



**BLAIRGOWRIE YACHT SQUADRON
SAFE BOAT HARBOUR**

**OPERATIONAL ENVIRONMENTAL
MANAGEMENT PLAN (OEMP)**

OEMP_ BYS

**Revision: Rev1
11Dec2017**

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN (OEMP)

SAFE BOAT HARBOUR

for

Blairgowrie Yacht Squadron



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List of Abbreviations

BYS	Blairgowrie Yacht Squadron Inc.
DEWLP	Department of Environment, Water, Land and Planning
ParksVic	Parks Victoria
EPA	Environment Protection Authority, Victoria
MPSC	Mornington Peninsula Shire Council
CEMP	Construction Environmental Management Plan
OEMP	Operational Environmental Management Plan
SEPP	State Environment Protection Policy
WCBFRCoM	Whitecliffs to Camerons Bight Foreshore Reserve Committee of Management Inc.



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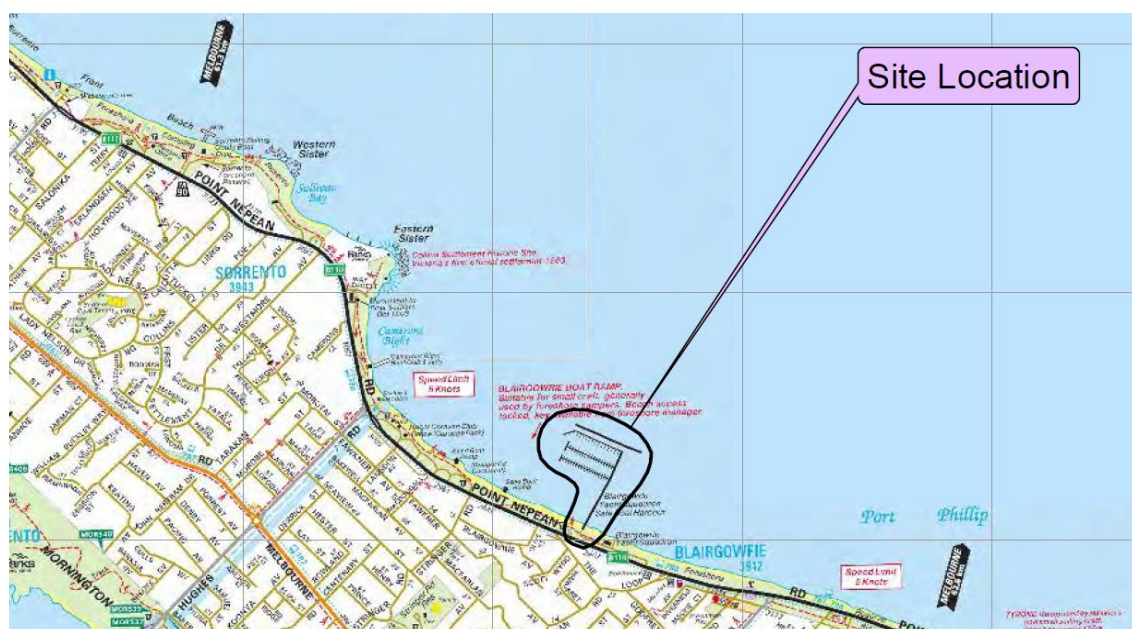
1 BACKGROUND

The BYB safe harbour redevelopment project was approved following a comprehensive planning process in March 2015. The project is an extension of the existing BYB safe harbour, which was subject to an Environment Effects Act process in the late 1990s. The current harbour operates under an existing Operational Environmental and Sand Management Plan.

The Blairgowrie Yacht Squadron (BYB), located on the shores of Port Phillip (Figure 1), comprises of:

- 119 new permanent and upgrade of 47 visitor marina berths including 2 disabled marina berths (concrete decked floating pontoon arms secured with steel tube piles)
- Extended main wave screen (steel tube piles and concrete panels) 161 meters westwards and then a further 75 meters angled towards the shore
- A hard stand area (platform with a concrete slab deck, steel pile tubes and two small lift out cranes in the north west corner and western end) of approximately 35 meters by 40 meters off the western side of the existing jetty
- A new straddle carrier track (solid deck with dual concrete tracks, tie beams and steel tube piles) approximately 190 meters in length off the western side of the existing jetty (replaced the existing timber slipway facility)
- New navigation aids – two buoys near the marina entry, one on the main wave screen and two on the western wave screen; and
- Installation of scour protection on the seabed under the existing and new wave screens, as well as under the eastern timber screen.

Figure 1: Location Plan





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1.1 SCOPE OF THE OEMP

The Operational Environmental Management Plan (OEMP) has been prepared to assist in the environmentally sustainable operation of the Blairgowrie Yacht Squadron (BYS) safe harbour. The OEMP describes how the BYS will manage its environmental responsibilities during the operation of the safe harbour in order to control the environmental impacts caused by its operation and ongoing activities and to minimise any pollution or degradation of the environment.

The OEMP identifies the environmental control measures required to minimise the impact of daily operations of the harbour on the surrounding environment. These control measures will assist in maximising the long-term sustainability of the development.

This OEMP is intended to control the ongoing management of the BYS safe harbour development to comply with all environmental obligations and requirements specified in the following documents:

- Planning Permit CP11/001 (21 March 2014) issued by Mornington Peninsula Shire Council which apply to the BYS Safe Harbour development
- Coastal Management Act consents (July 2013)
- Crown Lease
- EPA's *Cleaner Marinas: EPA guidelines for protecting Victoria's marinas*, October 1998
- State Environment Protection Policy (SEPP) – Waters of Victoria – Schedule F6 (Table 2)
- Code of Practice for In-Water Hull Cleaning and Maintenance (ANZECC 2000)

A full list of applicable legislation, guidelines and policies is found in section 2 of this OEMP. The OEMP is to be used in conjunction with the BYS communications plan and BYS Harbour Rules, which utilises communication tools such as the BYS web site.

This OEMP is part of BYS's Environmental Management processes for the Project. Principally, this document outlines the methods that will be used to monitor and control environmental aspects of BYS's ongoing operational activities that have potential to impact on the site and surrounding environment, specifically sand management, sea grass monitoring, water quality, marine pests, hazardous materials and waste management.

The OEMP will act as a reference tool for BYS and their employees and contractors who manage and/ or work at the development. The outcomes of the OEMP will also assist BYS members and visitors in using the safe harbour area in an ecologically sustainable manner.

However it should be noted that the intent of this OEMP is only to address the management of environmental risks related to the ongoing operations of the BYS safe harbour. It does not cover other areas of management over the lease area such as:

- Provision of safety aids within the harbour
- Straddle Lift Operations
- Dealing with sinking, unseaworthy and unserviceable vessels
- Dealing with abandoned vessels
- Requirements for insurance
- Living aboard rules
- Boating compliance within the harbour
- Protocols for visitor use for vessels.

These management issues are addressed in the Harbour Rules to be implemented by BYS.



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1.2 OBJECTIVES

- To ensure that there is minimal impact on the environment during the ongoing every day operation of BYS.
- Once approved, the OEMP will be available on the BYS website. It will be distributed to all BYS Committee and Management as well as employees specifically allocated to harbour operations. New guidelines and policies from Government Authorities will be circulated to all berthholders by way of the BYS website and Marina Newsletter.
- An OEMP is required to ensure that environmental management objectives are met. The overall goal of the OEMP is to minimise the impact of the development and operation on the physical, biological, cultural and social elements of the environment.
- This OEMP provides the framework, objectives, policy, commitments and strategies for priority management actions, resources, and responsibilities with monitoring and auditing guidelines for implementing, achieving, maintaining and enhancing environmental management.
- Within three years of the safe harbour commencement, the OEMP will be reviewed paying particular attention to the monitoring results and findings, implementation of the OEMP and overall operation of the facility.

1.3 AIMS

- Avoid or minimise the potential impacts on the environment by the operation of the boating facility.
- Be consistent with local and regional planning and environmental legislation and regulations.
- Be consistent with local, state and commonwealth environmental policy.
- Protect the life, health and well-being of humans.
- Protect the ecological environment.
- Protect the useful life and aesthetic appearance of the property.
- Protect the aesthetic enjoyment and local amenity of the region.



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2 STATUTORY FRAMEWORK

Relevant legislation, regulations and policies that may be applicable to the BYS Safe Boat Harbour operation includes, but may not be limited to:

Acts – Commonwealth

- Native Title Act 1993
- Environment Protection and Biodiversity Conservation Act 1999
- Biosecurity (consequential Amendments and Transitional Provisions) Act 2015
- Pollution of Water by Oils and Noxious Substances Act 1986

Acts – State

- Coastal Management Act 1995
- Crown Land (Reserves) Act 1978
- Dangerous Goods Act 1985
- Environment Protection Act 1970
- Fisheries Act 1995
- Flora and Fauna Guarantee Act 1988
- Marine Act 1988
- Port Services Act 1995
- Planning and Environment Act 1987
- Quarantine Act 1908
- Land Act 1958
- Wildlife Act 1975

Regulations

- Dangerous Goods (Storage and Handling) Regulations 2012
- Pollution of Waters by Oil and Noxious Substances Regulations 2002
- Environment Protection (Ships' Ballast Water) Regulations 2017
- Environment Protection (Industrial Waste Resource) Regulations 2009
- Port Services (Local Ports) Regulations 2015
- Environment Protection (Industrial Waste Resource) Regulations 2009
- Environment Protection (Prescribed Waste) Regulations 1998
- Dangerous Goods (Storage and Handling) Regulations 2000
- State Environment Protection Policy (Air Quality Management)
- State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) 1989 N-1
- State Environment Protection Policy (Waters of Victoria) 2003
- State Environment Protection Policy (Waters of Victoria) Schedule F6 (Table 2) 1997
- State Environment Protection Policy (Prevention and Management of Contamination of Land)
- Pollution of Water by Oils and Noxious Substances Regulations 2012



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Guidelines

- 1940-2004: Storage and Handling of Flammable Combustible Liquids
- AS2508: Safe Storage and Handling Information Cards for Hazardous Materials
- AS/NZA ISO 14001: 2016 Environmental management systems – Requirements with guidance for use
- AS/NZS 5667.9 1998 Water Quality Sampling – Guidance on sampling from marine waters
- AS4997 2005 Guidelines for the Design of Maritime Structures
- ANZECC Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand
- EPA (Victoria) 1992, Noise Control Guidelines. Publication 1254/2008
- Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance (ANZECC 2000)
- Cleaner Marina's: EPA guidelines for protecting Victoria's marinas (1998)
- Aquatic Pests: Treat 'em mean – keep your boat clean (DELWP)
- EPA Publication 275: Construction Techniques for Sediment Pollution Control (May 1991)
- EPA Publication 981: Reducing Stormwater Pollution from Construction Sites (May 2005)
- EPA Publication IWRG600 *Waste Categorisation*, Dec 2010
- EPA Publication 347.1, Bunding Guidelines, Oct 2015
- EPA Victoria Publication 624, Guidelines for Protecting Victoria's Marinas, 1998
- ANZECC Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand

2.1 Planning Permit and CMA Consent

2.1.1 Planning Permit

The Planning Permit No. CP11/001 was granted by the Mornington Peninsula Shire Council (MPSC) on 21 March 2014 and outlines the conditions of the development and land use for the purpose of replacement of the existing BYS safe harbour. The permit prescribes that an OEMP shall be prepared prior to the use of the harbour to the satisfaction of the Mornington Peninsular Shire Council, DELWP and WCBFRCoM.

The matters to be included in the OEMP are identified in Section 7 of the Planning Permit and are outlined within this OEMP.

Particularly, the permit requires the OEMP to generally address:

- Project risk identification and assessment
- Environmental objectives and measurable performance targets
- Action plans to meet targets
- Legal and other requirements
- Roles and responsibilities
- Staff training and induction processes
- Communication
- Management of incidents and complaints
- Non-conformance, corrective and preventative actions
- Emergency preparedness and response
- Record keeping
- Audits
- Review and updating



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In addition, condition 7 (a) – (g) also requires the OEMP to include:

- A sea grass monitoring and management program
- A marine pest management plan
- Waste and waste water management plan
- Water quality monitoring plan
- Re-fuelling and hazards materials management plan
- Sand management and monitoring plan
- Ecologically sustainable development plan

2.1.2 Coastal Management Act Consent

Pursuant to section 40 of the *Coastal Management Act* 1995, consent from DELWP is required for the use and development of Coastal Crown Land and a Coastal Management Act consent has been granted on 19 July 2013.

