

## **RISK ASSESSMENT**

### **LAKE PARRAMATTA AQUATIC RECREATION**



#### **RiskChase**

A Division of J & J Collins & Associates Pty Ltd

ABN 97 066 522 245

38 Hampden Avenue, Wahroonga, N.S.W 2076

P.O.Box 994

Telephone 02 9489 6761 Fax 02 9489 7474

e-mail: [jcollins@riskchase.com.au](mailto:jcollins@riskchase.com.au)

[www.riskchase.com.au](http://www.riskchase.com.au)

## CONTENTS

EXECUTIVE SUMMARY	3
1.0 BACKGROUND	
1.1 Initial Scope	4
1.2 Background to initiative	4
1.3 Lake Parramatta Plan of Management	5
1.4 Stakeholder expectations	6
2.0 ACTIVITIES	
2.1 Initial Discussions with Council Officers	6
2.2 Council Risk Management Workshop	7
2.3 Public Meeting	7
2.4 Other activities	7
3.0 RISK MANAGEMENT REVIEW	
3.1 Overview of risk management	7
3.2 Context	9
3.3 Risks within the Aquatic Recreational Environment	10
3.4 Categories of risks	12
3.5 Risk assessment tables	13
4.0 IDENTIFIED RISKS	
4.1 Public safety	20
4.2 Water Quality	21
4.3 Risks due to activities	24
4.4 Legal risks	25
4.5 Historical/cultural heritage risks	29
4.6 User group conflicts	30
4.7 Land use risks	30
4.8 Adjacent activity issues	31
4.9 Emergency response	32
4.10 Environmental risks	33
5.0 CONCLUSIONS	
5.1 Differential risks associated with activity	35
5.2 Areas of high risk	36
5.3 Discussion on options	36
5.4 Process for decision making	36
6.0 RECOMMENDATIONS	
6.1 Strategic	37
6.2 Risk improvement issues	38

6.3	Possible improvements required for Primary Contact	39
6.4	Other improvements noted	40

Appendix 1	-	Consultation processes & personnel
Appendix 2	-	Public Liability review of Lake Parramatta Reserve
Appendix 3	-	Recent changes to public liability legislation & practices
Appendix 4	-	Water quality issues

## **EXECUTIVE SUMMARY**

Lake Parramatta is a significant recreation resource within the Parramatta area. Over the past few years it has been the subject of much public debate concerning improvements to the environment and the opportunities that these bring with regard to the reintroduction of aquatic recreational usage. This usage would include swimming and boating which is currently restricted by the signage at the Lake.

This review has been carried out in consultation with various stakeholders to determine the risks involved in the reintroduction of aquatic recreation at the lake in the near future.

The report has used a risk management approach to the complete range of risks at the lake and identified a number of risks that would need to be addressed before aquatic recreational activities of various types are reintroduced. The major conclusions reached are:

1. The water quality at present is not sufficient for the introduction of swimming or other Primary Contact Activity and no swimming should be allowed until water monitoring results indicate that the standard can be consistently met.
2. If in the future the water quality exceeds the Primary Contact Standard there appears to be no significant risk that cannot be overcome to allow swimming in the lake. A number of recommendations are made to reduce the risk to Council during swimming and other primary contact activities.
3. Water quality will presently allow secondary contact activities such as canoeing or other non-powered watercraft and recommendations are made to allow the introduction of this type of activity in a safe manner.

## **BACKGROUND**

### **1.1 Initial scope of the project**

This project was initiated by Parramatta City Council and was designed to provide an overall risk management review of Lake Parramatta from the point of view of the introduction of aquatic recreational activities.

Following the appointment of RiskChase this initial scope was further defined by discussion with the Parramatta City Council Project Team and other parties identified in Appendix 1.

### **1.2 Background to the project**

Whilst the project provides an opportunity to review a significant aquatic reserve from the point of view of risks and benefits to the community it is apparent that this project has been instigated by the 'Swim Towards 2005' campaign initiated by the Upper Parramatta River Catchment Trust. This body has been active in obtaining public support for a range of initiatives that have been aimed at improving water quality in the Upper Parramatta River Catchment area.

As part of these initiatives Lake Parramatta has been identified as the only area where the potential water quality, depth and other facilities exist to provide an aquatic recreational facility.

To publicise this opportunity and motivate the public, the slogan 'Swim Towards 2005' was coined.

Whilst the objective is possible, based on water quality aspects, the date could also be considered symbolic of the need for progress rather than a set objective. Water quality progress isn't linear and is influenced by climate and other considerations outside of control of the Trust or Council.

The proximity of this date, however, has focussed Council and other stakeholders on the possibility of swimming and other aquatic activities being allowed at the lake. It was therefore felt that the risks of the possible new activities needed to be reviewed so that Council and other stakeholders could review the costs and benefits of the proposed activities.

This review is therefore intended to meet the following criteria –

- 1.2.1 To provide a list of the risks that could impact on Council if specified activities were allowed on the lake
- 1.2.2 To review any additional controls that would need to be provided so that Council could cost these and allow for them in their budget consideration over the next few years.
- 1.2.3 To obtain input from stakeholders regarding any objectives that they may have with regard to Lake Parramatta.
- 1.2.4 To provide a decision-making framework on which decisions on the implementation of these activities could be judged.

### **1.3 Lake Parramatta Plan of Management**

Lake Parramatta is reserved for ‘public recreation’ under the Crown Lands Act 1993. A plan has been prepared according to the principles of Crown Land Management. This plan has been reviewed as part of this study to ensure that the plan is consistent with the proposed uses discussed.

The Plan of Management for Lake Parramatta covers all aspects of management of the reserve including recreational usage and, in the initial preamble, it is stated that the Department of Land and Water Conservation advocate that Crown Land be managed for the benefit of NSW as per the objective of the Crown Lands Act 1989. These objectives are listed as including:

- public use and enjoyment of appropriate Crown Land be encouraged.

The vision for Lake Parramatta includes the need to:

- Satisfy the recreational needs of the community and satisfy a range of passive and unstructured active recreation activities throughout.

Finally, the Master plan makes a number of specific recommendations that include in particular:

- enhanced water access for canoe launching.
- Children’s swimming pool area.

The Plan of Management is therefore considered to be totally consistent with the envisaged aquatic recreational activities.

## **1.4 Initial Stakeholder expectations**

During the initial stage of this project RiskChase were aware of three stakeholders that had definite views on the activities that should be put into place at the lake.

The groups were –

### **1.4.1 Upper Parramatta River Catchment Trust (UPRCT)**

The views of this body are fully publicised in their website. This organisation would like to reintroduce swimming into Lake Parramatta both as an amenity for the local area and to demonstrate that water quality in the catchment has improved significantly.

### **1.4.2 Scouts NSW**

The Scouts have used the lake for boating activities in the past but have recently ceased this activity after discussions with Council regarding the water quality in the lake. They would like to use the lake in the future for boating and water safety

### **1.4.3 Parramatta Canoe Club**

This organisation has obtained agreement in the past to use the lake for canoe polo on a regular basis.

Other stakeholders including Parramatta City Council had not formulated a view or had no public position on additional uses for Lake Parramatta.

## **2.0 ACTIVITIES**

The activities carried out in the development of the Risk Assessment included:

### **2.1 Initial discussions with Council Officers**

These discussions enabled the overall scope of the project to be defined and also allowed the organisation of the activities noted in this section.

The Project Control Group (PCG) (designated in Appendix 1) demonstrated an ability to provide close support for the project whilst taking an open stance on issues that could impact on themselves as Council Officers.

These initial discussions allowed the following to occur –

- Backgrounding on the project

- Development of a Council Risk Assessment Methodology
- Assistance with developing categories of risk to provide a comprehensive risk identification

## **2.2 Council Risk Management Workshop**

Participants in this workshop are contained in Appendix 1 and include Officers of Council and the Upper Parramatta River Catchment Trust.

The workshop was intended to provide a formal risk identification and assessment process on which the project could be based.

The workshop also agreed on the risk categories used in section 3 and discussed the rating for some of the more significant issues.

The outcome of this workshop is contained in the risk management information in section 3.

## **2.3 Public Meeting**

A public meeting was held on 3<sup>rd</sup> April to allow any significant stakeholders to be represented.

The stakeholders who attended and the issues raised are included in Appendix 1.

## **2.4 Other Activities**

RiskChase consultants interviewed members of the stakeholder groups that did not attend the public meeting.

