**21st April 2010**

# FLOATING MARINA FACILITY, ST GEORGE MOTOR BOAT CLUB, SANS SOUCI

# Waste Management Plan

**Submitted to:**
St George Motor Boat Club
2 Wellington Street
Sans Souci, NSW 2219

REPORT

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**Report Number:** 097623028 002 Rev2

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# 1.0 INTRODUCTION

This report presents the Waste Management Plan (WMP) for the construction of an additional berthing arm (Berthing Arm F) and the ongoing operation of the Marina facility (including slipway, boat ramp and mechanics workshop) at the St George Motor Boat Club located in Wellington Street, Sans Souci. The WMP was prepared to form part of the Development Application required for the additional works at the Marina. The work was carried out in accordance with Golders proposal (Ref. P97623166-001-P-Rev0) dated 29th September 2009 following written Client authorisation to proceed with the works (dated 7th October 2009).

The WMP forms part of the overall process for environmental management of the Site. An environmental management plan (EMP) was produced by Golder for the St George Motor Boat Club which references this WMP (097623028 001 Rev2).

## 1.1 Project Objectives

The purpose of this WMP is to identify the waste streams at both the construction and operational phases of the proposed development and identify potential opportunities for avoidance, reuse and recycling of all waste streams at each phase where appropriate. Additionally, the outcomes of this WMP reflect the most effective and practical means for disposal of any waste generated at the Marina and complies with the NSW DECC (2007) *Environmental Action for Marinas, Boatsheds and Slipways*.

## 1.2 Project Background

Prior to commencement of the construction of Berthing Arm F and the additional berths along Berthing Arm E the Club engaged Planning Ingenuity Pty Ltd to prepare an Environmental Assessment (EA) and facilitate development consent for the additional construction works. The additional Berthing Arm was proposed to accommodate additional boating berths (up to 80 in total) and to improve St George Motor Boat Club's capability as a marina facility.

Following liaison with State regulatory bodies the Director General (DG) advised that an EA would be required to accompany the development application. The Director General imposed several additional requirements to be addressed by the EA (dated 8th May 2009, ref. S00/01835) with one being the assessment of waste management. In particular the DG requirements for waste include the following:

- Identify, classify and quantify the likely waste stream of the project during construction and operation and describe what measures would be implemented to minimise, reuse, recycle and/or dispose of this waste.

## 1.3 Scope of Works

In general, the scope of services relating to the Waste Management Plan was defined in our proposal and generally consisted of the following:

- Conduct a Site visit to evaluate the existing Marina structures and associated facilities;
- Identify the materials to be used in the proposed construction of the new marina and identify any waste that may be produced;
- Evaluate the production of waste from the commercial components of the Marina facility using the available data; and
- Liaison with the Site operations staff to ensure those areas allocated for waste storage and management are sufficient.

It should be noted that the Scope of Works for this WMP does not extend to the Club Building or associated parking facilities and only relates to the Marina, associated Marina facilities and the construction of Berthing Arm F and the additional berths along Berthing Arm E. The WMP has been prepared for the construction works and ongoing operation of the Marina facilities in compliance with the NSW DECC (2007) *Environmental Action for Marinas, Boatsheds and Slipways*.

## 2.0 DESCRIPTION OF MARINA FACILITIES

The St George Motor Boat Club Marina facilities are highlighted in Figure 1 (Appendix A) and include of the following:

- Five existing berthing arms (named A to E) constituting 128 approved fixed floating berths (consisting of a combination of 8m, 10m, 12m, 15m and 18m berths) and 23 unapproved fixed floating berths located on E-arm (151 berths in total);
- Refuelling facilities comprising two 9000 L underground storage tanks (UST) storing premium unleaded petrol and diesel fuel, suspended piping extending along Berthing Arm A and three bowsers on the western tip of Berthing Arm A;
- Wastewater pump-out located at the western tip of Berthing Arm A and connected to the sewer mains;
- A race viewing tower located at the western tip of Berthing Arm A;
- A boat motor mechanics workshop located beneath the Club building and rented out to Aquatic Power;
- A dual slipway located at the southern end of the Club main building including a paint storage shed (rented out and managed by the mechanic). The slipway is used for cleaning and painting of boat hulls;
- The wastewater generated by the dual slipway is trapped and passed through a wastewater treatment plant (designed as a gross pollutant trap), which was constructed around three years ago and is located against the southern wall of the Club building. A Sydney Water Corporation Trade Waste Agreement applies to discharges from this plant;
- A boat ramp to the immediate north of the dual slipway; and
- A Marina management office located on the gangway to Berthing Arms B and C.

