



9 February 2009

Carol Bergquist
Onepoto Lagoon Co-ordination Committee
c/o 3 Mollyhawk Place
Birkenhead
NORTH SHORE CITY

Dear Carol,

State of the Onepoto Lakes

Thank you for your letters of 2 December 2008 and 29 January 2009 to John Brockies regarding the state of the Onepoto lakes. We apologise for the late reply as we thought the Parks Department responded to your first letter.

We have prepared the accompanying report for Council's Infrastructure and Environment Committee which provides some background information about the Onepoto lakes and summarises the required investigations to enable the development of an appropriate desilting methodology and estimation of required costs.

This report will be discussed during the Infrastructure and Environment Committee meeting on 10 Feb 2009.

Please contact Frank Tian on 486 8574 if you would like to discuss this matter further.

Yours sincerely

Geoff Mason
General Manager Infrastructure Services

cc. John Brockies, Chief Executive
Jennifer Yorke, Chair Birkenhead-Northcote Community Board
Richard Plinston, Onepoto Lagoon Co-ordination Committee

TOPIC: Desilting the Onepoto Lakes and Chelsea Ponds



TO: Infrastructure & Environment Committee

ON: 10 February 2009

AUTHOR: Stormwater Operations Manager

Summary:

1. A large amount of sediments and decayed vegetation has accumulated in the Onepoto lakes and Chelsea ponds, resulting in adverse environmental effects and affecting public use of the Onepoto Domain and Chelsea Park. Desilting of these lakes and ponds should be considered seriously.
2. The Onepoto lakes were not initially built as stormwater ponds and have not been maintained as stormwater facilities. The four Chelsea ponds only became North Shore City's assets a few months ago. A lack of budget and knowledge about these lakes/ponds prevents Council from desilting them in the short term.
3. Desilting of these lakes/ponds is quite complicated and should be considered carefully, due to (a) the large area covered by these lakes/ponds; (b) the large quantity of sediments to be removed; and (c) little considerations given to future desilting at the design and construction stages of these lakes/ponds.
4. Further investigations are proposed to develop an appropriate desilting methodology and accurate cost estimate for the Onepoto lakes. The investigations will be carried out by Infrastructure Services (IS) within its current budget with help from the Parks Department. A preliminary report will be completed by November 2009, reporting back to the Infrastructure and Environment Committee.
5. There are still several significant issues needing to be clarified between North Shore City Council and New Zealand Sugar Limited towards the Chelsea ponds. It is suggested that detailed investigations regarding the pond desilting be carried out after these issues are clarified and the desilting issue be considered during the 2012/2027 City Plan process.
6. The purpose of this report is to:
 - A. provide some background information on these lakes/ponds.
 - B. summarise the required investigations to enable the development of an appropriate desilting methodology and estimation of required costs.

Officer's Recommendations:

1. That the report be received,
2. That Council officers carry out the proposed investigations required for desilting the Onepoto lakes and report back to the Infrastructure and Environment Committee in November 2009,
3. That Council officers clarify those significant issues in relation to Chelsea ponds as identified in the report with New Zealand Sugar Limited and then carry out the proposed investigations required for desilting the Chelsea ponds, and
4. That the desilting issue of the Chelsea ponds be considered during the 2012/2027 City Plan process.

Links to, and Consistency with:

Policy		Description of link and the consistency or inconsistency	Reference
(a)	City Blueprint:	A unique and natural environment: strengthening protection for our streams, lakes and beaches	P15
(b)	City Plan:	Not specifically mentioned	
(c)	Annual Plan:	Not specifically mentioned	
(d)	District Plan:	Not specifically mentioned	
(e)	Other council strategies/plans:	1997 Onepoto Domain Management Plan	
(f)	Council Policy Manual:	Stormwater Policies,	

Significance		High	Medium	Low
(a)	Impact [implication × how many people affected]		X	
(b)	History of public interest		X	
(c)	Impact on the council budget or capacity			X
(d)	Can the decision, policy or proposal be reversed?	Yes		
(e)	Describe any alteration of service levels of any council significant activity	None		
(f)	Describe any impact on any council strategic assets	None		
(g)	Does this decision involve changing the way in which a significant activity is delivered?	No		
(h)	If this is a significant decision, how does it take account of the relationship of Māori to ancestral land, water, sites, waahi tapu, valued flora and fauna, and other taonga?	Not applicable		