As part of Condition No. 13 of the Coastal Management Act Consent, an Operational Environmental Management Plan must be submitted to and approved by the Land and Fire Regional Manager, Port Phillip Region, DELWP.

The conditions of the Coastal Management Act consent (2013) are included in the planning permit conditions (permit CP11/001).

This OEMP is consistent with the matters listed in both the planning permit CP11/001 and CMA consent (July 2013).



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3 ENVIRONMENTAL MANAGEMENT SYSTEM

3.1 SYSTEM PROCEDURES

BYS is required to have an established and maintained system of procedures for managing significant environmental aspects in respect of the operation of a safe harbour. These systems reflect the international standard AS/NZS ISO 14001:2004 Environmental Management Systems.

BYS acknowledges it is important to comply with the following:

- Legal and Other Requirements
- Environmental Aspects and Impacts
- Communication of Environmental Issues
- Environmental Monitoring and Measurements
- Sea grass monitoring and management
- Marine pest management
- Waste and waste water management
- Water quality monitoring
- Re-fuelling and hazards materials management
- Sand management and monitoring
- Ecologically sustainable development

BYS representatives listed in the OEMP will have the responsibility for reviewing, monitoring implementation of the OEMP, and auditing as required of the nominated systems.

3.2 ENVIRONMENTAL POLICY STATEMENT

The BYS Environmental Management Policy is shown overleaf. Each contractor employed by BYS for various services relating to operation of the safe harbour will be required to have and implement their own operating policies, which shall be in accordance with the BYS statement.



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Policies and Procedures

Title: **Environmental Policy** Version **1**
Adopted at Meeting: **273**
Date: **7 October 2014**

1. Policy Background

BYS recognises that as a member of the local community and as an occupier of Crown Land it has a responsibility to act proactively preserve and protect the quality of the local environment.

A clean environment is important for the success of our organisation and so that future generations can also enjoy the natural environment of the Mornington Peninsula and sailing in the waters of Port Phillip.

2. Policy

In support of this commitment, management, staff will strive to conduct clean boating and marina practices at our facility and will educate our staff, members and guests on sound practices. Our overall goal is to achieve a high standard of environmental management that facilitates sustainability of our operation. We will achieve this goal by using a team oriented management approach to help ensure responsible use of our air, land and water resources.

Recreational boating facilities and services are not, in themselves a significant source of pollution, however effective and practical management procedures will mitigate any harmful effects.

To achieve this goal as a full service marina & boatyard facility, the Blairgowrie Yacht Squadron will meet or go beyond compliance with all applicable federal, state and local environmental rules and regulations. We endeavour to continually improve our environmental performance and to prevent pollution before it is produced. All our employees are expected to support our environmental goals while providing clean, sustainable boating services that help keep boating good clean recreation.

3. Implementation

The Policy will be reviewed bi-annually to ensure that the club is adhering to the objectives of the Policy.



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4 OBJECTIVES, TARGETS & ACTION PLAN

The following key Environmental Objectives and Targets apply to the operation of the safe harbour. **Appendix A** also includes an OEMP Environmental Risk Register for the BYS Harbour with more detail on actions for a number of potential operational environmental risks.

Table 4-1: Key Environmental Objectives and Targets

OBJECTIVES, TARGETS & ACTION PLAN				
No.	Objectives	Targets	Actions Required to Meet Targets	Action Timeframe
1	Comply with Legal and Statutory requirements	Nil Pollution Abatement Notice issued by the EPA, Nil Non-Compliance with the Planning Permit, CMA Consent and Parks Victoria's Works Authority.	Competent person to carry out Environmental Audits on the implementation of OEMP & any non-compliances	Within 6 months of commencement of use and 6 months thereafter
2	Avoid pollution to the harbour and Port Phillip waters during operational activities	Nil Non-Compliance with the Planning Permit, CMA Consent and Parks Victoria's Works Authority.	Implement water quality protection measures in accordance with State Environment Protection Policy (SEPP) – Waters of Victoria Schedule F6 and EPA Pub No. 275 <i>Construction Techniques for Sediment Pollution Control</i> and the <i>Code of Practice for In-Water Hull Cleaning and Maintenance (ANZECC 2000)</i> .	6 months
3	Avoid introduction of aquatic pests to the harbour area and Port Phillip	Nil Non-Compliance with the Planning Permit and CMA consent	Reference and implement management strategies referred to in DEWLP fact sheet Aquatic Pests: Treat 'em mean – keep your boat clean document and the <i>Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance (2000)</i>	6 months
4	Ensure control of translocation of existing pests within the harbour	Boat cleaning	Reference and implement management strategies referred to in DEWLP fact sheet Aquatic Pests: Treat 'em mean – keep your boat clean document and the <i>Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance (2000)</i>	6 months
5	Safe handling & storage of Hazardous Substances / chemicals	Nil incident of chemical or fuel spillage	Review of Incident reports and Register to verify target has been achieved	6 months
6	Avoid causing nuisance to the Public and the surrounding	Two or Less complaints per 6 months received from the Public, Customer and Authorities	Review of Complaint reports and Register to verify target has been achieved	6 months



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OBJECTIVES, TARGETS & ACTION PLAN

No.	Objectives	Targets	Actions Required to Meet Targets	Action Timeframe
	environment (due to dust, noise and water pollution, etc.)			
7	Avoid erosion and increased sediment of the coastal environment	Nil non-compliance with the operational environmental management and sand management plans	Compliance with the Operational Environmental Management Plan (2015) which includes a sand management and monitoring plan	3 months (or as required)
8	Avoid the removal of seagrass within the harbour footprint (lease area)	Nil non-compliance with the operational environmental management	Avoid activity that may have impacts on seagrass within the BYS harbour area	3 months (or as required)



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5 BYS ROLES AND RESPONSIBILITIES

The following are responsible for ensuring the performance of duties on Environmental Management for the operation of the safe harbour:

BYS COMMODORE & COMMITTEE

- Be familiar with and enforce environmental conditions of all authority approvals
- Select and engage consultants, contractors and suppliers with the capability of fulfilling the requirements of this plan
- Enforce compliance by members and berth holders with the OEMP for planned operational activities
- Represent the BYS in interaction with local authorities and community groups
- Endorse the BYS Environment Policy through leadership, action and example

BYS GENERAL MANAGER

- Be familiar with and implement this OEMP
- Overall site environmental performance by directing and coordinating environmental activities on site
- Liaison with the public, consultants, contractors and authorities including the Mornington Peninsular Shire Council and the DELWP on environmental matters
- Manages information presented on the BYS web site in relation to environmental management and operation of the safe harbour
- Ensures the recording and resolution of all environmental complaints received by the BYS
- Ensures the carrying out of regular Environmental inspections of the safe harbour
- Ensures reasonable and safe access during the operation of the safe harbour for all existing foreshore and harbour users
- Represents the BYS at relevant operational coordination meetings

BYS MARINA MANAGER

- Assist the BYS General Manager in liaison with the Stakeholders on Environmental issues
- Work with BYS members to be involved in regular Environmental inspections of the harbour
- Notify members and berth holders of any environmental issues identified through the harbour operations of the BYS



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BYS OFFICE ADMINISTRATION

- Assist the BYS General Manager in liaison with the Stakeholders on Environmental issues
- Maintain record keeping of correspondence, forms and registers nominated in this plan

ALL EMPLOYEES OF BYS & CONTRACTORS

- Be familiar with and comply with instructions and safe working practices on environmental issues
- Report any environmental hazards / accidents / incidents to the Foreman or Marina Manager immediately

A copy of the BYS Organisation Chart is attached as **Appendix B**.



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6 ENVIRONMENTAL ASPECTS

6.1 SEA GRASS MONORITING AND MANAGEMENT PLAN

The planning permit for the Safe Boat Harbour at Blairgowrie requires a seagrass monitoring program that is appropriate to the scale of the development and its likely affects. The permit requires that the program must:

- Detail techniques to be employed for protecting the seagrass
- Specify a benchmark that will trigger requirements for corrective action to address any detrimental impacts that are found to be occurring on the seagrass beds or other marine biota
- In the event that an approved benchmark has been attained, a requirement for corrective action to be carried out within twelve months

6.1.1 Considerations for the Monitoring Program

Baywide monitoring studies (Blake and Ball 2007) documented a steady increase in the amount of seagrass present in the nearshore environment at Blairgowrie from the 1930s in the substantial and widespread loss of seagrass between 1998 to 2003. Baseline (2001) and monitoring (2002, 2003) surveys of nearshore seagrasses in the vicinity of the original Safe Harbour development (CEE 2004) and the bay wide studies showed an 80% reduction in the distribution of seagrasses at Blairgowrie between 1996 and 2003. The cause of the decline was not known, but it did not coincide with any obvious human activity during that period.

Examination of remote images (see figure below) indicates that the decline continued eastward until approximately 2009. There has been significant recovery of seagrasses to the east of the harbour since 2010, with dense seagrass in this area in August 2014. Existing swing moorings in the area have created circular bare patches in the area of seagrass recovery. There is some evidence of establishment of seagrass within the existing Safe Harbour and in the areas outside the harbour that were previously occupied by swing moorings (such as the harbour entrance and in deeper water beyond the existing wave screen (CEE 2013). There appears to be less seagrass recovery to the east of the harbour, including Camerons Bight where the original loss of seagrass appeared to commence.



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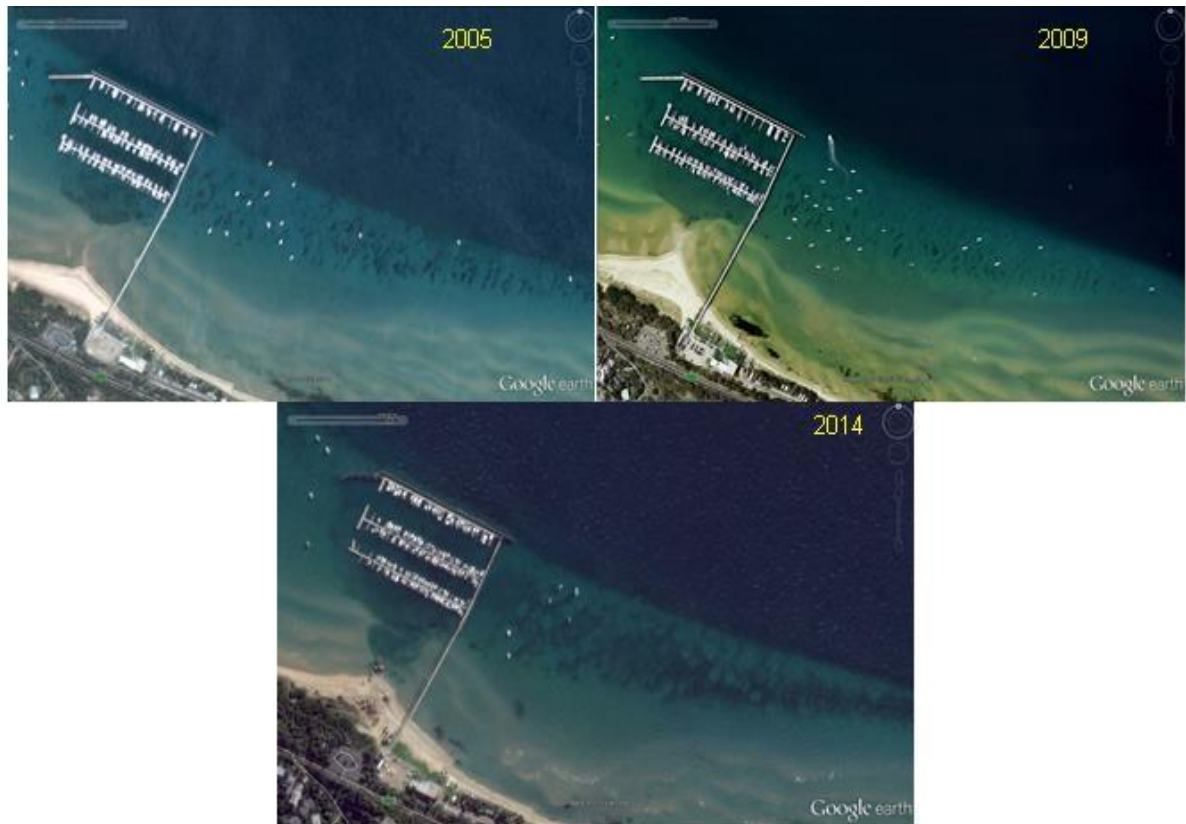


Figure 2: Seagrasses at Blairgowrie (2005 to 2014)

The Blairgowrie seagrasses are minor in extent compared to the major seagrass beds of Swan Bay, Prince George Bank, western shores of the Bellarine Peninsula, Corio Bay and Point Wilson. However, the seagrasses at Blairgowrie have localised ecological value in terms of providing habitat for local marine biota and should be protected. Seagrass monitoring was a requirement of the original EES process (1999) for the original harbour to protect the environmental value of seagrasses in the vicinity of the Harbour and ensure that potential effects on offshore seagrass from the construction and operation of the Harbour were confined and minimised.

