct	Inspections & Checklists	
16	Labelling and Signposting	19128	Bulk storages of hazardous substances will display adequate signs: <ul style="list-style-type: none"> Dangerous goods storage areas will be posted with the relevant HAZCHEM signage and emergency response information in conspicuous areas. 	Offshore Construction Manager	Construct	Inspections & Checklists	
17	Incident Management	19128	Emergency response training will be provided through toolbox talks and general environmental inductions. Incident management (including spill control and clean-up measures) will be undertaken in accordance with the relevant MSDS and the D&C Marine Area EMP, Environmental Incident Response Plan (Attachment K). This includes relevant notifications (Transport Safety Victoria, EPA, DSE etc).	Offshore Construction Manager	Construct	Inspections and Checklists Induction Records Toolbox Records HSE Records	
18	Spill risk reduction	19126 & 19128	<ul style="list-style-type: none"> Scuppers, bunds and oil interceptors for deck spill recovery. The following shall be implemented to minimise hazardous material spill risk: <ul style="list-style-type: none"> Marine Waste Management Procedure: <ul style="list-style-type: none"> Oil Book Marine Bunkering – Fuel Oil Procedure: <ul style="list-style-type: none"> Fuel Transfer Checklist Small Vessel Refuelling Guidance (Attachment I2.2) 	Vessel Master	Construct	Construction Logs, Records and Checklists Inspections & Checklists	



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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
19	Contingency Planning	19128	In the event of an oil or chemical spill outside the three nautical miles coastal waters, Australian Maritime Safety Authority (AMSA) contingency plans will be enacted. Spills within 3 nautical miles are managed in consultation with Transport Safety Victoria.	Offshore Construction Manager	Construct	HSE Records	
20	Spill removal capacity	19128	<p>Vessels are to have capacity to contain/remove spills as follows:</p> <p>JUB:</p> <ul style="list-style-type: none"> Capacity to contain and remove spills up to 1000L where met-ocean conditions permit (effectiveness of spill cleanup will generally be reduced in wave heights greater than 2m). This is achieved by deploying absorbent booms “downstream” of the spill and then connecting them in order to encircle the spill (oil). These are then drawn in to bring the spill into a manageable area. Absorbent pads are then used to absorb the spill (oil) before being disposed of appropriately. Hydrocarbon spill kits including absorbent pads and used spill response material bags will be available to clean up spills on deck. <p>OSV:</p> <p>SOPEP includes two hydrocarbon spill kits and one chemical spill kit (capacity to be confirmed upon pre-mobilisation).</p> <p>Other Vessels:</p> <ul style="list-style-type: none"> Hydrocarbon spill kits including absorbent pads and used spill response material bags will be available to clean up small spills on deck. 	Offshore Construction Manager	Construct	Inspections & Checklists HSE Records	
21	Requirement to stop works	19128	In the event that an incident results in a spill in the vicinity of drilling activity, the incident will be assessed on a case by case basis by the Offshore Construction Manager (in consultation with the Area Environment Manager) who is responsible for making the decision regarding whether to cease or continue works.	Offshore Construction Manager; and Marine Area Environment Manager	Construct	Construction Logs, Records and Checklists HSE Records	



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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
22	Monitoring	19128	<p>The following marine monitoring programs may be used to assess any potentially significant incidents (based on the specific material and spill volume in question). A decision will be made by the Marine Area Environment Manager as to the scope degree of monitoring to be implemented following an incident as follows.</p> <ul style="list-style-type: none"> In the event of an overboard spill water quality monitoring will be undertaken as deemed appropriate by the AEM. Consultation with relevant authorities (e.g. TSV, EPA) as required. Additionally pre and post construction benthic monitoring will be undertaken to establish any impacts and to assess recovery rates. General observations by A1MT crew to assess presence/absence of oil slick resulting from project vessels or other activities. 	Marine Area Environment Manager	Construct	Construction Monitoring Program HSE Reports	

* The *Responsibilities* column refers in many cases to senior positions within the project organisation, due to the changing nature of project teams. In practice some responsibilities may be delegated by the person nominated.



Attachment I2 – Hazardous Materials Sub Plan

ATTACHMENT I2.2 Small Vessel Refuelling Guidance



Attachment I2 – Hazardous Materials Sub Plan

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ATTACHMENT I2.2 – SMALL VESSEL REFUELLING GUIDANCE

1 Introduction

All vessels must follow an appropriate refuelling procedure. This attachment provides refuelling guidance for small vessels to adequately manage the risk of hazardous material spills to the marine environment. Refuelling of larger vessels (OSV and JUB) is managed through the Marine Bunkering – Fuel Oil Procedure (PR-IOS-MS-1-A-101-2010). Control measures for the minimisation and management of hazardous materials are described in Attachment I2.1 Control Measures Table. Contingency measures relating to hazardous materials are described in the Hazardous Materials Sub Plan, Section 9.

2 Refuelling Procedure

The following refuelling methods *or equivalent* should be followed in order of preference (1 to 3). In all cases hydrocarbon spill response equipment must be made readily available and all spills reported immediately to the Marine Area Environment Team as per the Environmental Incident Response Plan (EIRP).

1. Refuel on land

- Avoid refuelling on the water where practical by refuelling on land (e.g. at a petrol station).

2. Refuel on the water at a designated fuel wharf:

- This is preferable to refuelling from jerry cans (method 3) as fuel pumps are fitted with a pressure switch to help avoid overflow from vessel fuel tanks. Additionally, fuel wharfs should provide significant spill response equipment onsite.

3. Refuel on the water from a jerry can:

If methods 1 and 2 are not available/practical, adopt the following method.

- Undertake refuelling in a designated refuelling area where available (e.g. within a marina).
- Measure/calculate how full the tank is prior to refuelling.
- Measure/calculate the amount of fuel required to fill the tank.
- Refuel from a small container (≤ 20 L) and ensure that this is held over the vessel (not over the water).
- Based on the calculations above ensure that the tank is not overfilled (e.g. fill no greater than 90%).
- In the event that the tank size or volume of fuel required to reach capacity is unknown employ a suitable control to assist with the refuelling operation:
 - A fuel guard is fitted to the funnel/hose/overflow vent (i.e. No-spill fuel recovery system).
 - A spill tray is placed under the refuelling area.
- Refuel slowly and listen carefully to ensure the tank is not about to overflow (the use of a device such as a Green Marine Fuel Whistle can aid in this).