In addition to these existing facilities the Club propose to construct additional berths along the south side of Berthing Arm E and a sixth berthing arm (Berthing Arm F) which will be accessed from gangway off Berthing Arm E. The additional construction along Berthing Arm E and the new Berthing Arm F will hold up to 80 additional fixed floating berths 8m, 10m and 12m berths. The phases of construction are anticipated to incorporate the following:

- Engineering design of the Berthing Arm;
- Preparation and submission of the occupation certificate;
- Pre-fabrication (off-Site) of Berthing Arm components;
- Trucking in of pre-fabricated Berthing Arm segments and drilling and installation of piles;
- Installing of pre-fabricated segments (from land outwards) and installation of services along the Berthing Arm (electricity, water and fire); and
- Final handover of the Berthing Arm to the Club.

The Club anticipates that the construction of the Berthing Arm from engineering design to hand-over will be the responsibility of the construction contractor. However, the construction contractor must adhere to the requirements of this WMP when working on-Site. All works should be carried out in accordance with the *Protection of the Environment Act (1997)* in order to prevent any potential pollution events to the waterway.

# 3.0 WASTE MANAGEMENT PHASES

The WMP assesses the potential generation of wastes from both the construction phase of the additional berthing arms in addition to the ongoing operations of the marina and associated facilities.

## 3.1 Construction Phase

The construction phase of Berthing arm F will be conducted in three main stages of work.

1) Phase 1 - will involve the installation of the structural piles which will allow for attachment of the floating segments. Prior to installation, a survey will be conducted to identify the location of the piles. It is anticipated that the piles will be screwed piled thus minimising the generation of marine sediments. It is anticipated that no wastes will be produced from this phase of works.

2) Phase 2 – Delivery and installation of pre-fabricated floating segments. The segments will be transported to the Site, unloaded by a crane into placed into position and fixed. No waste is anticipated by during this phase of works.

3) Phase 3 – Final furnishings and services will be installed which will include services such as water, electricity and fire. Final furnishings will be fitted such as timber edging and signage. It is envisaged that minimal wastes will be produced during this phase of work and may include timber off-cuts from furnishings, plastic wrapping material from signage and fire service equipment. Additional capacity of waste disposal would not be expected, however a small skip bin to be located adjacent to the works area would be recommended to cater for the above mentioned.

The construction phase of the berthing arm is not expected to produce significant amounts of waste largely due to the use of materials that will be pre-fabricated off-Site and delivered to Site for direct placement. General waste is expected to be produced from the construction workers and will largely be associated with food scraps with some newspapers and drinks bottles. Only a small amount of potential recyclable material would be expected and thus measures to undertake recycling above the normal recycling facilities available for the Marina would not be recommended. If any waste materials (off-cuts, nails, saw-dust etc…) are produced during the construction phase, they should be cleaned up as a minimum at the end of each working day in the event of overnight rain washing any waste materials into the waterway.

It is recommended that the waste generated by during the construction phase be disposed into a small $3m^3$ skip bin located adjacent to the construction area. The appointed construction contractor is to be responsible for the disposal of all wastes generated during construction. The dedicated waste disposal bin should be located within the construction area thus reducing the likelihood of marina tenants depositing their waste in them.

## 3.2 Marina Operations Phase

The WMP for the operations phase incorporates not only the current waste generated from existing operations but also includes the expected increases attributed to the additional proposed berths.

### 3.2.1 Waste Streams Identified

The current waste streams attributable to general operations of the Marina were identified as:

- Waste generated from Marina tenants and Site employees including:
  - Raw sewage; and
  - Domestic waste.
- Waste oils, oil filters and discarded boat parts generated from the mechanics workshop; and
- Slipway waste including paint/boat scrapings and wash water from boat and hard stand wash down.

### 3.2.2 Waste Disposal Locations

The identified waste disposal locations of the above mentioned streams include:

- Two (2) general waste disposal bins located on the southern wall of the Motor Boat Club within the bottom car park;
- Pump-out of sewer waste directly to sewer (untreated); and
- Wastewater treatment plant for treatment and disposal of slipway wash-water to sewer (Sydney Water License 11166).