The small patches of seagrass (*Zostera nigricaulis*) between the low tide mark and 0.5 m are discontinuous and have shown more natural variation over time than the offshore beds. These seagrasses were considered to be potentially most affected by sand movement. Interactive monitoring of sand movement was considered adequate protection for these seagrass beds.

6.1.2 Potential effects of harbour expansion on seagrass

The potential effects of the proposal on the offshore seagrass bed include:

- Reduced cover of seagrass in the shade of the breakwater wall, under the floating pontoons and under the jetty
- Inspections of the seabed in 2013 and examination of remote images from 2015 indicate that seagrass in the area of the proposed breakwater is patchy and very sparse within those patches
- Increased shoreward extent of the seagrass into shallower water due to the reduced wave climate offshore in the lee of the Harbour



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- Inspection of the seabed with the existing harbour and inshore from the harbour indicates that it is likely that some seagrass will establish within the harbour and in shallow water inshore of the berths
- Increase seagrass bed continuity in the open areas of the Harbour due to removal of swing moorings
- Inspections of the seabed in 2013 indicate that there may be re-establishment of seagrass in areas where swing moorings have been removed. The seagrass in these areas was patchy and sparse.

6.1.3 Protection of Seagrass beds

The final design, construction methods and operational constraints of the Harbour were developed to minimise the potential effects of boat mooring on seagrasses in the Blairgowrie locale.

Design

The design of the Harbour and wave screen is configured to reduce wave action in the area of the boat pens but optimise water movement through the pen area and under the wave screen. The wave screen was designed to minimise potential for scouring under the screen. Hence the design has incorporated measures to eliminate or minimise potential effects of detrimental changes on water movement, flushing and scouring which may adversely affect seagrass beds.

It was recognised that a salient would develop at the shoreline in the lee of the breakwater. The extent of the salient will continue to be managed as part of a beach sand relocation program. The program will ensure that the potential effects of the salient on regional seagrasses are managed and minimised.

Operation

The operational constraints include floating berths, restrictions on refuelling, no wastewater discharge, no use of TBT anti-foul and removal of chain swing moorings. These measures together with feedback from the seagrass monitoring program will protect seagrass beds from widespread degradation in the long term due to the safe harbour.

6.1.4 Monitoring Program

The effects of the operation of the Safe Harbour on the seagrasses at Blairgowrie are expected to be minor. As discussed above, seagrass monitoring and inspections of the seabed and associated biota by CEE on occasions from 2001 to 2013 has demonstrated that seagrass has re-established in some areas of the harbour since its original construction in in 2001. The existing and re-established seagrasses within the harbour are patchy and most patches are sparse, but the presence of additional seagrass and the new habitat provided by the harbour has resulted in an increase in the variety of marine biota present in the vicinity of the harbour.

There appears to have been natural recovery of seagrasses to the east of the harbour, but not to the west of the harbour. While the cause of the recovery has not been established, it is possible that the characteristics of seagrasses within the original and expanded harbour and at its boundaries will change over the next five years. Hence, documentation of any changes is a prudent exercise for the Harbour managers and seagrass monitoring program is therefore recommended.



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Seagrass monitoring will be undertaken to:

- confirm that potential detrimental effects on existing seagrass are minor
- define any changes in the distribution of seagrasses in the near proximity of the Harbour
- inform discussions with stakeholders of changes to seagrass communities and associated ecosystem values.

Seagrass monitoring will include two components:

1. Direct monitoring of seagrass and associated biota within and adjacent to the new harbour and
2. Large scale mapping of seagrass using remote images

Direct monitoring of seagrass and associated biota

Direct monitoring describes the presence of sparse seagrass and other marine biota present on the seabed, and allows the detection of changes in seagrass associated communities over the duration of the monitoring program. Seagrass and associated biota were directly monitored before and after construction of the existing harbour. CEE has undertaken a number of assessments of seagrass and the marine ecosystem since the original safe harbour was built and found that patchy and sparse seagrass has re-established in the area protected by the harbour.

Seagrass and associated biota will be monitored along 100 m transects placed between known points at select locations within the harbour, across its boundaries and at reference locations east and west of the harbour. The extent and abundance of seagrasses and presence of other biota along the transects will be recorded annually. Subsequent surveys will be compared the nature and extent of biota to determine changes due the presence of the harbour.

Large scale remote mapping

The large scale extent of dense seagrass can be readily interpreted from aerial photographs. This complements the more detailed information from the direct monitoring component, which can detect sparser seagrasses and algae and document other biota. Remote mapping of moderate to dense seagrass has documented the large scale changes to seagrass distributions discussed earlier in this report. Examination of recent aerial images indicates there may have been significant natural recovery of seagrass beds to the west of the harbour in the past five years.

The extant of the moderate to dense seagrass should be determined from aerial photographs taken each summer (probably in March when boating activity has declined from the summer peak). The boundaries of the seagrass from year to year should be overlaid and changes in the shoreward boundary noted.

The precision of the determination of the seagrass boundaries appears to be 2 m to 5 m, based on the aerial photographs of the area viewed previously. This should be adequate to detect changes at the boundary of the order of 10m and provide large scale extrapolation direct monitoring aspect of the program in the harbour (see above).

Monitoring Program Schedule

Review of available aerial photographs should be taken once a year for five years. The program should be reviewed each year, with a final decision on the need for ongoing assessment after review of the third year of the program, and after five years of examination of aerial photography.

Benchmark Triggers

It is expected that the pattern of seagrass distribution in the boundaries of the harbour will change in time, as they have for the original harbour.



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Potential changes include:

- Improvement in seagrass cover around removed swing moorings.
- Reduction in seagrass cover under pens and jetty.
- Reduction in seagrass density between pens (depending on duration of boat occupancy and boat traffic).
- Increased seagrass in the area that is physically protected from waves by the harbour

Benchmark triggers of seagrass change for consideration of corrective action are directed to the pattern of seagrass distribution within 50 m of the boundary of the Harbour. Changes outside of 50 m of the Harbour that do not occur first within 50m are likely to be due to external influences. For example, there was an existing area of seagrass degradation approximately 600 m west of the Harbour in 2001. The area expanded eastward over following years to about 2010. The cause of the degradation was not known, but commenced before the harbour was constructed. More recently, CEE has noted in this OEMP that there has been significant natural recovery of seagrass beds to the west of the harbour in the past five years.

The extent and condition of seagrasses varies naturally from season to season and year to year. Hence, changes in seagrasses at Blairgowrie need to be considered in terms of reference sites and regional conditions.

Triggers for further consideration of the corrective action include:

- Excessive epiphyte growth and die back within Harbour.

Possible causes:

- Changes in water quality in the Harbour.
- Birds roosting at the Harbour.

- Degradation of seagrass cover beyond 3 m from ends of pen fingers

Possible causes:

- Changes in water
- Antifouling paints.
- Scour or shading.
- Grazing or destructive animals attracted to the shelter of the Harbour, such as crabs or urchins.

- Degradation of seagrass cover more than 3 m from access pier or wave screen.

Possible causes:

- Changes in water.
- Antifouling paints.
- Scour or shading.

- Degradation of seagrass cover in area within 50 m of the outside of the pen boundaries.

Possible causes:

- Disease.
- Boat activity.

Corrective actions will depend on environmental assessment of the cause of the effect (local cause due to the Harbour, local effect not due to the Harbour, such as sand movement, spread of die back, natural small scale changes in distribution, seasonal or annual abnormality or regional effect). If the Harbour is determined to be the cause of the effect, corrective actions which may be considered include:

- Modification of OEMP to improve water quality by further restricting some activities or checking and enforcing club rules on refuelling, Antifouling paints, hull cleaning, wastewater management.
- Modify bottom section of wave screen to reduce scour.
- Modify boat traffic plan to reduce effects of concentrated boat turbulence.



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The assessment of the likely causes and the need and schedule for corrective actions will be discussed with DELWP and Council as a requirement of the OEMP.

Monitoring

Table 6-1: Seagrass Monitoring Program

Action	Frequency	Responsibility
Annual direct monitoring of seagrass within and at boundaries of harbour Map the extent of seagrass via available aerial photography of harbour site area.	Annually for 3-5 years	BYS Marina Manager (via marine scientist)



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6.2 MARINE PEST MANAGEMENT

The permit requires that a marine pest management plan be prepared as part of the OEMP that assesses the increased risk of marine pest introduction from increased vessel activity and includes measures to minimise and mitigate risk in accordance with the National System for the Prevention and Management of Marine Pest Incursions. Reference is made to DEPI fact sheet "Aquatic Pests Treat 'em mean-keep your boat clean, located at https://parkweb.vic.gov.au/__data/assets/pdf_file/0004/313564/Aquatic-Pests-Treat-em-mean-Keep-your-boat-clean.pdf

BYS will also continue to work with Parks Victoria in implementing appropriate pest control measures within the harbour.

Marine pests are plants or animals, usually introduced from overseas that have a significant impact on our marine industries and environment. They can include mussels, crabs, seaweeds, sea stars, sponges, sea squirts, worms and other marine species.

Marine pests have been introduced into Australian waters in various ways, such as:

- attaching themselves as bio-fouling to boat hulls, anchor chains, fishing gear, recreational equipment and internal boat compartments or
- travelling in any seawater system on a boat including inside pipes and in bilge and ballast water, or
- being imported deliberately as aquarium or aquaculture species.

An estimated 250 introduced marine species have been introduced into Australian waters in these ways. In particular to Port Phillip, the fan worm *Sabella spallanzanii*, the Japanese kelp *Undaria pinnatifida* and the North Pacific seastar *Asterias amurensis* are widespread pests.

The transport of introduced species into the harbour, particularly hull attached plants and animals, has the potential to introduce marine pests to the harbour and then to transport them to other parts of Victoria where they currently may be absent.

Control measures for preventing / minimizing the introduction and translocation of marine pests include:

- complying with all Commonwealth or state regulations relating to marine pests,
- use local marine craft only (as far as it is practicable),
- Marina Managers should be familiar with the types of marine pests of ecological and environmental concern.
- Visiting vessels should be provided with access to information, procedures and rules for controlling marine pests prior to arrival, such as advice at the time of berth bookings and on the web page.
- Visiting vessels with significant fouling should not be permitted to do in-water cleaning as this would exacerbate the risk.
- Particular attention should be given to risk of introduction from any dredging, sand bypass or any other construction vessels and plant.
- keeping BYS owned marine vessels and equipment clean and well maintained, and carry out antifouling measures at follows:
- remaining vigilant – report anything unusual to the relevant state authority

BYS members and visitors must also have regard to the fact sheet *Aquatic Pests: Treat 'em mean – keep your boat clean* which is available at https://parkweb.vic.gov.au/__data/assets/pdf_file/0004/313564/Aquatic-Pests-Treat-em-mean-Keep-your-boat-clean.pdf

Marina Managers should be familiar with the primary marine pests of concern.



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The BYS should remind members and visitors of the importance of regular maintenance (appropriate antifoul for moored vessels) and cleaning of all vessels to avoid transportation of pests within, into and out of Port Phillip.



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6.3 WATER QUALITY MONITORING

The permit requires a water quality monitoring plan be prepared as part of the OEMP that includes the following:

- Collection of baseline water quality data in accordance with AS/NZS5667.9 – ‘Water Quality Sampling – Guidance on sampling from marine waters’.
- Identification of potential sources of water pollution / contamination.
- A monitoring program which includes indicators appropriate for identification of contamination arising from the operation of the safe boat harbour.
- A requirement that water quality data should be collected by a suitably qualified person, at 6 monthly intervals and after major storm events (average wind strength (not gusts) > 40Knots over a 2 hour period as measured at the South Channel Fort).
- A requirement that reporting on water quality, prepared by a suitably qualified person, be submitted to White Cliffs to Camerons Bight Foreshore Reserves Committee of Management Inc. and the responsible authority within two months of collection.

