



Environmental Assessment

Dolans Bay Marina

Appendix 4

Engineering Assessment by Toby Fiander & Associates Pty Ltd



APPENDIX 4 - Engineering Assessment by Toby Fiander and Associates Pty Ltd

Engineering Assessment of Proposed Extension

Dolans Bay Marina, DOLANS BAY, NSW

Report No. TFA 3304/01

Prepared by: H.J. Fiander, DipTechEng, BE(Hons),
MEngSc, MIEAust, CPEng,
Toby Fiander & Associates,
Suite 2/7 Wilton Close, Castle Hill
PO Box 6200,
Baulkham Hills Business Centre
NSW 2153
tobyfiander@bigpond.com

Date: 4 September, 2010



EXECUTIVE SUMMARY

This report has been prepared to accompany a development application for an extension to the Dolans Bay Marina located at 72 Parthenia St, Dolans Bay, within the jurisdiction of the Sutherland Shire Council. The marina is positioned at the north-western end of Dolans Bay adjoining Port Hacking.

The extension of the marina development involves reconfiguring the layout of boat storage in the bay. This will include:

- Relinquishing all 22 existing swing moorings;
- Extending the existing floating pontoons to provide an additional 53 berths;

Waste Management

Using principals of the 'Waste Avoidance and Resource Recovery Act 2001' and 'NSW Waste Avoidance and Resource Recovery Strategy 2003' (Resoruce NSW), a waste management plan has been created detailing the management of:

- Sewage,
- Oil contaminated bilge,
- Solid waste, and
- Chemical waste

Sediment & Erosion Management

A majority of the water based extension will involve construction being carried out below the surface of the water. Sediment curtains and booms for containment of floating material are to be provided curing construction of the piers and the marina.

Environmental Assessment

The present quality of stormwater from the site will not be affected by the proposed development. Enhancements to be required include bunding of petrol delivery facilities and refurbishment of the flating system of containment for petrol spills.

During the preparation of this report, the development has been looked at in regards to complying with the following planning controls and guidelines:

- EPA Environmental Guidelines 1999 - Best Management Practice for Marinas and Boat Repair Facilities,
- AS 3962-2001 Guidelines for the design of marinas,
- DECC 2007 Environmental Action For Marinas, Boatsheds and Slipways.



Contents

1 OVERVIEW

- 1.1 Background
- 1.2 Proposed Development
- 1.3 Project Scope

2 SITE DESCRIPTION

- 2.1 Field Investigations
- 2.2 Location & Existing Land Use
- 2.3 Surrounding Land & Water Uses

3 WATER CYCLE MANAGEMENT

- 3.1 Existing Slipway Procedures
- 3.2 Existing Water Cycle Management
- 3.3 Proposed Water Cycle Management
- 3.4 Slipway Management
- 3.5 Stormwater Collection

4 WASTE MANAGEMENT PLAN

- 4.1 NSW Waste Avoidance and Resource Recovery Strategy 2003 (Resource NSW, 2003)
- 4.2 Waste Hierarchy
- 4.3 Sewage
- 4.4 Oil Contaminated Bilge Disposal
- 4.5 Solid Waste
- 4.6 Chemical Waste

5 SEDIMENT & EROSION MANAGEMENT

- 5.1 Mooring Facilities
- 5.2 Containment Booms

6 Environmental Assessment

- 6.1 Water Quality Impacts
- 6.2 Assessment of Compliance

7 BIBLIOGRAPHY



1 Overview

1.1 Background

This report has been prepared to accompany a development application for an extension to the Dolans Bay Marina. A location sketch is shown at **FIGURE 1**.

1.2 Proposed Development

The extension of the marina development involves reconfiguring the layout of boat storage in the bay. This will include:

- 1.1 Relinquishing all 22 existing swing moorings;
- 1.2 Extending the existing floating pontoons to provide an additional 53 berths;

The proposed layout for the development can be seen in **FIGURE 2**.

1.3 Project Scope

This report will consider the following aspects of the proposal:

- Review the existing slipway water cycle management requirements;
- Review of impacts to water quality;
- Assess water quality risks and management;
- Discuss control measures for on-site sediment and erosion management; and
- Provides an outline of the the waste management plan.



2 Site Description

2.1 Field Investigations

Inspections of the existing marina area and supporting ancillary buildings was conducted.