Again these stakeholders and any comments they had are included in Appendix 1

# **3.0 RISK MANAGEMENT REVIEW**

## **3.1 Overview of risk management**

Risk Management covers many different issues. Broadly a risk can be defined by the following description contained in AS.NZS 4360: 1999

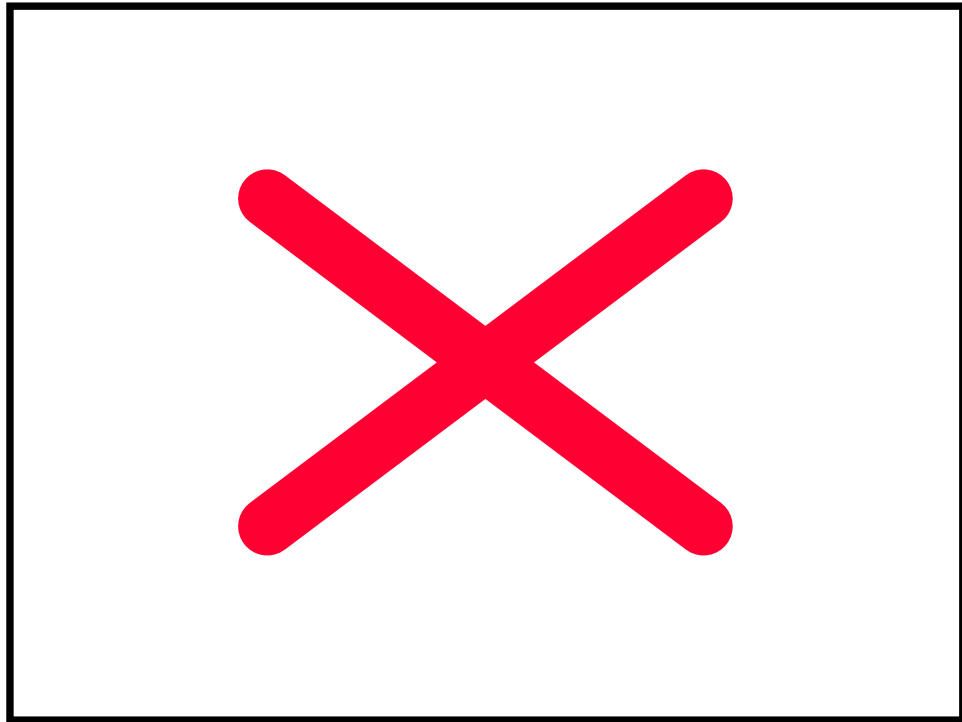
“Risk arises out of uncertainty. It is the exposure to the possibility of such things as economic or financial loss or gain, physical damage, injury or delay as a consequence of pursuing a particular course of action.

The concept of risk has two elements, the likelihood of something happening and the consequence if it happens”.



In the case of this project the course of action is the introduction of aquatic activities such as swimming and boating into Lake Parramatta and the exposures are the various impacts that this could cause in terms of financial, physical loss, injury or other losses that can be foreseen during this process.

AS/NZ 4360 also goes on to describe the risk management process in a diagrammatic form as shown below. During this project the review team followed this process to identify the context of this project, identify the risks, analyse and evaluate the risks and provide recommendations to treat the risks identified. This was done in consultation with stakeholders via the workshops and public forum. Monitoring and review is an ongoing requirement and is not part of this study.



### 3.2 Context

The context of the project is the social, physical, political and economic environment that relates to these activities. These issues will affect the impact of each risk and therefore need to be factored into the risk assessment.

In the case of this project the context was discussed during the initial meetings with Council and at the Risk Assessment Workshop. Participants have included both Council and major stakeholder representative the Upper Parramatta Catchment Trust.

The following issues were felt to impact on the context –

- Limited Council budgets for new projects
- Redevelopment occurring of existing pools
- Activities are not included at present in Regional plans
- These activities are not at present seen by Council as a priority
- Lake Parramatta is seen as a significant asset
- Historically swimming has been allowed at the Lake
- The activities would be symbolic of environmental improvements in the area
- The lake is bordered by Baulkham Hills Council which also contains the majority of the catchment area
- There is significant commitment from a major stakeholder (UPRCT)
- The lake has high visitation rates
- Balance between nature and recreational usage needs to be maintained

The risk benefit equation of the new recreational activities can be described in the following table.

Possible benefits	Possible risks
<ul style="list-style-type: none"> <li>Activities could enhance the lake as an asset.</li> <li>The proposed activities will be symbolic of improving environment.</li> <li>The activities could extend the popularity of the lake to a wider group of individuals.</li> </ul>	<ul style="list-style-type: none"> <li>Activities could impact on Council budgets for other activities.</li> <li>Existing &amp; developed pools could be more attractive for swimming.</li> <li>The proposed activities could conflict with the natural environment and present usage.</li> </ul>

The possible benefits of the proposed activities can be described as political or social in nature and Council must make a decision on these benefits. Likewise the acceptability of the risks will depend upon the possible impact of those risks and the cost of the controls that require to be put into place. This report attempts to detail the possible impact of the risks and the controls required so that Council and other stakeholders can make a decision on the risk/benefit.

### 3.3 Risks within the aquatic recreational environment

Like many activities we perform in everyday life there are significant risks involved in recreational activities. These risks are to a variety of personnel and organisations. They could include participants, neighbours, Council, owners and a variety of 3<sup>rd</sup> parties who may be involved due to their role as emergency workers or bystanders.

Recreational safety around water has been the subject of many reviews and case studies

NSW averages 87 drownings each year and this represents the sixth most common form of accidental death. Since drownings are considered largely preventable they are of major concern to the community.

(NSW Water Safety Framework: 2001-2003)

The potential introduction of swimming and boating activities into Lake Parramatta increases the risk of drowning due to the increased number of participants and their involvement with the water.

In addition to drowning, participants in swimming and boating are at increased risk due to the slippery nature of wet rocks and other aquatic issues such as being hit by boats, and poor water quality.

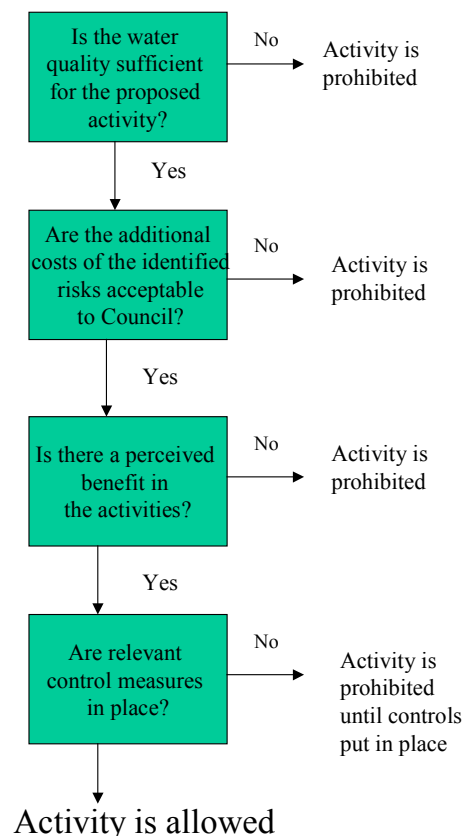
These risks are readily apparent to participants and therefore the new legislative environment noted in Appendix 3 provides some defence to transfer the risk to the participants.

In this review, however, there are many other risks, which could impact on Council, and these have been reviewed in the latter sections.

The controls and risk transfer mechanisms also introduce costs that prevent Council from improving other services.

RiskChase have therefore developed a simple model that can be used to cover the introduction of activities on a case-by-case basis in the aquatic reserve.

The following diagram can describe the model.



### **3.4 Categories of risk**

Risks in a project of this nature can be categorised in a variety of ways. In this report the risk categories have been identified both with Council Officers and major stakeholders. The categories are defined below –

#### **1) Public Safety**

Issues that may affect the safety of the public but not including water quality issues. These issues may include access, paths, traffic issues which are caused by the nature of the lake and reserve physical environment.

#### **2) Water quality**

This category encompasses the risk of illness or death due to contact with the water.

#### **3) Activity risks**

These include all issues of safety to participants involved in aquatic activities.

#### **4) Legal risks**

Risks of this type are due to non-compliance with laws or failure to identify ownership or permission issues.

#### **5) Historical risks/cultural heritage**

Damage to property or environment that could impact on the historical or cultural significance of the site.

#### **6) User Group conflicts**

This includes all aspects of dispute arising between groups of users.

#### **7) Land use risks**

These risks relate to the possibility that proposed useage would conflict with neighbouring land usage. Includes planning and zoning issues.

#### **8) Adjacent activity risks**

This includes the risk of an adjacent activity impacting on the site. This may include bush fire from adjacent reserves or other impacts due to the activities being carried out adjacent to the reserve.

## **9) Emergency Response issues**

These risks are due to a crisis or emergency event not being controlled adequately.

## **10) Environmental risks**

These relate to the risk of an environmental incident on the site.

### **3.5 Risk Assessment Tables**

When we talk about a ‘risk’ we are actually thinking about the risk of a particular event. For instance the risk of drowning is the likelihood of a person being drowned in the environment concerned. This obvious relationship between the likelihood and the severity of the event means that risks can be graded i.e. a significant event that can occur often is a greater risk than something that is of a limited impact and which occurs seldom.

To enable the impact of various risks to be compared it is necessary to develop a simple risk matrix. This allows risks of high consequence but limited likelihood to be compared to risks where the impact is low but the likelihood is reasonably frequent.

Whilst the likelihood of an event occurring is reasonably standard (Table 2) each organisation has its own interpretation of a catastrophe or a negligible impact. These impacts to the organisation can also be in a variety of areas including injuries, environmental harm, legal liability or public perception. To ensure that the severity of an event can be quickly identified a Severity Table (Table 1) was developed with the PCC. This table allowed severity scores to be assigned to a risk on the basis of the major area of impact.

It should be noted that the risk ratings relate to the risk profile of Parramatta City Council and the impact of the risks may be different for other organisations.

Tables 1 – Severity Table and Table 2 Likelihood of a defined event can be combined into a simple likelihood table allowing the identified risks to be prioritised using the risk matrix in Table 3.