Selection of the water quality parameters and sampling pattern for the monitoring program needs to consider the environmental values around the Harbour, the water quality risks associated with the operation of the Harbour and the physical setting of the Harbour. The environmental values and associated EPA water quality risks are listed in Table 6.2. This criteria has previously been agreed with the EPA as part of the original safe harbour project.

Table 6.2 Environmental Values and Potential Water Quality Risks

ENVIRONMENTAL VALUE	WATER QUALITY RISK
Swimming & Primary Contact	<ul style="list-style-type: none"> • Bacteriology
Biodiversity (seagrasses, but no reef)	<ul style="list-style-type: none"> • Nutrients • Toxicants • Hydrocarbons
Fishing (mullet, salmon, whiting, snook, calamari)	<ul style="list-style-type: none"> • Turbidity • Toxicants • Hydrocarbons
Boating	<ul style="list-style-type: none"> • Turbidity • Hydrocarbons • Colour
Aesthetics	<ul style="list-style-type: none"> • Turbidity • Colour



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6.3.1 Harbour Characteristics

The Harbour is designed to protect boats in pens from waves by using surface wave screens. The wave screens have minimal effect on water tidal currents which are strong along the southern channels of Port Phillip. Currents run parallel to shore and will cause a regular high degree of flushing of the Harbour waters resulting in very low potential for accumulation of nutrients or contaminants in the Harbour.

6.3.2 Assessment of Harbour Water Quality Monitoring Program Parameters

Bacteriology

The BYS will provide toilets in the clubhouse for visiting boats. The BYS has standing rules to prohibit use of boat's toilets when in the Harbour. However, it is possible that some boat users may use vessel's toilets when the boats are in the pens. Increasing numbers of vessels with overnight facilities are fitted with sewage holding tanks for use in harbours and marinas. Hence there is limited potential for very low volumes of low bacteriological contamination within the Harbour mostly at night during holidays when boat occupancy is likely to be highest.

Bacterial water quality was monitored by the Blairgowrie Yacht Squadron from 2001 to 2004 to measure the concentration of *E. coli* inside the harbour and at nearby beaches. *E. coli* is readily used as a bacterial indicator for monitoring recreational water quality. The SEPP and ANZECC ARMCANZ National Water Quality Guidelines state that the median *E. coli* concentration in waters during the bathing season should not exceed 150 organisms per 100mL when humans are in primary contact with the water.

The 2003/2004 operational results were similar to the baseline period of monitoring (2001, 2002) and demonstrated that:

- Water quality within the harbour pens was slightly better than adjacent beach bacteriological levels;
- Elevated levels in the harbour corresponded to high regional concentrations; and
- No bacteriological contamination of harbour waters or beaches was detected that could be attributed to vessels moored in the harbour.

The harbour expansion will have negligible effect on the volume of water passing through the harbour with the prevailing alongshore tidal currents. Recreational vessels with overnight accommodation are increasingly fitted with wastewater holding tanks for use in harbours. Hence, it is not expected that the proposed reconfiguration of the harbour will affect water quality on the adjacent bathing beaches or within the harbour. The harbour will continue to be managed under the same rules as present – no discharge to the marine environment from vessels. This will ensure pollutants into the marine environment do not occur.

In summary:

- Previous water quality monitoring in the harbour and nearby beach confirmed that water quality within the existing harbour was very good with acceptable water quality for bathing.
- EPA beach water quality monitoring confirms that water quality at Blairgowrie remains good and is suitable for swimming.
- The operation of the original Harbour had no adverse effect on bacteriological water quality in the harbour or adjacent beaches.
- Management measures to eliminate risks to bacteriological water quality risks in the harbour are effective.



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It is concluded that:

- There is negligible risk of bacterial contamination of bathing waters from the operation of the expanded harbour to adjacent bathing beaches or within the harbour.
- Further monitoring of bacteriological aspects of water quality is not considered necessary.

Nutrients

Nitrogen is the key nutrient for concern in Port Phillip. Sources of nitrogen from the operation of the Harbour are limited to human waste discharge from boats and wash-down of bird droppings from the pontoons. Elevated nitrogen concentration in quiescent Harbour environments can cause algal blooms. However, the water in the Blairgowrie Harbour is regularly flushed with clean seawater by the moderate tidal currents that wash through the marina twice each day. Discharge of sewage from vessels in the Harbour is prohibited. Consequently, nitrogen concentrations in seawater in and around the Harbour will remain close to background levels.

- There is very low risk of nitrogen concentrations causing algal blooms due to the operation of the Harbour.
- Monitoring nitrogen in seawater is not considered necessary.

Toxicants

Toxicants associated with operation of the Harbour include antifouling paints and various small quantities of mild biocides associated with boat cleaning. State Legislation and BYS harbour rules prohibit the use of TBT antifouling paints, and the harbour rules require the use of biodegradable cleaning materials, which are likely to be undetectable in most parts of the Harbour.

- There is very low risk of toxicants from affecting Harbour biota due to the operation of the Harbour.
- Monitoring toxicants in seawater is not considered necessary.

Hydrocarbons

Potential sources of hydrocarbons from operation of the Harbour include fuel spills during refuelling and oil spills from bilge pumping. The potential for fuel spills will be very low due to the predominance of yachts with low fuel capacity, the lack of refuelling facilities and the long distance to carry large amounts of fuel. The potential for oil spills is also very low due to the lack of maintenance facilities on the Harbour.

Hydrocarbon spills are highly visible and require immediate response to stop, clean or dissipate the spill. Water quality monitoring does not provide an effective or efficient method for detecting hydrocarbon spills.

- There is a low risk of substantial hydrocarbon contamination of the Harbour environment.
- Water quality monitoring does not provide an effective or efficient method for detecting hydrocarbon spills.

Colour

There is very low risk of water quality reduction with respect to colour due to the operation of the Harbour.

- Monitoring colour in seawater is not considered necessary.



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Turbidity

There is very low risk of water quality reduction with respect to turbidity due to the operation of the Harbour:

- Monitoring turbidity in seawater is not considered necessary

Notwithstanding the low risks identified to water quality associated with the operation of the harbour, the OEMP includes the following monitoring regime:

Table 6-3: Water quality monitoring requirements

Action	Frequency	Responsibility
Water quality data collection	Every 6 months and after major storm events	BYS contractor with relevant expertise
Submission of water quality report to White Cliffs to Cameron's Bight Foreshore Reserves Committee of Management and the responsible authority	Within 2 months of data collection	BYS General Manager

References

- Ball, D., Soto-Berelov, M., Young, P. and Coots, A. (2009). Baywide Seagrass Monitoring Program - Historical Seagrass Mapping. Fisheries Victoria Technical Report Series No. 70. Department of Primary Industries, Queenscliff, Victoria, Australia. 24 pp.
- CEE (2013) "Update to existing marine ecosystem conditions and implications for Blairgowrie Harbour extension". Scott Chidgey, CEE Consultants Pty Ltd August 2013.
- Hirst A, Ball, D, Heislors S, Young P, Coots A, Blake S (2010). Baywide Seagrass Monitoring Program, Milestone Report No. 10 (July–August 2010). Fisheries Victoria Technical Report Series No. 115, November 2010. Department of Primary Industries, Queenscliff, Victoria, Australia. 39 pp



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6.4 WASTE AND WASTE WATER MANAGEMENT

6.4.1 Waste and Waste Water Management Strategies

The planning permit requires a waste and waste water management plan that includes all of the following:

- i) Measures to prevent the transportation of sediment, deposition of oil and grease from roads and other surfaces, vehicles and machinery, spills of chemicals or fuels, residues generated from machinery and waste material including heavy metals and organic compounds from boat or machinery maintenance.
- ii) Measures to ensure that waste management, including boat cleaning and maintenance procedures comply with the 'Cleaner Marina Code, October 1998' (EPA).
- iii) Measures to ensure maintenance and repair of vessels in the harbour is to comply with the provisions of the Code of Practice for In-Water Hull Cleaning and Maintenance (ANZECC 2000).
- iv) Measures to ensure that there is no discharge or disposal of sewage to Port Phillip;
- v) Measures to manage any disruptions in the electricity supply or other problems in the provision of reticulated sewage.
- vi) Measures to manage any spills of wastewater.
- vii) Measures to ensure that all users of the harbour are aware of amenities in the Blairgowrie Yacht Squadron's buildings and user's responsibilities with regard to wastewater disposal and the sewage pump out facility.
- viii) Details of measures to ensure compliance with State Environment Protection Policy (Waters of Victoria) – Schedule F6 (Table 2); EPA Publication No. 275 Construction Techniques for Sediment Pollution Control (May 1991); and EPA Publication No. 981 Reducing Stormwater Pollution from Construction Sites (May 2005).

Wastes must be managed in accordance with the following hierarchy, in order of preference:

- Waste avoidance practices which prevent the generation of wastes altogether
- Waste reduction practices which reduce waste produced
- Waste reuse practices which direct reuse of waste materials for the same grade of use
- Waste re-cycling or reclamation using valuable components of the waste in other processes
- Waste treatment to reduce hazard or nuisance
- Waste disposal, if necessary, will be done in the most environmentally sound manner.

Education and training of staff and contractors will be regularly completed to ensure they are familiar with the requirements of waste management as part of site induction. This will be conducted at the start of the use of the facility, employment of new staff, on a regular basis as a refresher course and at the implementation of new procedures or equipment.

This ensures that personnel not only conduct their jobs in an environmentally conscious manner but also present themselves as role models for residents and visitors. This section of the OEMP also relates to the Ecologically Sustainable Development Plan (ESDP). Following are implementation plans for the different types of waste that require management at BYS safe harbour.

Contractors will be made aware of their responsibilities for waste management through this site induction process.



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Waste management will be undertaken using the following:

- Identify the type and volume of wastes generated
- Document intended modes of waste management, for example storage, reuse, recycle or disposal, to ensure that waste is managed in accordance with acceptable standards and appropriate waste control measures are implemented
- Minimise generation of waste via re-use and recycling
- Overboard dumping is illegal and not tolerated
- Store and dispose of engine and flashlight batteries for recycling
- Store and dispose of waste metal, glass and cardboard in recycling receptacles.
- Use waste receptacles for anything that cannot be recycled.
- Dispose of cigarette and cigar butts in waste receptacles.
- Food waste must be disposed of in sealed plastic bags in the waste receptacles.
- Receipts for industrial waste collection and recycling will be kept as proof of proper disposal.
- Bins with lids are to be used to collect general waste for transfer to industrial bins.

6.4.2 Sewer Pump Out Facilities

All vessels with a toilet, which are stored at BYS safe harbour should have sewerage holding tanks and pump out facilities to allow for disposal at dedicated sewage pump out facilities. The organic matter in sewage discharged from recreational boats into surface waters consumes dissolved oxygen as it decomposes. The amount of dissolved oxygen required to decompose sewage and other organic matter is measured as the "biological oxygen demand" (BOD) of a water body. Consumption of oxygen by decomposing organic matter leaves less oxygen for fish and other aquatic organisms that live in the safe harbour.

In addition adverse health effects associated with exposure to recreational waters contaminated with sewage can lead to a number of health problems, such as gastroenteritis.

Objectives

- To prevent sewage from recreational boats being discharged in the safe harbour and provide adequate sewage pump out facilities to service the safe harbour.

Relevant Legislation and References

- Environment Protection Act 1970
- SEPP (Waters of Victoria) 2003
- SEPP (Waters of Victoria) Schedule F6 Waters of Port Phillip 1997
- ANZECC - Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand
- AS4997 - Guidelines for the Design of Maritime Structures



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Management Actions

BYS safe harbour will be a 'no discharge zone' for sewage. Vessels without on-board holding tanks will not be permitted to use on boat toilets, sinks and showers in the safe harbour. Pump out connections will be clearly labelled. They will be fitted with one inch BSP fittings in accordance with the recommendations of the ANZECC Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand.

The BYS pump out station is located on the Northern end of the low landing on the East side of the main Jetty. The pump out station will only be operated by trained and supervised BYS staff in accordance with the manufacturer's instructions.

Monitoring

Table 6-4: Waste & Wastewater

Action	Frequency	Responsibility
Pump out connections and waste receptacles inspection	Weekly during peak season (26 December to 26 January and Monthly at other times	BYS Marina Manager/ external contractor
Signage and instructions inspection	Monthly	BYS Marina Manager

6.4.3 Bilge Water

The discharge of bilge water has the potential to be a significant source of pollution in the harbour. This can include the introduction of marine pest species to Port Phillip. Once introduced into an area, exotic plants and sea life can be very difficult to remove and often have adverse impacts on water quality, marine habitat, recreational and commercial activities. In addition petroleum products from poorly maintained boats can be discharged with bilge water.