2.2 Location & Existing Land Use

The site known as Lot 3 in SP 72918 is located at 72 Parthenia Street, Dolans Bay in the Sutherland Shire. The water based area in question is known as L199963. The marina is positioned at the north-western end of Dolans Bay adjoining Port Hacking.

The existing marina currently provides wet-berths for 29 boats, swing mooring for another 22 boats. The marina also has fuel bowsers located on the furthest pontoon.

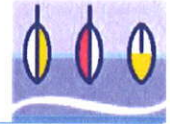
The land based facility currently occupying the land includes: a slipway, a 10 space carpark, an inclinor connecting the carpark to the water based amenities, and a building which houses an office, a workshop, a retail shop, and toilet facilities.

Access by land to Dolans Marina is gained from Parthenia St and provides both pedestrian and vehicular access.

The land on the site is classed as Zone 1 Environmental Housing (Environmentally Sensitive Land), while the water based area is classed as Zone 16 Environmental Protection (Waterways). Within Zone 16, marina development and removal of piers from swing moorings and pontoons may be removed with permission from the Department of Land and NSW Maritime.

2.3 Surrounding Land & Water Uses

The land in the vicinity of the marina complex is used principally for housing. Port Hacking, of which Dolans Bay is a part, is used principally for recreation.



3 Water Cycle Management

3.1 Existing Slipway Procedures

The existing slipway at the Dolans Bay Marina is used primarily for carrying out maintenance operations. The slipway is not used for major repairs or refits. Presently occurring maintenance that takes place on the slipway includes:

- Antifouling (using waterblast and airless spray)
- Hull Polishing (using an electric buff)
- Stainless steel polishing
- Stern gear and leg maintenance (using hand tools)
- Engine service (using hand tools)
- Antifoul removal (sailstrip)(using bead blasting).

3.2 Existing Water Cycle Management

The drainage from the slipway is settled and solid material is removed by settlement and sedimentation and the water is recycled.

3.3 Proposed Water Cycle Management

It is not proposed to change the water cycle management arrangements for slipway.

3.4 Slipway Management

To ensure that all preventative measures have been taken to minimise pollution entering Dolans Bay, the following list of recommendations have been made to help manage the regular activities occurring on the slipway:

- Signage shall be placed at visible locations onsite to encourage boat owners to use correct washing methodology.
- Slipway shall be kept clean at all times. After any scraping or sanding has taken place, paint chips and gross pollutants will need to be collected and not washed into the catch drain.
- Only appropriate tools and machinery to be used and used in a way to control dust and other potential pollutants. Chemicals such as paints, glues, and resins need to be stored in a bunded and secure storeroom and used carefully.

3.5 Wastewater Collection

Wastewater from the lower toilets, the sink from the gym kitchen, the lower kitchen area and the gym showers is collected in a pumping well with approximately 600L total volume, of which approximately 450L is used for submergence of pumps and for the control volume. Less than 200L is available for collection of sewage when the pump is inoperative. The consequences of overflow are examined in tabular form below, but raw sewage overflowing from the pump well, is not bunded and would quickly drain into Dolans Bay.

It is proposed to increase the volume of the storage in the well, to install a backup pump and a flashing red warning light in a prominent location operated by a high level alarm which also triggers the backup pump.



3.6 Stormwater Management

Existing stormwater management collects stormwater from the property and directs it principally into the pipeline and open channel whose principal flow is stormwater from Parthenia Street.

It is not proposed to modify the existing drainage system, except to install bunding in the area in which petrol is delivered to the site,.

4 Waste Management Plan

4.1 NSW Waste Avoidance and Resource Recovery Strategy 2003 (Resource NSW, 2003)

The waste management plan for the site was prepared using principals from the 'Waste Avoidance and Resource Recovery Strategy 2003' (Resource NSW, 2003). The primary strategies for waste minimisation taken from the document are:

- Prevent and avoid waste where possible;
- Increase the recovery and use of secondary materials;
- Reduce toxicity in products and materials; and
- Reduce litter and illegal dumping.