The risks identified noted that the matrix does not provide evidence of acceptability of the risk or indicate the party on which the risk will impact. These issues are discussed further in Section 4.0 as part of the evaluation of those risks.

Table 1 Severity Table

Score	Description	Cost	People	Environment	Legal Liability	Public Perception
5	<b>Catastrophic</b>	>\$10 million	Multiple fatalities	Long term environmental harm	Council put into administration	Council forced into administration
4	<b>Major</b>	\$1million - \$10million	Single fatality	Major environmental harm	Officer gaoled or class action	National adverse publicity campaign
3	<b>Medium</b>	\$100,000 - \$1million	Serious injury	Measurable permanent harm	Corporate fine	Local media coverage
2	<b>Low</b>	\$10,000 - \$100,000	Non permanent injury	Transient release of pollutants	Third party claim of over \$10,000	Local user issue
1	<b>Negligible</b>	<\$10,000	Minor injury	Brief transient pollution	Third party claim of <\$10,000	Council officer impact

Table 2 Likelihood of a defined event

Score	Description	Likelihood
<b>3</b>	Frequent	High likelihood of occurrence. The consequences have occurred in the organisation in the past 10 years
<b>2</b>	Reasonably probable	Could occur in the next 10 years but no evidence at this stage of this level of occurrence in the organisation
<b>1</b>	Occasional	Has occurred in the industry
<b>0</b>	Remote	Low probability that a situation with the defined consequences will occur
<b>-1</b>	Very unlikely	Possible but unlikely to occur

**Table 3 Risk Ranking Table**

	<b>Negligible</b>	<b>Low</b>	<b>Medium</b>	<b>Major</b>	<b>Catastrophic</b>
<b>Frequent</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Reasonably probable</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Occasional</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Remote</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Very unlikely</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>



**Table 4 Interpretation of Scores**

Scores	Level of risk	Outcome
6 – 8	High	Recommendations made in this report
3 – 5	Medium	Risk should be reviewed for possible action.
0 – 2	Low	Not considered to be significant.

**Table 5 Estimated risk ratings for identified risks**

Risk Category	Scenario	Consequence	Likelihood	Rating	Controls that can reduce the impact of these risks
<b>Public Safety issues</b>					
Cliff face access	Person falls from cliff or dives into shallow water	4	2	6	Limit liability using signage
Dam wall	Person falls from dam wall	4	2	6	Restrict access to the dam wall
Water	Person drowns	4	2	6	Limit liability using signage
Access to Lake	Person injured during access or egress from lake	3	3	6	Ensure safe access to lake
Tree branches	Branch falls on people picnicking	4	1	5	Survey and maintenance of trees
Flash flooding	Upstream rain increases level of lake	4	-1	3	Limited catchment upstream
Failure of dam wall	Collapse of dam wall	5	-1	4	Dam wall monitored
Submerged object	Swimmer or diver hits submerged object	4	2	6	Limit liability using signage

<b>Risk Category</b>	<b>Scenario</b>	<b>Consequence</b>	<b>Likelihood</b>	<b>Rating</b>	<b>Controls that can reduce the impact of these risks</b>
<b>Water quality issues</b>					
Overall water quality	Illness due to overall poor water quality	3	3	6	Limit liability using signage
Transient peak due to rain	Public not notified of possibility of spike	3	3	6	Procedure to inform public after rain
Temperature inversion	Swimmer drowns due to cold water at depth	4	0	4	Signage
<b>Activity risk</b>					
Watercraft usage	Watercraft impacts with swimmer causing death	3	0	3	Activities to be separated
Dangerous watercraft introduced	Dangerous watercraft introduced	4	-1	3	Only canoes and non powered craft to be allowed
Flying fox	Flying fox fails	4	0	4	Controls on activity
<b>Legal risks</b>					
Occupational Health & Safety	Lack of compliance with Occupational Health & Safety Act 2000	3	1	4	Little increase in risk
Environmental Protection	Requirements of <i>The Protection of the Environment Operations Act 1997</i> Lack of compliance with environmental legislation during the management of the reserve	3	1	4	Council EMS

<b>Risk Category</b>	<b>Scenario</b>	<b>Consequence</b>	<b>Likelihood</b>	<b>Rating</b>	<b>Controls that can reduce the impact of these risks</b>
Abatement of Public Nuisances	Inappropriate activities or unacceptable behaviour. Covered by Section 125 Local Government Act 1993	3	2	5	No increase in risk due to proposed activities
<b>Historical risks</b>					
Damage to dam wall	Vandalism to dam wall	2	1	3	Restriction on access to wall
Aboriginal sites	Aboriginal sites defaced	2	1	3	Restrictions on access
<b>Social risks</b>					
Conflict between user groups	Conflict between recreation & nature reserve activities	3	1	4	Involvement of user groups in study
<b>Land use risks</b>					
Non conformance with zoning	Use does not conform with zoning	3	-1	2	Minor risk
Plan of management issues	Use not allowed for in the Plan of Management	2	2	4	Revise Plan of Management

<b>Risk Category</b>	<b>Scenario</b>	<b>Consequence</b>	<b>Likelihood</b>	<b>Rating</b>	<b>Controls that can reduce the impact of these risks</b>
<b>Adjacent activity risks</b>					
Bush fire risk	Fire encroaches on reserve and traps persons	4	-1	3	External responsibility
Spillage from roadway	Major spillage enters reserve causing injury to public	4	-1	3	External responsibility
Chemical fire on adjacent road	Major chemical fire traps persons in reserve	4	-1	3	External responsibility
<b>Emergency response issues</b>					
Evacuation of reserve	Failure to evacuate reserve in event of incident	4	0	4	Open space with multiple exits
Drowning or water incident	Failure to manage incident	4	1	5	Procedure for incident mgmt required
Medical emergencies	Failure to manage incident	4	0	4	As above
<b>Environmental issues</b>					
Loss of fauna and flora	Increase in usage puts pressure on Flora & Fauna	3	0	3	Reserve management issue
Noise on neighbours	Complaints due to increased noise level	3	2	5	Reviewed in report
Car parking issues	Complaints due to cars parking in residential areas	3	2	5	Reviewed in report
UV exposure	Lack of shade causes increases in skin cancer	3	1	4	Reviewed in report
Weather impacts	Various impacts of weather	3	1	4	Natural risk

## **4 MAJOR RISKS**

### **4.1 Public Safety**

#### **4.1.1 Present Risk Profile**

The present risk profile of the reserve is addressed in Appendix 2. As indicated the Lake Parramatta reserve has a number of risks to the public associated with its existing use as a nature reserve.

These have been evaluated and with the exception of a small number of recommendations the risks are not significant and consistent with current usage standards within Councils. The risks to Council will appear to be reduced by recent changes to public liability legislation (Appendix 3).

#### **4.1.2 Changes in risk due to proposed activity**

The introduction of small non-powered watercraft and swimming to the lake will introduce a number of new risks for Council. Fortunately there have been recent changes to legislation that will allow Council to more effectively transfer the risk to people or organisations that participate in these activities. Whilst the overall risk of injuries is therefore raised, the impact on Council will be limited by the proposed legislative changes and if the specific recommendations made in this section and others are implemented there will only be a small additional risk to public liability due to the additional usage of the lake. This is not considered to be significant in the context of current usage.

#### **4.1.3 Discussion**

In the context of this report, public liability risks at the reserve are those risks due to the physical environment, access and egress.

Other risks that would be part of this heading are reviewed separately.

#### **4.1.4 Specific Recommendations**

The following recommendations are made

- 4.1.4.1 A regular review of the tree branches overhanging picnic areas and walking paths should be made to

ensure that dead branches do not pose a hazard to users of the reserve.

4.1.4.2 Signs should be posted advising visitors to use the walking tracks exclusively for accessing the reserve and recreation.

## **4.2 Water Quality**

### **4.2.1 Present risk profile**

This issue is the critical element in allowing bathing, fishing and boating on the lake. The issue has been addressed in the Streamly Clean Project Report in 1996 and subsequently in the Lake Parramatta Water Quality Management Plan in July 1998. Other monitoring and reports have also been completed.

The historical status of the lake water quality against the guideline standards is described in Appendix 4 and is illustrated by the following –

- The water quality in Lake Parramatta does not consistently meet the standard for Primary Contact e.g. swimming although generally it meets the requirements for Secondary Contact activities that include boating.
- The variations in water quality indicate that there are impacts due to seasonal and weather variations.
- Recent monitoring, which has included taking samples from various depths; indicate that the top layers of the lake are significantly higher in quality than areas close to the sediment.
- Although the objective of the UPRCT is to achieve swimming in Lake Parramatta by 2005 there must be some doubt that the Primary Contact standards will be achieved by that time.

At present Council has erected signage prohibiting swimming in the lake and on the basis of the new public liability legislation, this will provide basic protection for Council in the event that someone contracts a disease after swimming in the lake.

With regard to boating, Council has no specific signage at the lake and it was indicated that although boating was not encouraged it was not prohibited by any local ordinance. In particular the Council has previously allowed canoe polo to be played at the lake following representation from the club.

This aquatic activity consists of vigorous canoeing and passing a ball between members of the team. There are often collisions and capsizes and participants use a technique of 'rolling' the canoe to right themselves without having to leave the canoe.