Objectives

- To minimise the occurrence of contaminated bilge water and its discharge to the environment.

Relevant Legislation and References

- SEPP (Waters of Victoria) 2003
- SEPP (Waters of Victoria) Schedule F6: Waters of Port Phillip



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Management Actions

- Berth users that are berthing boats within the harbour from outside Port Phillip must flush cooling systems and bilge water prior to entering Port Phillip to minimise the risks of introducing marine pest species to Port Phillip.
- Boat users will not be permitted to discharge contaminated bilge water directly to the BYS harbour environment.
- Bilge water must be pumped out and collected in a plastic storage container and disposed to a prescribed waste facility when required.

Monitoring

Table 6-5: Bilge Water Management

Action	Frequency	Responsibility
Educational material available regarding the management of bilge water.	Ongoing	BYS Marina Manager
Educational material will be available to safe harbour users regarding the control of exotic species.	Ongoing	BYS Marina Manager

6.4.4 Solid Waste

Solid waste can create a nuisance and become an eyesore if not managed correctly. The visual appearance of the safe harbour, nearby beaches and foreshore can be significantly reduced by the presence of solid waste. Additionally, solid waste can create hazards to fauna and marine species and pose a threat to human health and boating/recreational activities. It can cause injury to people and wildlife, encourages pest animals such as rats, as well as the spread of germs and disease.

Objectives

- To reduce the quantity of solid waste generated within the site and to ensure that the waste produced is disposed of correctly.
- To encourage recycling of waste materials.

Relevant Legislation and References

- MPSC local by-laws
- Environment Protection Act 1970
- EPA Publication IWRG600, Waste Categorisation



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Management Actions

- Sufficient facilities for general waste and recyclables will be maintained in all public areas. These facilities will be fitted with wind/wildlife proof covers and regularly maintained to ensure birds and vermin are not attracted by inappropriate rubbish disposal.
- Additional education programs will be implemented if waste minimisation strategies are not being adopted.
- Gross pollutant traps (GPTs) may be required to be established for storm water discharges from the BYS lease area. These will be maintained by BYS to ensure they are regularly cleaned and continue to be effective in the collection of litter, prior to stormwater entering Port Phillip. Litter will be regularly removed from the harbour, eastern and western beaches.

Management and Monitoring Methods

Table 6-6: Solid Waste Management and Monitoring Methods

Action	Frequency	Responsibility
Training of staff and contractors	On engagement / induction	BYS admin staff
Provide educational material to boat owners and safe harbour users	Induction & continually by printed material and web site.	BYS admin staff
Litter removal from harbour	Weekly in summer. As required in other seasons.	BYS admin staff
Litterbin inspection	Weekly	BYS Marina Manager (or a BYS contractor)
Recycling facilities inspection	Weekly	BYS Marina Manager (or a BYS contractor)
General litter inspections	Daily	BYS Marina Manager (or a BYS contractor)
Stormwater pit inspection and obstacle removal	Monthly	BYS Marina Manager (or a BYS contractor)
Stormwater pit cleaning	Twice per year	BYS Marina Manager (or a BYS contractor)
Gross pollutant trap inspection and cleaning	Monthly inspection bi monthly cleaning and after extreme rainfall	BYS Marina Manager (or a BYS contractor)
Harbour will be inspected to ensure the frequency of litter removal is adequate	Weekly in summer As required in other seasons; dependant on need	BYS Marina Manager (or a BYS contractor)



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6.5 RE-FUELING AND HAZARDOUS MATERIALS MANAGEMENT

6.5.1 Re-fuelling

The possibility of spills during fuelling operations always exists and they are a common source of pollution in safe harbour/marina waters. Most fuel dock spills are small and result from overfilling boat fuel tanks so that fuel splashes back at the nozzle onto the deck, squirts out of the boat's air vent line, or drips from the nozzle as it is removed from the boat and returned to the fuel dock. Hydrocarbons in fuel are harmful to juvenile fish, to fish reproduction and genetics and they interfere with the growth and reproduction of bottom dwelling organisms.

The permit requires a hazardous materials management plan that includes the following:

- Measures to manage the installation and operation of any refuelling facility.
- Measures to manage the storage and handling of any petrol or oil.
- Measures to manage the storage and handling of any other hazardous materials.
- An emergency /incident response plan, including potential spills of fuel, oil, or hazardous substances and how these will be managed.

BYS do not have a refuelling facility located on its premises.

Relevant Legislation and References

- Dangerous Goods Act 1985
- Dangerous Goods (Storage and Handling) Regulations 2012
- Environment Protection Act 1970
- EPA Publication 347, Bunding Guidelines, December 1992
- EPA Publication 8884 Guidelines on the Design, Installation and Management Requirements for Underground Petroleum Storage Systems .
- Pollution of Waters by Oils and Noxious Substances Act 1986 ^(SEPP)
- SEPP (Waters of Victoria) Schedule F6 (Waters of Port Phillip)
- SEPP (Waters of Victoria) 2003
- Australian Standard 1940 - The Storage and Handling of Flammable and Combustible Liquids

Management Actions

Pollution control cabinets are fully maintained and located on the Tee Head of each Harbour Walkway and in Scotts Shed. Each pollution control cabinet is equipped with the following control equipment:

- 10 x 2.4 m long x 75 mm Dia Mini booms (UMB2-4)
- 16 x Pillows (UP).
- 200 x Pads (CP).
- 2 Bags particulate 3 Kgs (PTC3).
- 2 Pair P.V.C. Gloves (PVCG).
- 8 Disposal bags (D.B).
- 1x 240 Litre bin on wheels (labelled - chemical spill kit. Absorbent capacity 220 Litres).

Appropriate signage on site to make users aware of the location of the spill kits.

6.5.2 Hazardous Materials Management

All Hazardous Substances and Dangerous Goods such as chemicals and fuel will be identified and recorded in a MSDS Register maintained by the BYS Central Office. Material Safety Data Sheets (MSDS) for each product will be kept and maintained on site by BYS.



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Activities carried out on the Harbour and in the yard involve the use and storage of hazardous substances and chemicals.

Potential for human and environmental harm is significant. Chemicals and materials such as oil, fuels, antifouling paints, solvents and poisons have the potential to enter the environment in a number of different ways, including inappropriate use, leaks and spills.

The following strategies can reduce the risk and potential impact of hazardous substances on humans and the environment significantly:

- Continual review of substances being used
- Is there a less damaging substance available?
- Substances are to be stored in appropriate areas
- Up-to-date copies of M.S.D.S. and lists of all substances held are to be maintained
- Storage areas are to be away from drainage areas, pipes and fire hazards
- Appropriate precautions should be taken when handling hazardous substances
- Inspection of storage areas and containers should be conducted regularly
- Emergency Response Units should be clearly identifiable, include a spill kit with clearly labelled equipment

Further detailed management measures are provided in section 7 - Emergency and Incident Management.

6.5.3 Boat Wash Down

Boat paint contains many types of chemicals, some of which can be harmful to marine life. This is particularly true of antifouling paint, which is made specifically to retard plant and marine growth on boat hulls.

Boats are only to be washed down (removal of marine growth and antifouling paints) over the wash down pit, which is located in the BYS yard. This pit is designed to collect all run off and collect it in a holding tank before being pumped into the sewage system.

Sanding down of boats must be done with dust free power sanders connected with vacuum bags.

Drop sheets must be laid to collect all paint scraping and sanding wastes and be disposed of in sealed containers placed in the appropriate rubbish containers for removal to a licensed landfill.

Table 6-7: Boat wash down requirements

Action	Frequency	Responsibility
Provide educational material on where and how to wash their boat.	Induction and continuously	BYS Marina Manager (or a BYS contractor)

6.5.4 Painting

Spray painting can only be carried out provided that all surrounding areas have been screened off and low pressure guns are used. Brushes and rollers are the preferred method of applying paints and varnish.

Antifouling paints **must be** applied with either brush or roller. **THE USE OF T.B.T PAINTS IS ILLEGAL.** Compliance with 'Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance (ANZECC 2000)' is essential.

All empty paints, thinners, solvent cans, used brushes and rollers **must be** disposed of in the appropriate rubbish containers for removal to a licensed landfill.



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6.6 SAND MANAGEMENT AND MONITORING PLAN

In accordance with the Planning Permit Conditions for the Blairgowrie Safe Boat Harbour the following Sand Management Plan (SMP) has been developed for the transfer of sand should it accumulate along the shoreline adjacent to the Safe Boat Harbour. The permit states that the sand management and monitoring plan must include:

- i) The baseline beach position adjacent to the salient should be determined through analysis of aerial photography pre-construction of the existing harbour. The baseline should extend from the Eastern Sister to Canterbury Jetty Road. The baseline should link with new bypass/backpass trigger points in the monitoring program.
- ii) Prior to commencement of operation of the post P981777 development, sand bypass/backpass operations must be commenced to remove the backlog of sand accretion in the existing salient, to restore the beach to the baseline position.
- iii) The monitoring points, profiles, zone (or area) must be clearly specified with dimensions and GPS coordinates on a map. The monitoring zone should extend alongshore from the Eastern Sister to Canterbury Jetty Road to gain an adequate understanding of erosion and accretion patterns.
- iv) The frequency of the proposed monitoring program must be six monthly, including at the end of summer and the end of winter, for plan form with profiles out to a depth of at least Lowest Astronomical Tide and include both hydrographic/bathymetric and topographic surveys of the beach, intertidal and subtidal zones, using a GIS system allowing accurate computation of accretion volumes and changes in beach position.
- v) All surveys undertaken as part of the monitoring program must be undertaken by a Licensed Surveyor.
- vi) Reporting of all monitoring surveys must be submitted to the Secretary of the Department of Environment and Primary Industries, the responsible authority and Whitecliffs to Camerons Bight Foreshore Reserve Committee of Management Inc. within one month of the survey being undertaken, and must include a comparison of the monitoring survey with the baseline and any actions required to restore the baseline conditions.
- vii) A trigger point based on the salient accretion volume within the harbour must be established to activate sand bypass/backpass operations, and it must not exceed a maximum of 3000m³ or a maximum time period of two years, whichever is reached first, unless otherwise agreed with the Secretary to the Department of Environment and Primary Industries on advice from the Whitecliffs to Camerons Bight Foreshore Committee of Management Inc.
- viii) The sand bypass/backpass operations in condition (vii) are to be approved by the Secretary of the Department of Environment and Primary Industries on advice of the Whitecliffs to Camerons Bight Foreshore Committee of Management Inc. and must include consideration of:
 - The quantity of sand to be removed;
 - Where sand to be removed is to be placed;
 - The timing of any sand movement works;
 - The type and size of any sand moving vehicle/ machinery/ dredge plant;
 - Method of beach access;
 - A safety plan to apply during and after any sand movement;
 - Any dredging to be in accordance with the EPA Best Practice Environmental Management Guidelines for Dredging.
- ix). Bypass/backpass of sand must be undertaken within six months of identification of a trigger point being reached and an associated application for consent under the *Coastal Management Act 1995* must be submitted within 3 months of an identified trigger point being reached.



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6.6.1 Background

The coastal studies undertaken for the BYS safe harbour redevelopment planning scheme amendment predict the continued growth of the salient formation that has developed in the lee of the existing offshore wavescreen. Shoreline evolution modelling was used to predict an increase in the rate of sand accretion from 3,300m³ per annum for the current harbour to 3,700m³ per annum for the first 5 years after the redevelopment. In addition the widest point of the salient is predicted to shift approximately 100m to the west, and the long shore length of the salient is predicted to increase by approximately 160m.

These factors have been considered when developing the Sand Management Plan. The following sections outline the key aspects of the Sand Management Plan with reference to the relevant Planning Permit Conditions.

6.6.2 Condition (i)

The baseline beach position from the Eastern Sister to Canterbury Jetty Road has been determined through an analysis of pre-construction aerial photographs from 1996, 1997, and 2000. A summary of this baseline in the vicinity of the harbour is shown in Figure 3 below; with the full extent of the baseline from the Eastern Sister to Canterbury Jetty Road shown in drawing 3049.001-SK02 Rev A attached in **Appendix F**.