4.2 Waste Hierarchy

To comply with the Waste Avoidance and Resource Recovery Act (2001), a waste management plan for the site has been setup to follow the waste hierarchy. The waste hierarchy (sorted from most to least desirable) includes:

- Avoid unnecessary consumption of resources
- Recover resources (reuse, reprocessing, recycling and energy recovery)
- Dispose only after all other options are exhausted

4.3 Sewage

Wastewater from the lower toilets, the sink from the gym kitchen, the lower kitchen area and the gym showers is collected in a pumping well with approximately 600L total volume, of which approximately 450L is used for submergence of pumps and for the control volume. Less than 200L is available for collection of sewage when the pump is inoperative. The consequences of overflow are examined in tabular form below, but raw sewage overflowing from the pump well, is not bunded and would quickly drain into Dolans Bay. The toilets in the gym direct their contents to the Sydney Water sewer main which also receives the contents of the pumping well.

It is proposed to increase the volume of the storage in the well, to install a backup pump and a flashing red warning light in a prominent location operated by a high level alarm which also triggers the backup pump.

It is not proposed to provide a sewage pumpout facility for boats and Dolans Bay Marina.



4.4 Bilge Water Disposal

Signs at the marina in appropriate locations should be erected to inform boat owners on the correct procedure for disposing of the water. Neither the existing or proposed marinas contain a pump-out station for removing bilge from boats, so the signs should indicate local pump-out stations such as Cronulla marina, Royal Motor Yacht Club, Burraneer Bay marina, and Yowie Bay marina where it can be safely disposed of.

4.5 Solid Waste

Disposal bins on the site shall be segregated into recyclable material and organic material. Bins should be located close to the gangway and provide appropriate signage that advertises the correct bins and encourages marina users to dispose of rubbish thoughtfully after alighting from their vessel.

The existing contractors shall be enlisted to collect the refuse from the bins at regular intervals and taken to an offsite collection to be recycled or disposed of where appropriate.

4.6 Chemical Waste

Chemical waste produced onsite such as paint, resin, glue, and oil from the slipway is presently collected and stored onsite until a contractor can remove it to be disposed of appropriately. Chemical waste is not allowed to enter catch drains, sewer connections, or Dolans Bay.

Spill kits are located in the workshop area to contain any accidental spills.



5 SEDIMENT & EROSION MANAGEMENT

The implementation of control measures for sediment and erosion required during construction will require minimal attention as the work area is under existing roofing. Although all construction work will still comply with the principals and guidelines contained in the Landom 'Managing Urban Stormwater' handbook (2004).

5.1 Mooring Facilities

The berths will be constructed by driving piles into the seabed which will prevent dredging sediments and the oxidation of potential acid sulfate soils which may be present. The material of the existing piles is hardwood timber. It is proposed to use this material where available, at locations shown in **FIGURE 3**.

Pile driving will be undertaken with a noise reduced system of driving. Piles will be marked with an appropriate navigation marker and light until the marina is completed.

Metal fitting will be protected from corrosion by a system appropriate to a marine environment and inspected regularly for signs of corrosion and wear.

5.2 Containment Booms

Construction shall be performed with a containment boom and silt net surrounding the water based job site. This control measure will not only act to help reduce the impact of sedimentation during the construction but will also act to contain pollutants if any spill at the site during the construction period.



6 Environmental Assessment

6.1 Water Quality Impacts

During Normal Operation

Provided that the stormwater treatment system is monitored and maintained on a regular basis, it is not expected that there will be any significant impact to the water quality of Dolans Bay.

Events Outside of Normal Operation

There are some rare and unlikely events which could occur to a marina facility such as this and have an overall negative impact on the water quality of the bay. The following table shows a number of possible scenarios of detrimental events coupled with its prevention, containment, or management plan. The scenarios have been characterised on their likelihood of occurring based on the following scale:

- Almost Certain - Event is expected to occur
- Likely - The event will probably occur under adverse conditions
- Possible - The event could occur under adverse conditions
- Unlikely - The event might occur under very adverse conditions
- Rare - The event is conceivable but only under exceptional circumstances
- Not Credible - The event is inconceivable

Risk	Likelihood	Management Plan
Accidental fuel spill into Dolans Bay from fuel bowser.	5. Rare	A boom will be available for use in the event of an accidental spill of hydrocarbons and to prevent dispersion. An alert system shall be in place to ensure spills are dealt with quickly.
Discharge of gross pollutants, sediments, oil and grease due to failure of stormwater treatment system.	4. Unlikely	Regular monitoring of system operations, hydrocarbon capture system, maintenance of system and 'clean out' as required.
Accidental release of fuel or waste from moored boats.	4. Unlikely	A boom will be available for use in the event of an accidental spill of hydrocarbons and to prevent dispersion. An alert system shall be in place to ensure spills are dealt with quickly.