Community views		
(a)	What information does the council have on community views on this matter?	The Birkenhead Community Board has made two submissions over the past two years regarding the desilting of the Onepoto lakes.
(b)	What communication and/or consultation has been undertaken?	None
(c)	What consideration has been given to community views on this matter?	Birkenhead/Northcote Community Board submission
(d)	Further consultation is not required	

Background:

The Birkenhead Community Board has recently requested Infrastructure Services (IS) to desilt the two lakes within the Onepoto Domain. Council also obtained four ponds within the Chelsea Estate in September 2008 as part of the Chelsea Park acquisition process. These lakes/ponds have been formed for many years and a significant amount of sediments and decayed vegetation has accumulated in the lakes/ponds. During hot and dry summers, the accumulated sediments contribute to bad water odours, low levels of dissolved oxygen (DO) and less recreational usage of these lakes/ponds by the public.

The need of desilting these lakes/ponds should be considered seriously. However, due to the reasons described below, these lakes/ponds have not been maintained by Infrastructure Services as stormwater facilities and are not

included in our current pond desilting programme. It will be more complicated to desilt these lakes/ponds than to desilt the normal stormwater ponds. This report:

- A. provides some background information for these lakes/ponds.
- B. summarises the required investigations to enable the development of an appropriate desilting methodology and estimation of required costs.

Onepoto Lakes and Chelsea Ponds

A. Onepoto Lakes

Based on the Onepoto Domain Hydrology Study carried out in 1997, the two lakes were formed in mid 1970s within the Onepoto Basin. "The two lakes were created 450 mm deep with a floodgate mechanism through to Onepoto Stream. They were intended as freshwater lakes, and receive stormwater runoff via two main streams from Exmouth Road and Sylvan residential areas". The two linked lakes cover an area of about 10,000 m².

The Onepoto Domain is a well used recreational reserve by the public. The lakes also experience a high level of recreational use by three model boating clubs.

There are currently two major issues associated with the Onepoto lakes.

A considerable amount of sediments and decayed vegetation has accumulated on the lake beds, particularly along the lake margin. During dry and warmer summers, the lake water becomes dark and odorous. The levels of DO also decrease. Numerous complaints have been received over the past years. Furthermore, a 1-2 m margin around the eastern side of the main sailing lake has a depth of 100-300 mm only. The model yachts cannot approach the shallow area.

B. Chelsea Ponds

The four ponds, which cover a total area of about 7 ha, were constructed by New Zealand Sugar Company Ltd at its Chelsea Refinery, Birkenhead, pre-1940's to supply water to its sugar refinery process. Similar to the Onepoto lakes, a large amount of sediments and decayed vegetation has accumulated in the ponds. The Chatswood development, during which inadequate sediment control was in place, resulted in extra silt and debris being carried into the ponds. The thick layer of sediments in the ponds smothered plant life, decreased DO levels, caused bad odours and contributed pollution to the inner Waitemata Harbour.

To mitigate the adverse environmental effects, North Shore City Council, with funding from Infrastructure Auckland (IA) and the co-operation and on-going maintenance funding of New Zealand Sugar Company, installed three aerators in the most affected pond (Pond 3) in 2000 at a total cost of \$70,000. NSCC also undertook additional works towards pond 1 and pond 2 between 2004 and 2005, including construction of two sediment forebays, removal of some of the existing sediments, riparian planting and installation of a debris boom.

Significant improvements in DO levels and water odours were achieved in Pond 3 after the installation and operation of the aerators. However, this is only a temporary solution as the aerators cannot reduce the sediments in the pond. Desilting the cumulated sediments should be considered if we want to resolve the above mentioned problems from the source.

Complexity of Desilting these Lakes/Ponds

Infrastructure Services manages about 70 purposely constructed stormwater ponds and wetlands. These ponds/wetlands are inspected and maintained monthly and desilted regularly based on a desilting programme. It is easier to desilt most stormwater ponds because due considerations were given to future desilting requirements at the design and construction stages.