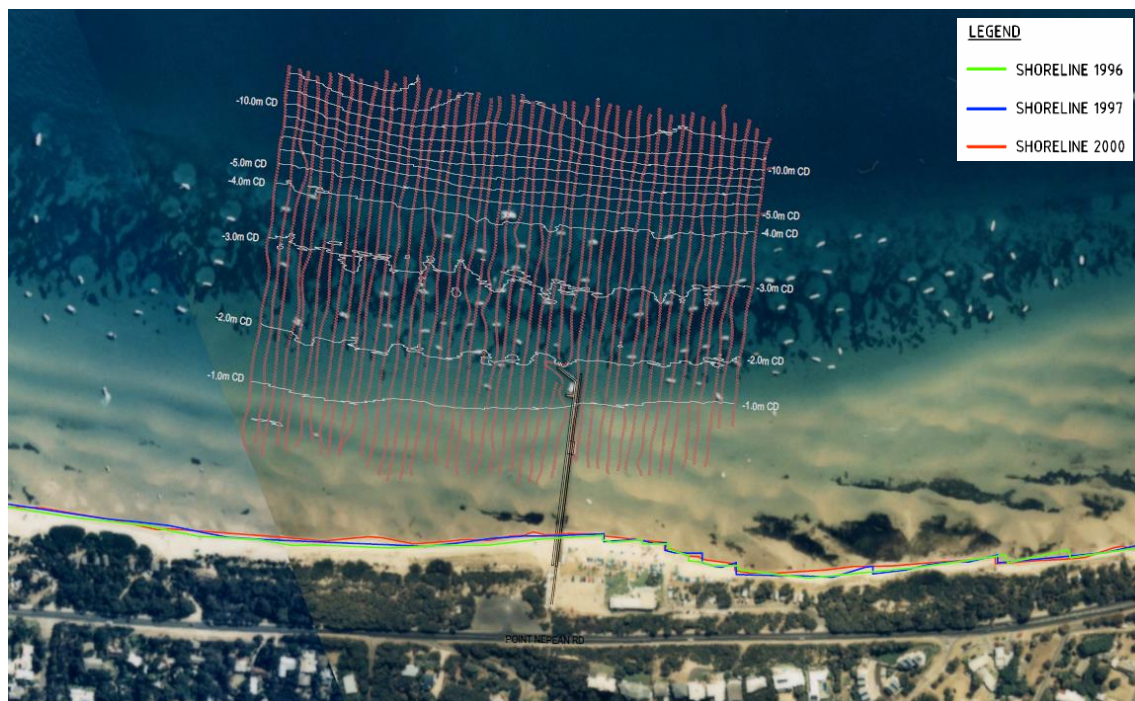


Figure 3 – Baseline Beach Position

6.6.3 Condition (ii)

This work has been completed to the extent shown on drawing 3049.001-SK4 Rev C attached in **Appendix G**. Some minor follow up work is expected to occur in early 2016.



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6.6.4 Condition (iii)

The proposed monitoring sections and areas are provided on drawing 3049.001-SK01 Rev B shown in Figure 4 below.

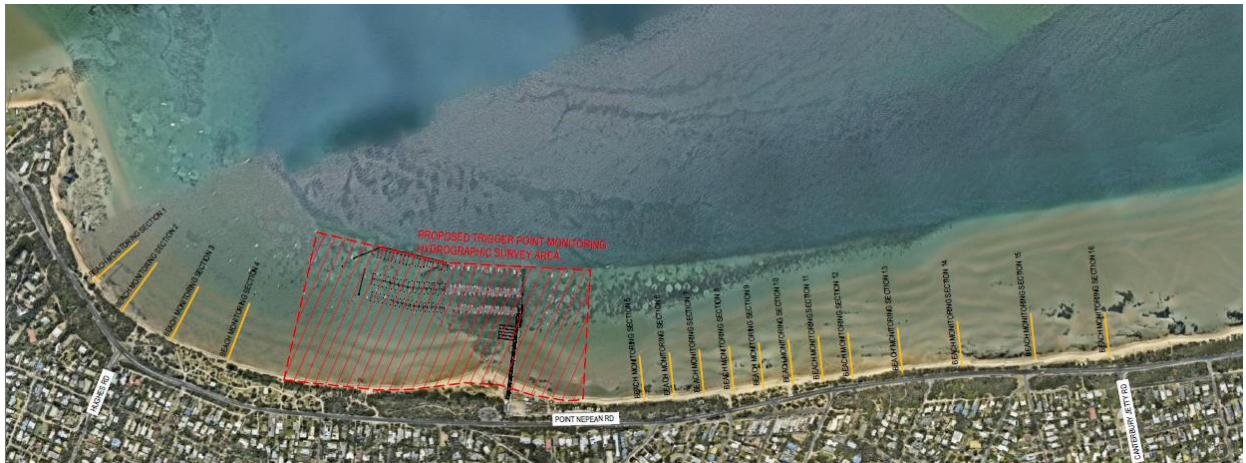


Figure 4 – Baseline Beach Position

The proposed approach includes regular beach profile cross sections (extending to at least the Lowest Astronomical Tide contour), including a closer spacing of sections in the area of maximum predicted erosion to the east of the harbour. In addition to regular beach profile sections it is proposed that a full hydrographic and topographic survey be completed of the seabed and foreshore within the immediate vicinity of the development. It is proposed that the minimum level of detail of the hydrographic survey be the use of a singled beam echo sounder at no greater than a 20m x 20m grid spacing. Precise coordinates of the survey area and beach profile sections will be provided on the completion on an initial setup survey.

Volume calculations based on this detailed survey will be used as the basis for assessing sand accretion against the trigger point. The beach cross section surveys will be used to inform the decision of where to place accreted sand when the trigger point is reached and backpassing/bypassing is required.

6.6.5 Condition (iv)

BYS will fully comply with the requirements of this condition.

6.6.6 Condition (v)

BYS will fully comply with the requirements of this condition.

6.6.7 Condition (vi)

BYS will fully comply with the requirements of this condition.



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6.6.8 Condition (vii)

BYS will fully comply with the requirements of this condition.

6.6.9 Condition (viii)

Prior to completing any sand backpassing/bypassing operation BYS will prepare a detailed method statement for approval by DELWP and the Whitecliffs to Camerons Bight Foreshore Committee of Management Inc. in full compliance with this condition.

The exact nature of the works will depend on the findings of the monitoring program and may include a combination of dredging and excavation. The detailed method statement will include the timing of the operation including areas affected by the excavation and replenishment of sand, a description of equipment and vehicles to be used in the operation, the route of any trucks, the dates for commencement and completion and the days and times of the operation.

6.6.10 Condition (ix)

BYS will fully comply with the requirements of this condition.

6.6.11 Ongoing Monitoring

The ongoing actions required for sand management and monitoring are found in the table below.

Table 6-8 Sand management & monitoring actions

Action	Frequency	Responsibility
Beach monitoring (hydrographic/bathymetric and topographic surveys of the beach, intertidal and specified sub intertidal zones.	Every 6 months (end of summer & start of winter)	Contractor with relevant expertise (in consultation with BYS General Manager)
Reporting of monitoring surveys to Department of Environment, Land, Water and Planning (DELWP)	Every 6 months , within a month of survey being undertaken	BYS General Manager
Submission of Sand bypass/backpass proposal to DELWP	Must not exceed a maximum of 3000m ³ or a maximum time period of 2 years, whichever is reached first	Contractor with relevant expertise (in consultation with BYS General Manager)
Sand bypass/backpass operations	Within 6 months of above trigger point being reached	Contractor with relevant expertise (in consultation with BYS General Manager)



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6.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT PLAN

The permit requires that the Ecologically Sustainable Development Plan (ESDP) must include the following matters:

- Identify relevant statutory obligations, strategic or other documented sustainability targets or performance standards.
- Document the means by which the appropriate target or performance will be achieved.
- Identify responsibilities and a schedule for implementation, and ongoing management, maintenance and monitoring.
- Demonstrate that the design elements, technologies and operational practices that comprise this part of the OEMP can be maintained over time.

The following sustainability principles apply to the BYS OEMP and should be read in conjunction with the BYS Environmental Policy. These principles will guide BYS safe harbour operations so that consideration of the environment, climate change and sustainability is implemented in the day to day operations of the safe harbour.

- *Promote a safe harbour that minimises greenhouse gas emissions and other air pollutants.*
- *Promote a safe harbour that protects the marine environment from contaminants.*
- *Identify and respond to natural and climate change hazards as required.*
- *Optimise water and energy efficiency and waste minimization and recovery for all harbour activities.*
- *Support local and State strategies that recognise the importance of healthy waterways, the environment and Port Phillip.*
- *Achieve sustainable outcomes by provision of information to BYS members and harbour users.*

Management Actions

Educational material will be available to BYS members and safe harbour users regarding the implementation of ESD harbour principles and practices. Many of the actions and monitoring regimes presented in this OEMP will ensure the application of ESD throughout the operation of the safe harbour.

Relevant Legislation and References

- Planning and Environment Act 1987
- Victorian Energy Efficiency Target Act 2007
- Victorian Coastal Strategy 2014
- Victorian Climate Change Adaptation Plan

Monitoring

Table 6-9: ESD Plan

Action	Frequency	Responsibility
Educational material will be available to safe harbour users regarding the implementation of ESD harbour practices	Ongoing	BYS Marina Manager
Ensure other actions identified in this OEMP are complied with.	Ongoing	BYS Marina Manager



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7 EMERGENCY AND INCIDENT MANAGEMENT

An Emergency Response Plan has been developed by the BYS to identify, prevent and mitigate any environmental impacts that may be associated with emergencies. The induction for new staff will include details of the Emergency Response Plan and where appropriate training will be undertaken. BYS will ensure that adequate resources and equipment are readily available, in the event an accident or emergency environmental situation arises.

The BYS Marina Manager will maintain a record of events and this will include, but not be limited to the following:

- The location of the emergency or incident
- The details (i.e. name and telephone number) of the person reporting the incident
- The estimated time of the incident
- The time at which the Owners Corporation Manager was made aware of the event/incident;
- The suspected cause of the incident
- The environmental harm and or environmental nuisance caused, threatened, or to be caused by the incident, and
- The proposed rectification/remediation actions.

All incidents will require a formal investigation by BYS. Not more than 14 days following the initial notification of an emergency or incident, the BYS Marina Manager must prepare an Environmental Incident Report to any relevant responsible authorities documenting the above in addition to:

- Proposed actions to prevent a recurrence of the emergency or incident (e.g. proposed amendments to the OEMP)
- Outcomes of actions taken at the time to prevent or minimise environmental harm and or environmental nuisance, and
- The results of any environmental monitoring performed.



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There are only a small number of emergencies which may occur that require some form of management and control. These are:

Item	Risk of Environmental Impacts	Control Measures
1	Small land based chemical, oil or fuel spill	<ul style="list-style-type: none"> • Use spill kit provided onsite to contain and clean up spill. Dispose of used material in approved landfill site; • If spill is larger, use sand or soil to absorb spill. Dispose of used material in approved landfill site; • Check with MSDS for the appropriate handling methods and the type of PPE to be used.
2	Water based chemical, oil or fuel spill	<ul style="list-style-type: none"> • Attempt to stop the spill from spreading by placing oil boom to completely surround the spillage; • Place oil/grease absorbent material (e.g. OilSorbe) to absorb oil and dispose of appropriately; • For larger spills responses are to be coordinated by the BYS with local authorities and emergency services.
3	Fire	<ul style="list-style-type: none"> • If fire is small and controllable, use fire extinguisher to put out the fire; then advise BYS office; • If the fire is out of control and you and others are in risk, then evacuate from the area and notify the Fire Brigade immediately.

The listing of Emergency Telephone Numbers is attached as **Appendix C**.

A facility layout plan/ diagram will be placed around the harbour and club house with relevant emergency contact details in the case of an emergency.



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8 COMMUNICATION & CONSULTATION

A Communications Plan has been prepared by BYS and is found on the BYS website www.bys.asn.au. The Communications Plan provides information to members and visitors' regarding the BYS safe harbour, BYS operating procedures and documents the relevant people to contact at BYS for any matters that may arise.