Although the location of the waste collection facilities for Marina tenants may be considered inconvenient, it is considered adequate for the following reasons. The Marina had previously located smaller 240 L bins on each Berthing arm to aid in disposal convenience for tenants. However, it was observed that when these bins reached capacity the rubbish tended to be placed next to the bins which ultimately resulted in waste being blown into the Marina waters. Therefore the current waste management system in place for Marina tenants is considered adequate for the purpose.

### 3.2.3 Waste Volumes and Capacity

The current volume of waste generated is largely dependant on seasonal factors and specific weather patterns. Generally, tenants will be more active during summer periods than winter and again if the weather conditions are favourable as opposed to windy and raining.

Domestic waste collection is currently scheduled on a weekly basis (collection by waste contractor - Veolia). At present, there are 2 bins available for Marina tenants to dispose of waste. Generally, on average, only one bin is filled per week. During winter periods or unfavourable weather conditions, the bin may only be half full, while during peak periods (summer and favourable weather conditions), both bins may be full.

It is envisaged no additional capacity will be required to accommodate any additional waste produced from the new berths. A worst case scenario would result in an extra bin may have to be utilised.

### 3.2.4 Waste Avoidance and Recycling

Although it would be desirable to have recycling facilities available for Marina tenants, the process would potentially be extremely inefficient and not necessarily achieve the environmental benefits it would set out to achieve. At the point of origin of the waste (inside the boats), there may not be the available space to provide recycling options therefore a situation may arise where some tenants will recycle while others won't. Additionally, domestic waste may end up in the recyclables waste stream which would take considerable effort by the waste contractor to remove prior to processing.

The best preferred option for waste management is waste avoidance. However this measure is difficult to implement as the Motor Boat Club has limited control over the tenants waste producing habits.

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

The WMP described herein is designed to provide the Motor Boat Club with a waste management strategy that will reduce environmental impacts in a manner that is both practical and cost effective to all stakeholders. The following are the key findings and recommendations for future waste strategy:

- Management of waste resulting from both the construction works and the ongoing operation of the marina facility following construction should be conducted in compliance with Information Sheets 5 (Hazardous Materials and Liquid Waste) and 6 (Solid Waste and Resource Recovery) of the NSW DECC (2007) *Environmental Action for Marinas, Boatsheds and Slipways* and the *Protection of the Environment Operations Act 1997*.
- A very limited volume of waste is expected to be produced during the construction phase of the new Berthing Arm. The waste that will be produced will largely be from constructions workers and would likely consist of general domestic waste. The generation of waste during the construction phase is to be

the responsibility of the construction contractor. It is recommended that a small skip bin would be adequate for the management of wastes during construction. All waste generated from the construction phase will be the responsibility of the construction contractor. The construction contractor is to maintain good house-keeping which will involve ensuring all surfaces are free of cuttings/shavings or any other materials that would have the potential to be washed into the waterway during a rainfall event;

- The generation of additional wastes as a result of the addition of extra berths is not considered to alter the current waste management practice of weekly disposal of two (2) large bins. There is enough capacity within the current set-up. However, if during peak periods the waste volumes increase to near capacity, an extra bin may have to be supplied;
- No additional production of wastes will be produced from either the mechanic or slipway facilities unless there is an increase in facility size. It is believed that the current facilities are operating at full capacities. No extra waste is likely to be produced per day/week/year of operation. Only an increase in waiting times for servicing will result for the tenants. The disposal of all wastes produced by the mechanic is the responsibility of the operators of the mechanics facility; and
- Any means of providing waste recycling services for tenants is considered to be difficult to implement and potentially will result in limited environmental benefits if the process is not managed appropriately.

# REPORT SIGNATURE PAGE

If you have any questions or comments do not hesitate to contact the undersigned. Your attention is drawn to the document "Limitations", which is included in Appendix B of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

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# APPENDIX A

## Figures

Fuel Bowsers and Sewage Pump-out on A Arm

UST Locations and Filler Points in North of the Site

Dual Slipway in South of the Site

Paints in Storage Shed

Fire Extinguisher Installed on A Arm



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| CLIENT: St George Motor Boat Club | | PROJECT: Waste Management Plan, Sans Souci | |
| DRAWN: JAH | DATE: 4.11.09 | TITLE: **Environmental Control Plan** | |
| CHECKED: | DATE: | | |
| SCALE: N.T.S | | PROJECT No: 097623028 | FIGURE No: 1 / REV No: 0 / A3 |

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# APPENDIX B

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