Although canoe polo is a boating activity in practice, participants have significant risk of water ingestion and in the opinion of the authors of this report the relevant water standard should be for Primary Contact.

This acceptance of canoe polo as an activity at the lake gives rise to a small level of existing risk. The reduction in risk is considered to be due to –

- Controlled nature of the activity
- Short duration of exposure
- Lack of history of illness

The risks however could be further reduced by –

- Agreeing standards for access to the lake eg. Rain or flood conditions may involve a significant reduction in water quality
- Obtaining written dispensation from the risks due to water quality from both the Club and the individuals
- Posting notices prohibiting unauthorised boating or other water contact activities

At present fishing in the lake is not specifically prohibited and there is evidence that some fishing occurs although this will no doubt be limited due to the 'signage' in the lake area.

There is no specific water quality standard for recreational fishing and as one stakeholder observed 'if the fish can survive it is clean enough for fishing'. Since fish will almost always be cooked any faecal contamination will generally be destroyed or reduced and any standards noted in the literature relate primarily to shellfish collection.

Despite this lack of a clear standard it is not likely that Council will overtly allow fishing that allows the catch to be eaten if the water quality does not allow Primary Contact.

One method to reduce this risk is to allow only 'catch and release' fishing in the lake as carried out by Clubs.

#### **4.2.2 Changes in risk due to proposed activity**

If activities involving Primary Contact do not occur until water quality consistently meets the standards noted in Appendix 4 there will be no additional risk due to water quality. In practice, if and when the lake is found to meet the standards for Primary Contact activities the present risk relating to the Canoe Polo Club will be removed.

#### **4.2.3 Discussion**

The risks due to poor water quality in the lake have been discussed in various comprehensive reports.

The Upper Parramatta River Catchment Trust (UPRCT) has worked with local communities to improve the quality of the water but it is arguably still somewhat from achieving consistently the normally accepted standard for Primary Contact eg swimming.

Despite the objective of the UPRCT to achieve this by 2005 there is significant progress still to be made particularly due to the increase in pollution at depths in the lake.

There are obviously significant risks both to the public and Council in allowing swimming, boating, fishing and other Primary Contact activities before acceptable standards have been met and, therefore, there is an assumption made in this report that no decision on allowing these activities will be made until the international standards are achieved. This achievement will be verified by a professional organisation.

When this standard is achieved it may also be necessary to set restrictions after periods of heavy rain similar to those restrictions which exist for Coastal waterways or beaches.

#### **4.2.4 Specific recommendations**

The following recommendations are made relating to existing usage and the proposed usage for canoe polo as this is the only Primary Contact activity envisaged until water quality improves.

4.2.4.1 Negotiations should be entered into with the Parramatta Canoe Club to obtain a written agreement regarding usage of the lake; restrictions on access after events that could increase pollution eg rain.



- 4.2.4.2 Both the Club and individual participants should provide written indemnification against illness due to water ingestion.
- 4.2.4.3 No other Primary Contact activities are allowed until water quality issues meet the standards discussed in Appendix 4.
- 4.2.4.4 Other groups requesting similar activities should be assessed on a case by case basis.
- 4.2.4.5 Fishing should only be allowed at the lake on a catch and release basis until water quality has improved.

### **4.3 Risks due to activities**

#### **4.3.1 Present risk profile**

Lake Parramatta is presently used for land based recreation activities. These include picnics, bush walks and it is also a venue for community fetes and there is a small training room for Council or Community groups.

None of these activities appear to conflict with each other.

As indicated in section 4.2.1 there is also canoe polo that takes place for a short period of time each week. This activity is again unlikely to conflict with the present uses of the lake environment.

The risk of conflict between the present activities is therefore considered low.

#### **4.3.2 Changes in risk due to proposed activities**

The proposed activities will introduce some increased level of risk unless they are managed effectively.

The proposal is to introduce both swimming and non-powered boating to the lake in the future. Since there is no proposal to introduce powered boats, except for maintenance operations there is a reduced risk of injury of swimmers due to the boat activities. However unless controls are put into place there is still a significant risk of injury to the public in the following areas –

- Contact between non powered craft and swimmer
- Swimmer being hit by an oar
- Injuries during the launching of boats

The injuries during launching of the boat are increased significantly at present since there is no launching ramp and the weir close to the car park area restricts the access into shallow water.

#### **4.3.3 Discussion**

Largely the public safety issues noted in 4.1 define the present risk profile.

The present activities are benign and do not impact on other users.

With the proposed changes to the usage of the lake both swimming and boating will be introduced which if allowed to be uncontrolled will impact on each other.

It is therefore recommended that the two activities be segregated and facilities provided to allow easy access to each other.

#### **4.2.4 Specific recommendations**

The following recommendations are made relating to existing usage and planned usage.

4.2.4.1 The introduction of swimming in Lake Parramatta will require the implementation of an effective safety system on the lines of the Red, Yellow, Green system demonstrated in the US. During holiday times the use of lifeguards may be required but it is expected that these will be voluntary based on the Surf Lifesaving model and therefore be at a limited cost to Council.

4.2.4.2 Access ways for swimmers into the water must be constructed. This will require ladder or beach type access point for the physically infirm.

4.2.4.3 Boating areas must be segregated from the swimming area via a buoyed rope or equivalent or by restricted access times.

4.2.4.4 Boat launch access must be improved to enable the launching of non-powered boats or canoes.

### **4.4 Legal risks**

#### **4.4.1 Present Risk Profile**

There are ranges of legal risks that arise from the Council's management of the park. For the purpose of the report the major legal risks are considered to arise from:

The public liability risk arising from the use of a passive recreational activity;

The public liability risks which arise from aquatic based recreational activities;

The risks that emerge to the council and the council workforce with regard to undertaking the range of maintenance tasks normally required to ensure the safe use of the facility and obligation under the Occupational Health and Safety Act 2000;

The risks of environmental pollution as defined by the Protection of the Environment Operations Act (POEO) Act 1997;

Abatement of public nuisances within the park area under the Local Government Act 1993.

### **Public Liability Issues**

These have been considered above.

### **Occupational Health and Safety Act (OHS) 2000**

The major consideration for council is the operation of the OHS Act 2000 which requires council to ensure that not only is there a safe workplace for employees but also that other persons at the workplace are not placed at risk. While council staff, or contractors engaged on behalf of the council are undertaking employment related tasks in the park the aquatic reserve then the immediate area is considered to be a workplace and attracts the provisions of the OHS Act 2000.

In addition to the general duties of care the OHS Act 2000, at Section 8(2) makes it quite clear that the risk assessment must not be restricted solely to employees but include all other persons at the workplace. Under normal circumstances, it would be anticipated that members of the public could be using the park or the aquatic reserve during the time council employees or contractors may be undertaking employment related tasks. Therefore, to ensure compliance with the OHS Act 2000 council must ensure that consideration is given to the presence of members of the public.

### **Use of the plant in a public area**

The OHS Act 2000 places a specific obligation on the use of plant in a public area, (refer to Section 135 for details). Plant is defined in very broad terms and includes any machinery, equipment or appliances; (refer to Section 3 for details). It would be anticipated that from time to time council, or contractors, would require the use of plant in the course of their employment related activities. To ensure compliance with the OHS Act 2000 it will be necessary to ensure that the risks to public safety are taken into consideration when risk assessments are being undertaken.

#### **4.4.2 Changes in risk due to the proposed activity**

Council will not face any new risks with regard to the statutory obligations as discussed below.

#### **4.4.3 Discussion**

##### **Occupational Health & Safety Risks**

As a major council with a large workforce Parramatta City Council is familiar with the risks arising from the range of operational tasks associated with the maintenance of a council reserve. There may be a need to review the council's procedures to ensure they are adequate to cover any maintenance tasks related to the lake, in particular, maintenance on the dam wall.

Many of the potential risks to public safety can be managed through attention to scheduling of tasks and the use of appropriate barriers and signage.

##### **Environmental Legal Risks**

Given the location of the reserve and the activities undertaken within the boundaries there would appear to be no increase in council's risk profile under the POEO Act 1997. As a public authority the regulatory authority, with regard to Council's activities in the park and aquatic reserve, is the Environmental Protection Agency (EPA). The potential for council to commit an environmental offence with regard to the aquatic reserve is rated as low. The potential environmental harm is also rated as low. Given the nature of activities undertaken by council it is unlikely to present risk to the environment. The major environmental risks, which directly impact on the water quality,

are in the management of the catchment area. At present council's responsibility for the catchment area is limited.

Environmental risks arising from users of the aquatic reserve Council is the appropriate regulatory authority (ARA) for protecting the environment of the reserve from the public. As an ARA council has the power to regulate the activities of persons that may pose a threat to the environment of the aquatic reserve. The exercise of the POEO Act 1997 regulatory powers will be familiar to council officers and therefore will not create a new legal risk to council. It would be anticipated that given the potential volume of visitors to the reserve there will be a range of environmental protection issues with which council will be familiar. These issues will include arrangements for collection and disposal of litter in accordance with any displayed notices.

As part of its ongoing program of environmental protection council will be required to give consideration to a range of measures. However, council will face these environmental protection issues in other public areas and should present no new risks to council.