The following key stakeholders have been consulted as part of the planning and construction activities of the BYS Safe Harbour Reconfiguration Project and BYS will continue to engage with these stakeholders throughout the operation of the harbour:

Table 8-1: Key Stakeholders

Government agencies and regulatory authorities	Mornington Peninsula Shire Council (MPSC) Parks Victoria (PV) Department of Environment, Land, Water and Planning (DELWP) Central Coastal Board (CCB) Marine Safety Victoria (MSV) Office of Aboriginal Affairs Victoria (OAAV)
Community and interest groups	White Cliffs to Camerons Bight Foreshore Reserves Committee of Management Inc. (WCCBFCoM) Nepean Ratepayers Association
Local facilities and service providers	Diving Victoria Association and numerous Mornington Peninsula dive shops
Local industry and business	BYS members
Local community	Neighbouring property owners Blairgowrie residents Sorrento Rye
Indigenous groups	Aboriginal stakeholder organisations – Bunurong Land Council Aboriginal Corporation and Boon Wurrung Foundation Ltd
Media	BYS website

The BYS will facilitate further consultation with the Council, DELWP, Parks Victoria, the Foreshore Committee and other key stakeholders during its ongoing operation, particularly when large events are planned.

The communication process would involve the combination of the following methods:

- Letter drops
- Signage (where required)
- Media – BYS website and/or newspaper articles, etc.
- Website-

The website will contain the following information:

- The Harbour Rules
- Emergency Procedures
- OEMP
- Communications Plan



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- Environmental awareness induction
- Supporting pamphlets and guidelines, such as those for marine pest management



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9 COMPLAINTS & NON-CONFORMANCES, CORRECTIVE ACTION

The contact details of BYS are available on the BYS web site, <http://www.bys.asn.au/>. The site lists contact details for the staff and committee. All complaints received by BYS and its members are to be reported to the BYS General Manager who is to follow up with relevant stakeholders to ensure that they are closed out and reported in accordance with this plan.

All complaints received by BYS will be recorded to show details of the complaint, the complainant and the action (if any) taken in relation to the complaint and any follow up contact with the complainant. A Complaints record sheet is found in **Appendix D**.

All non-conformances, incidents and public complaints will be recorded. Corrective action will be taken in a timely basis to remediate any unsatisfactory conditions and to ameliorate any adverse environmental impacts arising from any incidents such as oil spills.

All Non-Conformances and Environmental Incidents will be reported to the BYS General Manager who will then notify the relevant government agencies. A non-conformance register sheet is found in **Appendix E**.



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10 ENVIRONMENTAL AWARENESS INDUCTION

BYS will ensure that all berth owners contractors will be made aware of the important elements of the OEMP. The aim of the induction session will be to ensure contractors to the safe harbour are aware of:

- Environmental values and sensitivities of the area
- Potential for environmental incidents to occur and how to respond in the event of an incident
- Emergency Procedures and Emergency Contact Numbers

The BYS are to keep records of participation in the induction session/s. These may be required for review by the BYS (or external consultant/auditor) during periodic checks and audits.



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11 ENVIRONMENTAL MONITORING AND AUDITING

The OEMP provides details (as appropriate) for the specific tests, protocols and/or monitoring procedures to be employed, the frequency and location of monitoring, the reporting mechanisms/system and other relevant requirements for various management and monitoring plans throughout this document.

11.1 Internal Audits

Trained internal auditors will conduct quarterly audits of selected activities at BYS safe harbour against the requirements of the OEMP. The scope of these audits and the process for reporting will be developed by BYS and its consultants. BYS will review the results of the internal audits.

BYS will carry out its own surveillance and monitoring program to check and verify that environmental controls and management plans are implemented and are effective and that its stated Objectives and Targets are being met.

Where any environmental hazard is identified, corrective action shall be taken promptly to control and minimise any environmental damage. Records of all inspections, actions are to be recorded and reported to BYS. Any pollution incidents to be reported to EPA and DELWP immediately.

11.2 Review and Updating OEMP

This OEMP will be subject to an internal review:

- within 12 months of the start of the approved use;
- then every three years to the satisfaction of the responsible authority in consultation with the Secretary of DELWP on advice from the WCBFCoMgt Inc.
- When a serious Environmental Incident has occurred and which is shown to have been caused by a deficiency in the OEMP,
- Whenever it is directed by the BYS General Manager.

11.3 External Audits

A suitably qualified Auditor will audit the BYS safe harbour during the period of operation to verify conformance to this OEMP. As described in the CMA consent for the project, the OEMP must be reviewed within 12 months of harbour construction and then every 3 years in consultation with DELWP and the Foreshore Committee.

An independent environmental auditor will conduct an audit of the performance of the development against the requirements of the OEMP every year (this may change over time). This audit will specifically include an assessment of the results of the water, sediment and groundwater monitoring programs against the requirements of the relevant State Environment Protection Policies and compliance of the BYS Safe Harbour operations.



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Table 11-1 Environmental monitoring & auditing actions

Action	Frequency	Responsibility
Internal audits conducted by trained staff	Quarterly	BYS General Manager
Undertake corrective action for identified hazards	Ongoing	BYS General Manager
External audits & OEMP Review	<ul style="list-style-type: none"> • 12 months post harbour construction • Subsequently every 3 years 	BYS General Manager and external auditor
OEMP Amendment approved by DELWP	Within 3 months of the review	DELWP /WCCBFC

The requirements of the external review as required by the planning permit are:

- Evaluate the performance of the approved use against the OEMP.
- Identify any new environmental policy or standard since the last OEMP review. If the approved use does not apply, propose an amendment of the OEMP in response.
- Include an annual review of the Sea Grass Monitoring Program by a suitably qualified person for at least the first 3 years and include consultation with DELWP about the nature of any ongoing review thereafter.
- Include a review of the Sand Management and Monitoring Plan by a suitably qualified coastal engineer conducted 3 years following construction of the post P98/1777 development and then every 5 years thereafter to the satisfaction of the Secretary of DELWP on advice from Whitecliffs to Cameron's Bight Foreshore Reserve Committee of Management Inc.
- Include a report by a qualified person describing the performance of the water quality monitoring program to the satisfaction of the Environment Protection Authority.
- Be submitted to the responsible authority for approval within three months of its due date.



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12 RECORDS TO BE MAINTAINED

The following records will be maintained on site (site office) to verify conformance to this OEMP:

- Appendix A OEMP Risk Register
- Appendix B - BYS Organisation Chart
- Appendix C - Environmental Emergency Numbers
- Appendix D - Environmental Complaint Record
- Appendix E - Non-Conformance Register (NCR)

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Appendix A – OEMP Risk Register

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Introduction

This Environmental Risk Register has been prepared to support the Operational Environmental Management Plan (OEMP) for the Blairgowrie Yacht Squadron (BYS) safe harbour.

The BYS are responsible for various components of the operation of the BYS safe harbour and these components will be in accordance with the requirements of this OEMP.

The risk management process involved an assessment of the key operational activities and associated environmental aspects/stressors within the harbour. This risk assessment process resulted in a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking. Each environmental risk was categorised based on the:

- Environmental aspect
- Likelihood of occurrence
- Type of potential impact
- Relative scale of the potential impact.

The risk assessment is based on the AS/NZS ISO 31000-2009 *Risk management – Principles and guidelines*, and includes an assessment of risk levels (based on supporting evidence and historical data, informed and expert opinions and stakeholder's needs), risk controls and identification of any residual risks. The risk assessment utilises the risk matrix in Table 1 below to determine the risk ranking for each potential impact. Risk rankings have been determined based upon relevant legislation, guidelines, policy, design and technical reports, expert judgments and experience of specialist consultants and contractors.

References used as part of the Risk Register assessment process included:

- AS/NZS ISO 31000:2009 Risk management – Principles and guidelines (2009)
- *Extension to Blairgowrie Safe Boat Harbour, Final Report on Existing Marine Conditions*, CEE Consultants, (Aug 2011)
- *Extension to Blairgowrie Safe Boat Harbour, Update to existing marine ecosystem conditions and implications for Blairgowrie Harbour extension*, CEE Consultants, (Aug 2013)
- *Flora and Fauna Assessment for the proposed Blairgowrie Yacht Squadron Safe Boat Harbour Reconfiguration, Blairgowrie Victoria*, Ecology & Heritage Partners, (23 February 2011)
- *Biodiversity Assessment for proposed road upgrade works at the Blairgowrie Yacht Squadron, 2900 Pt Nepean Road*, Ecology & Heritage Partners, (14 July 2014)
- *Offset Management Plan for Blairgowrie Safe Boat Harbour Road Upgrade Works, 2900 Point Nepean Road, Blairgowrie, Victoria*, Ecology & Heritage Partners, (September 2014)
- *BYS Safe Boat Harbour Reconfiguration Project, Planning and Environment Report*, GHD, (Aug 2012)
- *DSE Fact Sheet: Renourishing Blairgowrie beach*, DSE (July 2010)
- *DSE Fact Sheet: Aquatic Pests: Treat 'em mean - keep your boat clean*


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Table 1: Risk Matrix used to determine the risk ranking for each potential impact

Risk Matrix		Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	Almost Certain	Medium	High	High	Extreme	Extreme
	Likely	Low	Medium	High	High	Extreme
	Moderate	Low	Low	Medium	High	Extreme
	Unlikely	Low	Low	Low	Medium	High
	Rare	Low	Low	Low	Low	Medium

Risk likelihood and consequence are based on the definitions outlined in Table 2 below.

Table 2: Risk Consequence and Likelihood Scales

Risk Consequence				
Insignificant	Minor	Moderate	Major	Catastrophic
No impact on the baseline environment. Localised to point source and no recovery required.	Localised within site boundaries. Recovery measurable within 1 month of impact.	Moderate harm with possible wider effect. Recovery within 12 months	Significant harm with local effect. Recovery longer than 12 months.	Significant harm with widespread effect. Recovery longer than 12 months. Limited prospect of full recovery.
Risk Likelihood				
Rare	Unlikely	Moderate	Likely	Almost Certain
5% chance of occurring; highly unlikely to occur on this project	20% chance of occurring; given current practices and procedures, this incident is unlikely to occur	50% chance of occurring; incident has occurred on similar project	80% chance of occurring; incident is likely to occur on this project	95% chance of occurring; incident is very likely to occur on this project, possibly several times

As part of ensuring compliance with the OEMP, this risk register and relevant legislation and policy, a competent person will be responsible for carrying out environmental audits during the operation of the harbour. The audit will include an assessment against the OEMP and will record any non-conformances. The first environmental audit should occur within 6 months of commencement of operation, and 12 months thereafter.

Risk Register

Activity	Stressor	Effect	Supporting Evidence and Impact	Inherent Risk			Risk Treatment (mitigation)	Residual Risk			Responsibility
				Likelihood	Consequence	Risk		Likelihood	Consequence	Risk	
General Operational Activities	General waste created on site.	Contamination of sea and land areas.	Potential for wastes generated during operation to enter the environment. Appropriate bins and signage on site will ensure waste is minimal. <i>Compliance with OEMP and Harbour Rules</i>	Moderate	Moderate	Medium	All rubbish to be disposed of in closed rubbish bins and disposed of off site appropriately and asap. Preparation and implementation of the OEMP and Harbour Rules for the harbour indicating control measures for waste/pollution management. Monitoring of wastes to be undertaken by contractors and BYS general manager.	Unlikely	Moderate	Low	BYS General Manager (and others as nominated in the OEMP)
General Operational Activities	Creating nuisance and disturbance on site during operation	Amenity impacts to residents and foreshore users	Some disturbance to local residents during busy periods of operation, however measures will be in place to allow continued public access to the foreshore. <i>Compliance with planning permit and CMA consent conditions</i>	Moderate	Moderate	Medium	Signage informing the general public of events and activities, including contact numbers of BYS and any traffic management arrangements. Implementation of Project Communications, Stakeholder and Community Engagement Plan. Set up a Complaints and Non-conformance Register. Implementation and monitoring of the Communications Plan and OEMP by BYS.	Moderate	Minor	Low	BYS General Manager (and others as nominated in the OEMP)
General Operational Activities	Dust	Decreased air quality	Potential for dust to occur from vehicles and plant movement on site. <i>Contractors knowledge and experience</i> <i>Compliance with SEPP (air emissions)</i>	Moderate	Minor	Low	Operational activities that may cause dust are not expected to exceed levels set by SEPP (Air Quality). Preventative measures for dust to be used including controlling speed of vehicles within the site (if required).	Unlikely	Moderate	Low	BYS General Manager, berth holders, BYS staff
General Operational Activities	Chemical Spills (land and sea areas)	Contamination of the site.	Oils/fuel are the main potential contaminants associated with the boating operations within the harbour, including sinking boats. There will be minimal quantities of these stored on site.	Moderate	Moderate	Medium	Store chemicals and fuel in fully sealed containers and store in bunded areas that comply with Australian Standards. No hazardous material will be stored within 50m of a waterway/sea. Material Safety Data Sheets are maintained on site by each contractor and copies available at the BYS office. Compliance with regulations and MSDS's for the storage of chemicals and hazardous materials. Availability of hydrocarbon spill kits onsite (positioning near operating machinery) to clean up any spillages.	Unlikely	Minor	Low	BYS General Manager, berth holders, BYS staff