Unfortunately, the Onepoto lakes and Chelsea ponds were not built as stormwater ponds, although they do receive storm runoff from upstream catchments and have a water quality "treatment" function. Little considerations were given for future desilting at the design or construction stages. As previously mentioned, these ponds have not been maintained by IS and little information is available to help form an appropriate desilting methodology and accurate cost estimation.

These lakes and ponds are all on-line lakes/ponds and are significantly larger than most normal stormwater ponds within the City. Auckland Regional Council consents have to be obtained for desilting these lakes/ponds. Furthermore, the stormwater department is not experienced in desilting large lakes/ponds.

Proposed Future Investigations

The following investigations are required in order to develop an appropriate desilting methodology and obtain an accurate cost estimate for desilting the Onepoto lakes and Chelsea ponds.

- A. Collate **basic information** about these lakes/ponds such as lake area, **contribution catchments, base flow, aquatic life within the lakes/ponds**, etc.
- B. Better **understand** the cumulated sediments, e.g. thickness, contamination level, how much sediment to remove, etc.
- C. Develop an appropriate desilting methodology. Due to the nature of these lakes/ponds (**big, no causeways for diggers**), conventional desilting methods may not suit and alternative methods may have to be explored. Other issues, such as **machine access, bypass of runoff during desilting process, sediment control, health and safety for the public** also need to be carefully considered.
- D. Investigate **methods of sediment dumping**. Dumping of contaminated sediments could cost more than 50% of a desilting operation. Due to the large amount of sediments to be dumped, an appropriate dumping method for **each lake** has to be carefully used.
- E. Estimate cost.
- F. Obtain Auckland Regional Council consents.

It is suggested that IS carry out the aforementioned investigations for Onepoto lakes (Items A to E) within its current budget, with help from the Parks Department. A preliminary report will be completed by November 2009 and report back to the Infrastructure Committee. Due to the complexity and large scale of the desilting operation, formal projects have to be established. These projects have to be managed by Council's stormwater capital project team.

The current annual budget for desilting stormwater ponds is \$365,000 and they have been allocated to those ponds which need to be desilted based on our pond desilting programme. For example, the Link Drive stormwater pond is scheduled for desilting in 2009/2010. The cost for desilting this pond is likely to be higher than the available budget as more than expected sediments have settled in the pond and higher sediment dumping costs. It is impossible to desilt the Onepoto lakes or Chelsea ponds within the current budget.

There are still several significant issues needing to be clarified among New Zealand Sugar Limited and North Shore City Council about the Chelsea ponds. These issues include the control of spills to the ponds, water taking from the ponds, operation of the aerators and access for on-going maintenance. These issues may have a significant impact on dam safety and environmental quality around these ponds. There are also other concerns or risks needing to be investigated as outlined in the memorandum from Water Services to Community Service in July 2006. It is suggested that the proposed future investigations as listed above are carried out after these issues have been clarified or assessed. The budget for desilting these ponds will be considered during the next City Plan process.

Conclusions

A. The Onepoto lakes and Chelsea ponds were not built as stormwater ponds and have not been maintained as stormwater facilities. A lack of budget and knowledge about these lakes/ponds prevents Council from desilting them in the short term.

B. Further investigations are required to develop an appropriate desilting methodology and accurate cost estimate for the Onepoto lakes. The investigations will be carried out by IS within its current budget with help from the Parks Department. A preliminary report will be completed by November 2009, reporting to the Infrastructure and Environment Committee.

C. There are still several significant issues needing to be clarified between North Shore City Council and New Zealand Sugar Limited towards the Chelsea ponds. It is suggested that further investigations be carried after these issues have been clarified and the desilting issue be considered during the 2012/2027 City Plan process.

	Name and title of signatories
Prepared by	Frank Tian Stormwater Operations Manager
Recommended by	Martin van Jaarsveld Parks Manager

	<p><u>Confirmation of statutory compliance</u></p> <p>In accordance with section 76 of the Local Government Act 2002, this report is approved as:</p> <p>(a) containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,</p> <p>(b) is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.</p>
Approved by	Geoff Mason General Manager Infrastructure Services

Date: 21 January 2009