#### **Abatement of Public Nuisances**

It is to be anticipated that from time to time unacceptable activities or inappropriate activities take place on public land. The public nuisance may range from a minor irritation to a major inconvenience, which materially affects the comfort and convenience of persons seeking to use the reserve in accordance with the activities permitted by the Plan of Management. As with any public reserve there is always the potential for public nuisance. However, given that Lake Parramatta is a water attraction it is to be anticipated that there is a slightly increased risk of a public nuisance. There are a range of water based activities and behaviours which could give rise to potential public nuisance. From children energetically chasing ducks to adults seeking to skim stones over the surface of the water has the potential to both attract more persons and to provide more opportunities for inappropriate behaviour. Council will be familiar from its other parks and reserves with these issues and therefore it does not present council with a new category of risks.

#### **4.4.4 Specific Recommendations**

The council should identify and review the specific maintenance tasks required for the Lake Parramatta Reserve in particular

4.4.4.1 Council should review its OHS Risk Management Manual to ensure there are in place safe work method statements for the identified tasks;

4.4.4.2 If there are tasks specific to Lake Parramatta for which there are no safe work method statements the tasks should be identified and listed. In particular the issue of spraying of weeds should be reviewed.

4.4.4.3 Council should in consultation with employees develop safe work method statements.

4.4.4.4 Council is to ensure employees are given information, instruction and training on the safe work method statements for Lake Parramatta Reserve specific tasks.

## **4.5 Historical/cultural heritage risks**

### **4.5.1 Existing risk profile**

There remains evidence today of Aboriginal occupation within the boundaries of Lake Parramatta Reserve in the form of remnant shelters, hand-stencils, flaking scars and deposits. It's possible that other sites were inundated with the construction of the dam in the 1800's.

The dam was finished in 1856 under the supervision of "Percy" Simpson for a total cost of \$17,000 pounds. The sandstone used for the dam was quarried locally.

The risk to both the European and Aboriginal artefacts appears to be low and would be due to vandalism, graffiti or erosion.

There have been no examples of significant vandalism of this type and therefore the existing risk profile is considered to be low.

### **4.5.2 Changes in risk due to proposed activity**

There would appear to be no significant changes in the level of risk due to the introduction of swimming and boating.

Access from boats would mean that some more remote areas of the reserve are opened up to visitation. This could result in increased vandalism but the likelihood of this is considered to be low and could be reduced by the provision of access ways and paths to allow the boats to load and unload safely.

### **4.5.3 Specific Recommendations**

No specific recommendations are made to reduce risks in this category.

#### **4.6 User group conflicts**

##### **4.6.1 Existing risk profile**

This category is intended to review the risk of conflict between the various types of usage of the lake environment.

In particular the use of the lake for recreational activities can detract from the nature activity usage of the reserve.

Whilst there was no evidence of conflict at the Public Meeting these issues can occur at anytime in the future and would be expected to be more apparent closer to the implementation date. Since the existing usage of the park is purely nature activities there is little risk of conflict at the present time.

##### **4.6.2 Changes in risk due to proposed activity**

The introduction of recreational activities will increase the risk of potential conflict. The probability is however considered to be low due to the fact that swimming was allowed and as part of the 2005 plan, its introduction has been well publicised to all groups.

##### **4.6.3 Discussion**

The risk of conflict can be reduced by consultation and this risk management plan is intended to partially fulfil this.

##### **4.6.4 Specific Recommendations**

No specific recommendations are made to reduce risks in this category.

#### **4.7 Land use risks**

##### **4.7.1 Existing risk profile**

The Department of Land & Water Conservation owns Lake Parramatta. Parramatta City Council is the operator of the reserve. This is allowed for under the Crown Lands Act 1989 and associated regulations. The Council is appointed as the Reserve Trust Manager. Existing zoning for the lake is evenly split between a nature reserve and recreational use. As usual the water body itself is not zoned.

The Lake is subject to the Lake Parramatta Plan of Management and this plan already includes strategies for swimming & boating.

From this information it is apparent that the zoning for Lake Parramatta allows existing and proposed use.

#### **4.7.2 Changes in risk due to proposed activity**

There is no significant increase in risk in this category.

#### **4.7.3 Discussion**

There is no significant increase in risk in this category.

#### **4.7.4 Specific Recommendations**

No specific recommendations are made to reduce risks in this category.

### **4.8 Adjacent activities issues**

#### **4.8.1 Present risk profile**

The catchment surrounding Lake Parramatta covers 783 hectares and 5000 properties. This includes 60% residential, 10% commercial, 10% infrastructure and 20% open space and bushland. (Information courtesy of the UPRCT website)

Due to the nature of the reserve, the lake and facilities are in a basin and few residential properties are directly seen from the reserve water area. There is only a limited visual impact from commercial or infrastructure facilities.

The only substantial risk that has been identified from the adjacent activities relate to the roadway which crosses the access road to the reserve car park and the possibility of a bushfire occurring in adjacent reserve.

In the event of a major chemical/fire incident on roadway, the effect would be to prevent access or egress to the site. There is a remote risk of multiple fatalities if the incident occurred during the movement of people below the road but the overall risk is low.

Bush Fire. A bush fire transferring into the reserve or starting in the reserve is a possibility however emergency procedures referred to in Section 4.9 would ensure that the risk of entrapment was low and consequently the risk is low.



#### **4.8.2 Changes in risk due to the proposed activities**

The proposed activities do not add in any way to the likelihood of these occurrences but may add in a very small manner to the consequences due to the larger numbers of people that would be attracted to the reserve.

The risk increase however is considered insignificant.

#### **4.8.3 Discussion**

Neither of the major risk scenarios gives rise to a high risk and will be dealt with by emergency services.

#### **4.8.4 Specific Recommendations**

No specific recommendations are made to reduce risks in this category.

### **4.9 Emergency response**

#### **4.9.1 Present Risk Profile**

This risk arises from the inability of emergency services to manage emergencies effectively due either to lack of communication, access or resources.

The risk is dependent upon the types of emergency that are envisaged at the reserve. At present the common emergency scenarios would be –

- Drowning
- Injury due to fall etc
- Car accident
- Catastrophic event from adjacent activity

There are no lifebuoys or water safety equipment on site since water access is prohibited.

The reserve is in an urban area and emergency services would be expected to attend within the normal urban timescales provided that communication with the services can be initiated from the site.

At present there is no publicly accessible telephone but it is unlikely that there wouldn't be any mobile phones on the site during periods when swimming or boating is allowed. Access to residential housing is in any case only a short distance from the car park area.

The risk of death or injury due to the lack of emergency facilities is therefore considered low.

#### **4.9.2 Changes in risk due to the proposed activities**

The risk of drowning, if swimming was allowed, would be expected to increase. This has been addressed in Section 4.1

There is therefore a small increase in the risks associated with emergency response on the site.

#### **4.9.3 Discussion**

If swimming is allowed on the site it is considered advisable for emergency facilities to be provided. These will be permanent facilities and may be added to if a life saving club provides additional services during the peak periods.

#### **4.9.4 Specific Recommendations**

The following specific recommendations are made:

4.9.4.1 Life rings or other form of life saving facility to allow a person to be pulled from the water should be provided at the car park area if swimming is allowed.

4.9.4.2 If significant swimming is likely on a summer weekend then the use of a lifesaver should be reviewed.

### **4.10 Environmental risks**

#### **4.10.1 Present risk profile**

The risks in this section relate to the risks to the environment from the activities carried out in the reserve and the risks due to environmental influences or people taking part in those activities.

Risks of this nature could be –

- Impact on flora and fauna
- Contamination of lake or surrounds
- Noise impact on neighbours
- Exposure of participants to weather conditions

These are further developed in the risk-rating table in section 3.4.

Generally the risks due to these issues are considered to be low at the present time. Some issues are covered in the Public Safety Report.

#### **4.10.2 Changes in risk due to the proposed activity**

The proposed activities are intended to introduce significantly more people into the reserve particularly on a summer weekend. The additional visitation will have an impact on the risks however there are 3 issues that need to be reviewed in more detail. These are –

- Noise and parking impacts on neighbours. The old photograph of the lake shows many hundreds of people taking advantage of the water. If this number took advantage of swimming at the Lake then the noise level at the reserve boundary would be raised significantly above background. The impact of this will be reduced by the fact that background levels at the closest housing are already impacted upon by the traffic and residential dwellings are generally below the line of sight from the lake area that will be used.
- Car Parking. In addition that number of participants will mean 100's of vehicles and the car park is severely limited in capacity. This will require on street parking and impact to some extent on the residential housing close to the entrance to the reserve. The impact of these issues on neighbouring properties needs to be reviewed.
- Exposure of participants to UV. One of the significant risks to participants in swimming and body pursuits is the risk of skin cancer. This has led to campaigns aimed at personal protection but also to a push to ensure that all recreational locations have sufficient shade. The reserve has a significant number of shade trees but a review of shade issues may require additional shade facilities if significant numbers of people participate in the activities.

#### **4.10.3 Discussion**

Both of these risks could be rated as moderate to high particularly the parking issue. There seems to be no way of restricting the numbers that could use the reserve unless a cost is put on entry and this will require discussion with the DLWC. Parking could be restricted on weekends or holidays but this will also impact on the neighbouring residential properties.

These risks of course will only eventuate if the swimming in particular is popular. Under more conservative numbers there will be adequate parking and shade areas.

#### **4.10.4 Specific Recommendations**

4.10.4.1 A plan should be developed with local residents to deal with excess parking around the reserve if swimming is allowed and numbers become excessive.