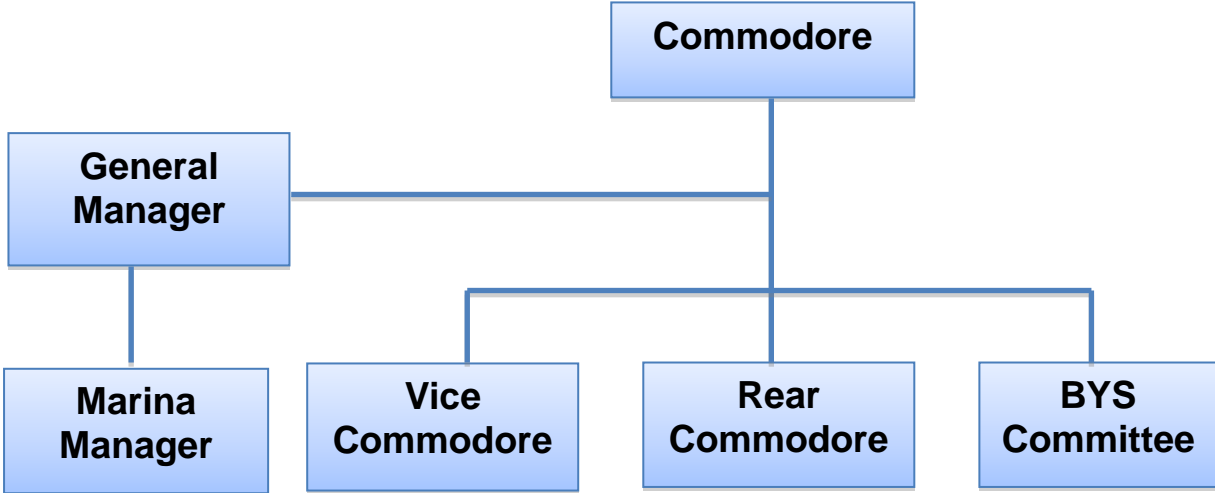
Risk Register											
Activity	Stressor	Effect	Supporting Evidence and Impact	Inherent Risk			Risk Treatment (mitigation)	Residual Risk			Responsibility
				Likelihood	Consequence	Risk		Likelihood	Consequence	Risk	
General Operational Activities	Marine pests	Introduction of marine pests.	Marine pests can be transported around the Bay by marine equipment/plant/vessels. Potential for introduction of marine pest species during operation within the marine environment of the harbour. <i>CEE Consultants (Aug 2011 & Aug 2013)</i> <i>DELWP Fact Sheet: Aquatic Pests: Treat 'em mean - keep your boat clean</i> <i>Compliance with OEMP</i>	Moderate	Major	High	Adherence to DELWP's <i>Aquatic Pests: Treat 'em mean - keep your boat clean</i> and the National System for the Prevention and Management of Marine Pest Incursions.	Moderate	Moderate	Medium	All berth holders, contractors and BYS General Manager.
General Operational Activities	Marine pests	Introduction of marine pests.	Marine pests can be transported around the Bay by marine equipment/plant/vessels. Potential for introduction of marine pest species to wider Port Phillip Bay during operation within the marine environment when leaving the harbour. <i>CEE Consultants (Aug 2011 & Aug 2013)</i> <i>DELWP Fact Sheet: Aquatic Pests: Treat 'em mean - keep your boat clean</i> <i>Compliance with OEMP</i>	Moderate	Major	High	Adherence to DELWP's <i>Aquatic Pests: Treat 'em mean - keep your boat clean</i> and the National System for the Prevention and Management of Marine Pest Incursions.	Moderate	Moderate	Medium	All berth holders, contractors and BYS General Manager.
General Operational Activities	Localised damage within the existing harbour	Removal/burial of seabed seagrass	No significant seagrass areas are known to exist within the harbour, although seagrass is present. <i>CEE Consultants (Aug 2011 & Aug 2013)</i> <i>Compliance with OEMP and Harbour Rules</i>	Moderate	Moderate	Medium	Minimise boating activities where possible to minimise damage to seagrass.	Moderate	Minor	Low	All berth holders, visitors and BYS General Manager.
General Operational Activities	Damage to site services	Damage to underground services in the area	Minimal (if any) underground/underwater services currently exist within the BYS harbour. <i>Contractors and BYS knowledge and experience</i>	Unlikely	Major	Medium	Ensure exact location of any known underground/underwater services via drawings and plans from service authorities. Call 1100 to obtain drawings. Signage indicating location of services to be visible in Office.	Rare	Major	Low	All contractors and BYS General Manager.

Risk Register

Risk Register											
Activity	Stressor	Effect	Supporting Evidence and Impact	Inherent Risk			Risk Treatment (mitigation)	Residual Risk			Responsibility
				Likelihood	Consequence	Risk		Likelihood	Consequence	Risk	
Dredging activities (spit adjacent to existing jetty)	Localised damage within the existing harbour during maintenance dredging activities	Removal/burial of seabed seagrass	Seagrass located in this area will be disturbed as part of maintenance dredging activities. The area affected is small and patchy and is an area of seagrass that has recolonised in the period between maintenance dredges. Seagrass is known to recolonise in the BYS harbour after disturbance, <i>CEE Consultants (Aug 2011 & Aug 2013).</i> <i>Compliance with any CMA consent as part of a dredging program</i>	Likely	Minor	Medium	Minimise footprint of maintenance dredging activities where possible to minimise damage to seagrass. Removal of the salient (sand build up) in the spit adjacent to the jetty is a current CMA consent condition. Ongoing maintenance dredging will be subject to a further CMA consent process.	Likely	Insignificant	Low	BYS appropriate contractor & BYS General Manager
Dredging activities (spit adjacent to existing jetty)	Localised damage within the existing harbour during maintenance dredging activities	Marine pests	Marine pests can be transported around the Bay by dredge equipment/plant. Potential for introduction of marine pest species during maintenance dredging works within the marine environment. <i>CEE Consultants (Aug 2011 & Aug 2013)</i> <i>DELWP Fact Sheet: Aquatic Pests: Treat 'em mean - keep your boat clean</i>	Moderate	Major	High	Plant is sourced locally. Inspection of dredge suction equipment used for dredging of the harbour to prevent introduction of marine pests. Adherence to DEPI's Aquatic Pests: Treat 'em mean - keep your boat clean	Unlikely	Moderate	Medium	BYS appropriate contractor & BYS General Manager
Dredging activities (spit adjacent to existing jetty)	Localised damage within the existing harbour during maintenance dredging activities	Removal/burial of benthic communities	Minimal marine organisms known to be found in the nearshore area. No significant or listed species found during surveys in 2011 or 2013. <i>CEE Consultants (Aug 2011 & Aug 2013).</i>	Likely	Minor	Medium	Dredging only to occur in nominated areas and in accordance with the CMA consent.	Likely	Insignificant	Low	BYS appropriate contractor & BYS General Manager
Dredging activities (spit adjacent to existing jetty)	Localised damage within the existing harbour during maintenance dredging activities	Noise	Dredging machine (cutter suction) and pump may cause localised noise to users of the foreshore and harbour (including divers) and nearby residents. <i>Contractor's knowledge and experience. Eg. Maw Civil has undertaken similar dredge works in the same location in 2010.</i> <i>SEPP (Noise)</i>	Moderate	Moderate	Medium	Ensure plant and equipment has efficient noise suppression devices (where possible) and work within approved working hours and in accordance with the CMA consent.	Unlikely	Moderate	Low	BYS appropriate contractor & BYS General Manager

Dredging activities (spit adjacent to existing jetty)											
Activity	Stressor	Effect	Supporting Evidence and Impact	Inherent Risk			Risk Treatment (mitigation)	Residual Risk			Responsibility
				Likelihood	Consequence	Risk		Likelihood	Consequence	Risk	
Dredging activities (spit adjacent to existing jetty)	Localised damage within the existing harbour during maintenance dredging activities	Water quality, including turbidity.	Potential changes to water quality during this activity. Pumping of sand via Cutter Suction dredge, to areas under the existing wave attenuator - filling in areas that have been previously scoured, including areas alongside and under the existing jetty. <i>Contractor's knowledge and experience</i> <i>DSE Fact Sheet: Renourishing Blairgowrie beach, DSE (July 2010)</i>	Likely	Moderate	High	Regular site walk/inspections required to monitor the presence of plumes during maintenance dredging operations. Installation of silt control measures as required around the works.	Moderate	Moderate	Medium	BYS appropriate contractor & BYS General Manager
Dredging activities (spit adjacent to existing jetty)	Suspended Solids/turbidity	Effects on fish due to blockage of gills by sediment.	No significant fish species was found to be present in the existing BYS harbour, however, some species are known to be present (e.g little weed whiting) <i>CEE Consultants (Aug 2011 & Aug 2013)</i> <i>BYS knowledge and experience</i>	Unlikely	Moderate	Low	Monitor the harbour during activities.	Unlikely	Moderate	Low	BYS appropriate contractor & BYS General Manager
Dredging activities (spit adjacent to existing jetty)	Suspended Solids/turbidity	Effects on water quality	Minor 'clouding' may occur on seabed. Any disturbance will be minimal, localised and temporary. <i>Contractors knowledge and experience</i> <i>Compliance with SEPP Waters of Vic</i>	Moderate	Minor	Low	Contractors to note and record any 'clouding' from the seabed. Monitor and inform BYS General Manager if clouding is continually experienced. Sediment controls in place (if required).	Moderate	Minor	Low	BYS appropriate contractor & BYS General Manager

Appendix B – BYS Organisation Chart



Appendix C – Environmental Emergency Numbers

Emergency Services		
	Ambulance	000
	Fire Brigade	000
	Police	000
Blairgowrie Yacht Squadron		
	Commodore	5988 8453
	General Manager	5988 8453
	Marina Manager	5988 8453
Environmental Authorities		
EPA		1300 327 842
DELWP- Port Phillip Region		9210 9222
WCBFRCoM Inc.		5985 3288

Appendix D – Environmental Complaint Record

SITE HAZARD / COMPLAINT RECORD

PROJECT : BLAIRGWORIE SAFE BOAT HARBOUR EXTENSION DATE: _____

Note: NOT to be used to report accidents involving injury or property/plant damage

REPORTED BY	REPORTED TO
Name : _____	Name of Employee: _____
Address: _____	Position / Title: _____
Telephone: _____	Telephone: _____
Mobile: _____	Mobile: _____
	Date Report was Received: _____

COMPLAINT / HAZARD DETAILS	
The complaint was:	<input type="checkbox"/> Verbal <input type="checkbox"/> Written (attach copy of complaint to this record)
The complaint relates to:	<input type="checkbox"/> Noise / Vibration <input type="checkbox"/> Dust <input type="checkbox"/> Environmental Pollution <input type="checkbox"/> Water <input type="checkbox"/> Public Concern <input type="checkbox"/> Other : _____
State precisely and concisely the details of complaint or hazard:	

LEVEL OF RISK FOR THIS IDENTIFIED HAZARD OR COMPLAINT						
Determine the Level of Risk for this Hazard using the Risk Matrix shown here →		LEVEL OF RISK				
Level of Risk = Probability x Consequence <div style="border: 1px solid black; padding: 5px; width: fit-content;">Level of Risk =</div>		Consequence				
			Severe	High	Moderate	Low
		Almost Certain	HIGH	HIGH	HIGH	MEDIUM
		Very Likely	HIGH	HIGH	MEDIUM	MEDIUM
		Possible	HIGH	MEDIUM	MEDIUM	LOW
Unlikely	MEDIUM	MEDIUM	LOW	LOW		

CORRECTIVE ACTION	
Proposed Corrective Action, OR, state the Reason(s) for any Non-Action:	
Corrective Action Approved: _____	Date: _____

Completion of Corrective Action Verified: _____	Date: _____
Is Corrective Action Effective? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Comments: _____	

Appendix E – Non-Conformance Register (NCR)

Appendix F –Baseline Beach Position (condition 7(i))

Appendix G – Sand Bypass Operations (condition 7(ii))