4.10.4.2 Shade structures for swimmers should be considered based on demand for the facility.

## **5.0 CONCLUSIONS**

### **5.1 Risks due to the introduction of aquatic activities**

There are a number of risks introduced by allowing the proposed activities. These can be put into the following categories:

#### **5.1.1 Risks to the public participating in the activity**

These include sickness and ill health due to generally poor water quality or due to the variation in the water quality associated with weather and other cyclical issues.

Other risks introduced by swimming and boating are the increased risk of drowning and injuries caused by access issues including access to the lake and dam wall.

It is believed that due to recent changes in the public liability area. Most of these risks can be transferred to people participating in the activity by relatively cheap controls such as signage.

Preventing access to the dam wall will require some capital expenditure as well as improving the access facilities to the lake for swimming and boating.

#### **5.1.2 Impacts due to ‘success’ factors**

The second group of increased risks relate to circumstances that may occur if the swimming and boating activities bring significant quantities of people to the reserve. These issues are less easily mitigated using legal disclaimers however they may not be significant if swimming and boating is not popular. In this respect it is significant to note that Council is in the process of improving other leisure venues. Popularity in the 1930’s does not mean that it will be as popular in 2010.

## **5.2 Areas of high risk**

Table 4 in section 3.4 indicates that without effective control or risk transfer mechanisms there are a number of high-risk areas that could impact on Council. These areas have been addressed in the relevant sections above and in all cases effective control or risk transfer mechanisms can be implemented to provide reasonable protection for Council.

## **5.3 Discussion of options**

The overall risk assessment indicates that Council can manage the risks associated with the introduction of swimming and watercraft activity provided that the water quality issues are overcome in both cases.

The majority of the high risks identified are risks that are due to the inherently risky nature of water-based activities or in some cases natural risks associated with the Reserve's physical features eg cliff faces.

Recent changes to public liability legislation in NSW appear to have reduced the potential costs of incidents in these areas to Council although it should still be noted that this legislation hasn't reduced the risk but this risk is now more likely to be carried by participants rather than Council or other controlling organisations.

The lack of any significant risk that will 'stop' the activities is welcome but it also does not guarantee that the proposed activities should be introduced.

Each of the activities introduces some additional risks and the controls and risk transfer mechanisms also introduce costs that prevent Council from improving other services.

The final decision must therefore be based on a cost benefit decision by Council however this review indicates that the potential costs to Council of allowing initially Secondary Contact activities would be small in terms of the overall cost of the maintenance of the Lake and environs.

## **5.4 Process for decision making**

In the case of the Lake there are 2 activities that could be introduced –

- Swimming or primary contact aquatic activities
- Watercraft which give rise to secondary contact exposure

On the basis of the current information on water quality the lake will only support Secondary Contact activities and even then there will be periods when these will need to be restricted.

**At this stage swimming or other Primary Contact sports cannot be recommended for introduction into the reserve since the water quality is not sufficient for these activities.**

**The water quality however may be sufficient for Secondary Contact sports and Council should review with the UPRCT the recent and historical finding to determine if the water quality can consistently achieve this standard.**

With regard to the additional risks of watercraft these risks have been previously reviewed and the additional costs of improvement work are considered to be small.

**If water quality issues can be clarified for Secondary Contact, it is likely that the costs for controls will be sufficiently low for watercraft activities to be allowed.**

## **6.0 RECOMMENDATIONS**

The following recommendations are made in this report –

### **6.1 Strategic Issues**

From the historical data it would appear unlikely that the standard for Primary Contact activities will be met at the lake in the near future without substantial water quality improvements.

The current ‘Swim Towards 2005’ campaign is well intentioned and provided a focus for change however due to the proximity of the target year it is in danger of raising expectations that cannot be met.

Although this report found no significant risk due to the introduction of recreational activities into the lake that could not be overcome it is apparent that water quality will not be met in the short/medium term.

This being the case the introduction of Primary Contact activities such as swimming and fishing for consumption is not recommended in the short term until the water quality substantially meets the Primary Contact Standards. Secondary Contact activities such as small non-powered watercraft could be allowed immediately without significant risk or cost.

The following recommendations of a strategic nature are therefore made to implement this policy.

- 6.1.1 Parramatta City Council Officers should negotiate with the UPRCT to review the objectives and 'Swim Towards 2005' slogan. It is recommended that this slogan be modified so that it broadens the activities to be pursued in Lake Parramatta from swimming to a broader view of water activities.
- 6.1.2 Council should discuss access of small non-powered watercraft with the NSW State Canoeing Federation with a view to involving them in the process of introducing these activities.

It would seem likely that this body could provide assistance with access and initial supervision in return for some form of dedicated access for competitive events.

This is seen as an effective method of introducing small non-powered watercraft whilst maintaining some additional level of surveillance and support.

## **6.2 Possible improvements to allow Secondary Contact and Canoe polo to continue**

There will be a cost to the introduction of small non-powered watercraft to the reserve if the Secondary Contact standards for water quality are maintained.

It is recommended that –

- 6.2.1 Discussions commence with the UPRCT to review water quality standards and ascertain both the profile of the results and events that could cause transient peaks.
- 6.2.2 If these discussions indicate that the water quality is sufficient for Secondary Contact the following actions should be taken:
  - 6.2.2.1 A system to control access to the water should be introduced and this may be in the form of a red, yellow or green sign at the entrance. The sign will be changed according to the weather or other criteria identified in the discussions with UPRCT as relevant to the water quality.
  - 6.2.2.2 To assist participants make an informal decision on water quality, ongoing and historical data should be posted on the UPRCT or Council website and referenced in signage at the reserve entrance.
  - 6.2.2.3 Signage at the lake should be modified to clarify access and prohibit Primary Contact activities. It should also inform participants of the 'traffic light' system to

control secondary activity. The sign should permit small non-powered watercraft.

- 6.2.2.4 An appropriate access pathway/ramp should be provided from the car park to the lake to allow small non-powered watercraft to be launched.
- 6.2.2.5 Access to the dam wall should be prevented from the lake using a floating boom or other method and signs should be fixed to the dam wall prohibiting access from the lakeside as well as the sides of the dam.
- 6.2.2.6 Negotiations should be entered into with the Parramatta Canoe Club to obtain a written agreement regarding usage of the lake; restrictions on access after events that could increase pollution eg rain.
- 6.2.2.7 Both the Club and individual participants should provide written indemnification against illness due to water ingestion.
- 6.2.2.8 No other Primary Contact activities are allowed until water quality issues meet the standards discussed in Appendix 4.
- 6.2.2.9 Other groups requesting similar activities should be assessed on a case by case basis.
- 6.2.2.10 Fishing should only be allowed at the lake on a catch and release basis until water quality has improved.

### **6.3 Possible improvements required for Primary Contact**

- 6.3.1 A regular review of the tree branches overhanging picnic areas and walking paths should be made to ensure that dead branches do not pose a hazard to users of the reserve.
- 6.3.2 The introduction of swimming in Lake Parramatta will require the implementation of an effective safety system on the lines of the Red, Yellow, Green system demonstrated in the US. During holiday times the use of lifeguards may be required but it is expected that these will be voluntary based on the Surf Lifesaving model and therefore be at a limited cost to Council.
- 6.3.3 Access ways for swimmers into the water must be constructed. This will require ladder or beach type access point for the physically infirm.
- 6.3.4 Boating areas must be segregated from the swimming area via a buoyed rope or equivalent or by restricted access times.



Boat launch access must be improved to enable the launching of non-powered boats or canoes.

#### **6.4 Other improvements noted**

- 6.4.1 Council should review its OHS Risk Management Manual to ensure there are in place safe work method statements for the identified tasks;
- 6.4.2 If there are tasks specific to Lake Parramatta for which there are no safe work method statements the tasks should be identified and listed. In particular the issue of spraying of weeds should be reviewed.
- 6.4.3 Council should in consultation with employees develop safe work method statements.
- 6.4.4 Council is to ensure employees are given information, instruction and training on the safe work method statements for Lake Parramatta Reserve specific tasks.
- 6.4.5 Life rings or other form of life saving facility to allow a person to be pulled from the water should be provided at the car park area if swimming is allowed.
- 6.4.6 If significant swimming is likely on a summer weekend the use of a lifesaver should be reviewed.
- 6.4.7 A plan should be developed with local residents to deal with excess parking around the reserve if swimming is allowed and numbers become excessive.
- 6.4.8 Shade structures for swimmers should be considered based on demand for the facility.

## Appendix 1

### Consultation Processes & personnel

## STAKEHOLDER REVIEW

Stakeholder	Description of involvement	Comments on discussions
Baulkham Hills Shire Council	Neighbouring Council	Baulkham Hills Shire Council do not feel that they can add significantly to this project
Department of Land & Water Conservation (Shane Connolly)	Owner of land	DLWC will need to be informed if and when changes to the activities at the reserve are agreed. It is anticipated that these changes will not conflict with land usage requirements and therefore the DLWC do not feel that they need to be involved in this exercise at this stage.
Upper Parramatta River Trust Catchment (Peter Morison)	Rateable Trust responsible for catchment issues	The UPRCT are part of the project group and were represented at the Risk Assessment workshop. Their views have been referred to in the report.
Scouts Association (Bruce Roberts)	The Scouts Association used to use the lake for canoeing up to 12 months prior to this report Bruce attended the public forum.	Bruce indicated that they would like to use the lake for canoeing but that they needed to be assured of the quality of the water. Generally the activities carried out by the Scouts would constitute secondary contact. The organisation stopped using the venue because of concerns about the water quality.
New South Wales Canoeing (Trevor Williamson)	Trevor represents the State Canoeing body and attended the public forum	Trevor indicated that the lake had a definite potential as a training venue. The organisation has a fully insured membership and was also insisting on individuals signing a waiver. Trevor indicated that if canoeing was allowed the venue could be used for competitions. The organisation is presently reviewing risk assessments for each discipline and can differentiate between primary and secondary contact activities
Parramatta Canoe Club (Jeff Cottrell)	Jeff represented the local canoe club that uses the venue for canoe polo. He attended the public forum.	Jeff stated that he was concerned about the water quality particularly for canoe polo, which he felt, was a primary contact sport. He also indicated that access to the lake was difficult due to slippery rocks. Jeff would like to continue using the facility but would require assurances regarding water quality issues.

## Appendix 2

### Review of public safety issues in existing area

REPORT TO PARRAMATTA CITY COUNCIL  
ON  
PUBLIC SAFETY RISKS AT  
LAKE PARRAMATTA

APRIL 2003



---

**Ian Shepherd & Associates Pty  
Limited**

P.O.Box 71 Penrith NSW 2751 Tel: 02 4751 1765 Fax 02 4751 1766

Email: [shepherd@acay.com.au](mailto:shepherd@acay.com.au) ACN094976995

The consideration of public safety within Parramatta Lake was primarily concerned with risks associated with water use. The scope of consideration was widened to include all aspects of public safety within the recreational area.

The methodology employed was consistent in approach with AS/NZS 4360 1999 - Risk Management, which outlines procedures which can be implemented to help establish context, identify, access, analyze, treat, monitor and communicate with regard to risk. Two physical inspections of the area were carried out, one when the area was fairly busy and a subsequent inspection during a quieter period.

The recreation area is partially fenced and gated, controlling vehicular access only, whilst pedestrian access is not controlled. It is possible that late hour activity may occur; however there is no history of such.

The risks associated with the use of natural recreational resources such as parks, lakes and reserves include the following;

1. Slip Hazards
2. Natural Hazards
3. Access Hazards
4. Vehicle/Traffic Hazards
5. Inappropriate Behaviour

Should the number of persons utilizing the area be increased then the potential for certain risks will increase proportionally.

## 1. SLIP HAZARDS



There is a normal expectation that access within a natural area will be comprehensive. It is the very presence of riverbanks, hilled areas and rock faces that produces the experience of being in natural environment.

However, there is some expectation that areas of pathways “directed” or “encouraged” for use by Council be safe in a general sense.

This is the case within the area of concern. The pathways are in good condition, of non-slip design and of an acceptable gradient.



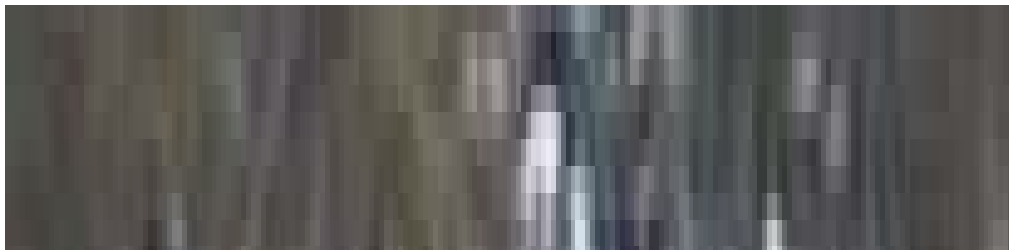
When a member of the public leaves the designed trail then there are the usual risks associated when traversing a natural environment, no greater or lesser than any other natural environment.

## **2. NATURAL HAZARDS**

The presence of gum trees would indicate the endemic risk of decay or weather damaged branches falling onto a person. A regular inspection of trees would reduce the possibility of this hazard. The potential for insect or animal bites was considered but judged to be no more severe than in other surrounding areas.

## **3. ACCESS HAZARDS**

The potential for harm to a member of the public in accessing a hazardous area, such as unfenced high areas, drains, confined spaces etc was considered.



The present ability to gain access to the dam wall by water is considered to be a real and considerable risk. Whilst access by land has been controlled by means of a fenced cage, no attempt has been made to impede access by water. The recent changes to NSW legislation have probably reduced the Council's exposure to suit, but does not actually reduce the risk of harm to a person. A risk control strategy such as floating barriers and warning signs should be considered.

## **4. VEHICLE TRAFFIC**

A number of risks associated with vehicular access were considered. There is a potential for injury within the car parking areas due to misuse of vehicles, speeding etc. No indications were present that the risks were greater than any other public space.

## **5. INAPPROPRIATE BEHAVIOUR**

Whilst the use of the area remains unchanged it is not considered that the risk of harm emanating from inappropriate behaviour such as vandalism, drunkenness, assault etc is likely to be greater than any other public space.

The presence of a children's play area was considered. The use of modern play equipment and cushioning of the ground indicates that Council has previously considered risk management strategies. It would be expected that a procedure for regular inspection had been established.

## **RECOMMENDATIONS.**

1. Signs are utilized to suggest use of designated pathways.
2. A system of inspection is established to minimize the possibility of harm caused by decayed or weathered branches falling from gum trees.
3. Signs be utilized to warn persons from climbing onto the dam wall
4. A floating barrier is installed to prevent access to the dam wall by water.



## Appendix 3

### Changes to public liability legislation

## **Public Liability**

In recent months there have been two major changes, which will impact upon the risk management, and public liability for the undertaking of water based activities in the Lake Parramatta Reserve.

These major changes, which will combine to ease the burden to Council of managing the risks, relate to:-

- Courts are now seeking to impose a stricter test of negligence for plaintiffs, and
- Statutory changes to public liability.

There is emerging evidence that the courts are imposing a stricter test for negligence in the area of recreational activities. The evidence for this is two recent appeal cases involving water based recreational activities. In both of these cases the plaintiffs had in the lower courts won substantial damages for major injuries arising from diving into water. However, the Councils, Coffs Harbour and Waverly, on appeal had the verdicts overturned. In both cases the Court of Appeal held that there was no negligence on the part of the Councils and that the plaintiffs were responsible for their own actions and would have been aware of the inherent risks of their actions.

It is necessary to add a note of caution as these are very recent cases and that there is a still a possibility of an appeal to the High Court. However, it is clear that the courts are beginning to reflect community concern as to the obligations of persons to take reasonable actions to protect themselves from known risks.

### **Statutory Changes to Public Liability**

The State Government has introduced a range of reforms to public liability, *Civil Liability Act 2002* and the *Civil Liability (Personal Amendment) Act 2002*. The legal reforms are part of a national initiative to bring about more acceptable and sustainable public policy outcomes in the area of public liability. While the impetus for the changes were largely driven by the HIH collapse nevertheless the demand for reform had been building up for some time. The changes to the law will provide a greater degree of protection to council against public liability claims from recreational activities.

With regard to the Lake Parramatta Reserve the major changes to the law which will impact on risk management are to be found in the *Civil Liability (Personal Responsibility) Amendment (CLPRA) Act 2002*.

Under the CLPRA Act 2002 a person is not negligent in failing to take precautions against a risk of harm unless:

The risk was foreseeable (that is, it is a risk of which the person knew or ought to have known), and

The risk was not insignificant, and

In the circumstances, a reasonable person in the person's position would have taken those precautions.

In determining whether a reasonable person would have taken precautions against a risk of harm, the court is to consider the following (amongst other relevant things):

- The probability that the harm would occur if care were not taken,
- The likely seriousness of the harm,
- The burden of taking precautions to avoid the risk of harm,
- The social utility of the activity that creates the risk of harm.

An ***obvious risk*** to a person who suffers harm is a risk that, in the circumstances, would have been obvious to a reasonable person in the position of that person. For the purpose of the CLPRA Act 2002:-

Obvious risks include risks that are patent or a matter of common knowledge. A risk of something occurring can be an obvious risk even though it has a low probability of occurring.

A risk can be an obvious risk even if the risk (or a condition or circumstance that gives rise to the risk) is not prominent, conspicuous or physically observable.

### **Injured persons presumed to be aware of obvious risks**

Under the CLPRA Act 2002, in determining liability for negligence, a person who suffers harm is presumed to have been aware of the risk of harm if it was an obvious risk, unless the person proves on the balance of probabilities that he or she was not aware of the risk. A person is aware of a risk if the person is aware of the type or kind of risk, even if the person is not aware of the precise nature, extent or manner of occurrence of the risk.

With regard to giving a warning under the CLPRA Act 2002 a person does not owe a duty of care to another person to warn of an obvious risk to the plaintiff.

However, this provision does not apply if:

The plaintiff has requested advice or information about the risk from the defendant, or  
The defendant is required by a written law to warn the plaintiff of the risk, or  
The defendant is a professional and the risk is a risk of the death of or personal injury to the plaintiff from the provision of a professional service by the defendant.

The provision does not give rise to a presumption of a duty to warn of a risk in the circumstances referred to in that subsection.

## **Inherent Risk**

An ***inherent risk*** is a risk of something occurring that cannot be avoided by the exercise of reasonable care and skill. Under the new law a person does not owe a duty of care to another person who engages in a recreational activity to take care in respect of a risk of the activity if the risk was the subject of a risk warning to the plaintiff.

Under the CLPRA Act 2002 a person is not liable in negligence for harm suffered by another person as a result of the materialisation of an obvious risk of a dangerous recreational activity engaged in by the plaintiff.

## **Liability for Obvious Risks**

Under the CLPRA Act 2002 the following definitions have been introduced:-

***Dangerous recreational activity*** means a recreational activity that involves a significant risk of physical harm.

***Obvious risk*** has the same meaning as it has above

***Recreational activity*** includes:

- ↑ Any sport (whether or not the sport is an organised activity), and
- ↑ Any pursuit or activity engaged in for enjoyment, relaxation or leisure, and
- ↑ Any pursuit or activity engaged in at a place (such as a beach, park or other public open space) where people ordinarily engage in sport or in any pursuit or activity for enjoyment, relaxation or leisure.

There are new rules that will apply only in respect of liability in negligence for harm to a person resulting from a recreational activity engaged in by the plaintiff. A person is not liable in negligence for harm suffered by another person as a result of the materialisation of an obvious risk of a dangerous recreational activity engaged in by the plaintiff. This provision applies whether or not the plaintiff was aware of the risk

## **No duty of care for recreational activity where risk warning**

A person does not owe a duty of care to another person who engages in a recreational activity to take care in respect of a risk of the activity if the risk was the subject of a risk warning to the plaintiff.

If the person who suffers harm is an incapable person, the defendant may rely on a risk warning only if:

The incapable person was under the control of or accompanied by another person (who is not an incapable person and not the defendant) and the risk was the subject of a risk warning to that other person, or  
The risk was the subject of a risk warning to a parent of the incapable person (whether or not the incapable person was under the control of or accompanied by the parent).

For the purposes of subsections above a risk warning to a person in relation to a recreational activity is a warning that is given in a manner that is reasonably likely to result in people being warned of the risk before engaging in the recreational activity. The person is not required to establish that the party received or understood the warning or was capable of receiving or understanding the warning.

With respect to a risk warning the following has to be considered:-

- A risk warning can be given orally or in writing (including by means of a sign or otherwise);
- A risk warning need not be specific to the particular risk and can be a general warning of risks that include the particular risk concerned (so long as the risk warning warns of the general nature of the particular risk);
- A defendant is not entitled to rely on a risk warning unless it is given by or on behalf of the defendant or by or on behalf of the occupier of the place where the recreational activity is engaged in;
- A defendant is not entitled to rely on a risk warning if it is established (on the balance of probabilities) that the harm concerned resulted from a contravention of a provision of a written law of the State or Commonwealth that establishes specific practices or procedures for the protection of personal safety;
- A defendant is not entitled to rely on a risk warning to a person to the extent that the warning was contradicted by any representation as to risk made by or on behalf of the defendant to the person, and
- A defendant is not entitled to rely on a risk warning if the plaintiff was required to engage in the recreational activity by the defendant.

The fact that a risk is the subject of a risk warning does not of itself mean:

That the risk is not an obvious or inherent risk of an activity, or

That a person who gives the risk warning owes a duty of care to a person who engages in an activity to take precautions to avoid the risk of harm from the activity.

### **Waiver of contractual duty of care**

Under the CLPRA Act 2002 there is provision for waivers to be enforceable. Despite any other written or unwritten law, a term of a contract for the supply of recreation services may exclude, restrict or modify any liability to which the Act applies that results from breach of an express or implied warranty that the services will be rendered with reasonable care and skill. Nothing in the written law of New South Wales renders such a term of a contract void or unenforceable or authorises any court to refuse to enforce the term, to declare the term void or to vary the term.

A term of a contract for the supply of recreation services that is to the effect that a person to whom recreation services are supplied under the contract engages in any recreational activity concerned at his or her own risk operates to exclude any liability to which this Division applies that results from breach of an express or implied warranty that the services will be rendered with reasonable care and skill.

## **Implications for Lake Parramatta Reserve**

The changes to the law and the stricter test introduced by the Courts will combine to reduce the risk exposure for public liability for Councils in general. In particular, the type of water based recreational activities undertaken in Lake Parramatta Reserve would be considered to fall into the category of a *dangerous recreational activity* and therefore there is a responsibility on persons participating in dangerous recreational activity to exercise due care and attention for their own safety.

There are now available to council a number of defences to a public liability claim in the event of an adverse incident involving a member of the public. Persons participating in recreational activities are required to be more responsible for their actions. The combined effects of the changes to the law and the recent approach by the New South Wales Court of Appeal will reduce the exposure of Council to public liability claims.

## Appendix 4

### Water Quality Issues

## **BACKGROUND**

Water quality issues have had significant publicity recently due to public interest in the quality of water at both public beaches and inland waterways. This interest in water quality has also been enhanced with recent drinking water quality issues in the Sydney environment.

To meet these concerns and provide a broad strategy on which public policy could be formulated the Australian & New Zealand Environment & Conservation Council (ANZECC) and the Agricultural & Resources Management Council of Australia & New Zealand (ARMCANZ) have developed Australia & New Zealand Guidelines for Fresh Marine Water Quality. These are accessible via the Environment Australia website and are the presently recognised standards for water quality.

A more recent document entitled Microbiological Water Quality Guidelines for Marine & Freshwater Recreational Areas has not at this point been accepted in Australia but is used below to provide additional information not contained in other materials.

Both publications provide guidelines that meet ‘best practice’ at the present time but due to scientific changes the guidelines may require improved standards in the near future. The issue of changes to the guidelines is referenced in Section 5.2 of the Australian & New Zealand Guidelines for Fresh & Marine Water Quality.

## **STANDARDS FOR RECREATIONAL WATER QUALITY**

The Australia & New Zealand Guidelines for Fresh Marine Water Quality document categorises water usage into 3 categories –

### **Primary Contact**

This relates to sports where the user comes into frequent direct contact with the water, either as part of the activity or accidentally: for example swimming or surfing.

### **Secondary Contact**

This relates to sports that generally have less frequent body contact with the water: for example boating or fishing.

### **Passive Recreational**

This relates to the use of the water for passive recreational use: for example no body contact.

The guidelines define the characteristics to be measured and the guidelines for each parameter. These are included in tables 5.2.1 and 5.2.2 at the rear of this appendix.

These standards are noted to be similar in the Freshwater Bathing Guidelines in the NZ Guidelines for Recreational Water Quality but in this publication they propose a ‘traffic light’ system based on a –



Green	-	Acceptable
Amber	-	Alert
Red	-	Action system

The standards are based around the ‘maximum tolerable swimming associated illness risk’ of eight per 1000 bathers based on US studies and guidelines. This standard is accepted internationally.

### **Levels of Contamination in Lake Parramatta**

The levels of water quality in Lake Parramatta have been monitored by the UPRCT and tabulated in a report which is available on the UPRCT website.

During the 1990-1998 period the report indicated that the overall catchment failed to meet the guidelines but that Lake Parramatta did meet the criteria for each level of recreation particularly during dry weather.

Looking in detail however the results for Station 7 in 1998, which was the Lake Parramatta testing site, the Faecal Coliform Bacteria Units varied from 1000 to a low of 200 with a mean of 494. This exceeds significantly the mean of 150 required in the Australian Standard for primary contact.

The report indicated that 1998 was a year in which the quality declined. It is our understanding that water quality measurements have been undertaken since 2000 but that these do not demonstrate a quality that meets primary contact although it shows some consistency with secondary contact.

A further study of the 1990-2000 results can also be found in the Water Quality Multivariate Statistical Analysis 1990-2000 carried out by Dr. Robert Gittins and commissioned by the UPRCT. This demonstrates the direction in which the plotted parameter moves.

The results of this study for Lake Parramatta station at the Dam Wall show that the levels of faecal coliform have been influenced by changes within the catchment area, growth of plants and algal blooms and weather. These variables mean that the overall water quality can vary considerably on day-to-day and longer cycles.

### **CONCLUSIONS**

The following conclusions can be reached with the available evidence –

At present Lake Parramatta water quality would not consistently meet the standards for primary contact. On the basis of the New Zealand standard and the detailed 1998 results the lake would be zoned Red for freshwater bathing.

On the basis of the 1998 results above the lake would meet the requirements for Secondary Contact and Passive Recreation.

The number of samples taken in the lake is not large. In particular the 1990-1998 results are spread throughout the catchment area and only sample at one part in the lake. The results in the survey are also based on samples at the surface.

## **RECOMMENDATIONS**

The following recommendations are made and incorporated into the main body of the report –

If the lake is to be used for boating a monitoring regime should be established to ensure that the lake water quality meets the secondary contact standard.

Since there is evidence that the water quality is affected by weather and other variables that could mean that the secondary contact standard is exceeded, Council should implement a colour coded warning system possibly based on the New Zealand ‘traffic light’ system. On days when the quality of the water is measured to be higher or when the area has been subject to rain an ‘amber’ level would be relevant. When a spike in the actual measurements is observed this level would be raised to ‘red’. This would prohibit bathing.

To provide a transparent approach to this monitoring on either the UPRCT or Council websites