An Alternative Approach – Preliminary Proposal

Title: The Provision of Foreshore & Flood Protection in the vicinity of Brown Street in Thames

Background:

The authors of this preliminary proposal, Thames residents Max Bosselmann and Warren Sly, were very interested attendees at the public meeting held in the Thames War Memorial Hall on Monday 24 March 2025. There we learned of the difficulties being experienced in coming up with an acceptable solution to the very high flood flows coming from the Karaka Stream catchment and their influence on the design of a foreshore wall. We are attempting to use our local and professional engineering knowledge to come up with an acceptable solution to the problem posed by the Karaka Stream.

Credibility:

Max Bosselmann. Max is a retired Consulting Civil and Structural Engineer who remains a Life Member of Engineering NZ. Max graduated BE Civil in May, 1960 and became a Registered Engineer in 1963. He commenced his Consulting Engineering practice in Thames in 1966 and retired in 2018.

Max was fortunate to have been taught his Coastal Engineering and Fluid Mechanics skills by the late Professor Arvid Raudkivi (Professor Raudkivi was internationally recognised as a leader in both these fields). Max acted as Engineer to four separate land drainage authorities on the Hauraki Plains before commencing his private consulting practice. He was successful in gaining a **WA Stevenson Award** which enabled him to undertake a three-and-a-half-month study tour to the USA where the study emphasis was on land drainage and river control (rural and urban). In particularly the use of detention dams in the mitigation of flood flows. Max was able to apply the skills he thus gained throughout his Consulting Engineering career,

It is also worth mentioning that, on behalf TCDC, Max conducted a peer review of Tonkin and Taylor's coastal protection scheme for the Moanataiari Subdivision and his recommendations were adopted by Tonkin and Taylor and incorporated in the final design.

Warren Sly. Warren’s background is that as an Aircraft, Mechanical and Hydraulic Applications Engineer. He is known by many for getting important local projects completed from inception to successful completion such as the Hauraki Rail Trail Shelters.

Importance:

In our view the area from the Pak 'n Save Supermarket up to a point just north of the Croquet green is extremely vulnerable to flooding from a minor tsunami or storm surge and should be Council's main focus at this time. We suspect that a close study might reveal that the remainder of Thames is sufficiently well protected already that no further works would be required for twenty or more years. We believe the initial scheme could probably be confined to the six or seven hundred metres

north of the Supermarket reclamation with the remainder of Thames being tackled when sea level rise reaches the extent that it triggers action.

Our Alternative:

The hydrograph shown on the screen during the March 24th public meeting, displayed the classic characteristics of a steep hillside catchment with an impressive peak flow of 80 cumecs but with only a short time in excess of what would be a manageable flow. One would normally handle this by installing one or more detention dams in the lower part of the catchment area but upstream from the urban area. We assume that this has been considered but that no suitable sites are available.

A similar and probably more effective result could be gained by siting the detention facility downstream of the urban area. This of course would not solve the overland flows being experienced in extreme events but it would not worsen them and we understood from comments being made that these overland flow events can be managed in a way that no buildings are flooded.

Our Alternative: If the required new sea wall were to be constructed approximately 300 m out to sea from the existing Brown Street shore line it would link on to the existing Moanataiari area reclamation adjacent to the dog park. At the southern end it would link in to the existing Supermarket reclamation. This would enable the creation of a lake of area around 18 hectares which should be a sufficient size to enable its use as a detention facility to attenuate the Karaka Stream flow sufficiently that no pumping is required and that the necessary floodgate facility is very modest in comparison to that which otherwise would be required.

We visualise the area being developed as an attractive fresh water urban recreational lake. Ideally it would have a minimum water depth of about 1.2 m and that something in excess of 1.5 m would be available for temporary flood storage before any adjacent land is flooded.

We envisage a short extension of the existing Karaka Creek flume with a weir around 1.2 m high on the north side forming the permanent lake water level. The short flume extension would lead directly into the appropriately sized floodgate outlet into the sea.

A desirable refinement would be the inclusion of a reasonably substantial sluice gate at the base of the weir so that this could be opened to increase the detention capacity in the case of a severe flood warning.

All lakes require reasonable circulation. This could be provided by placing an intake in the existing flume, in the vicinity of the Hospital, and strapping a water pipe to the wall of the flume. This pipeline should be extended to discharge into the lake in the vicinity of the Croquet Club.

Flood water storage in its most economical form could be provided by eliminating the suggested weir and allowing the impounding area to become a fresh water wetland. We however believe this would be an opportunity to provide a wonderful new amenity, at relatively low cost, by retaining the lake concept.

In developing the lake there would be the opportunity to carry out earthworks to provide additional

depth and to carry out minor reclamation work to establish a round the lake walking path and to enhance both the shape of the lake and the several existing adjacent public areas. We believe the existing intertidal mud layer is comprised of silt runoff that has come down the Waihou and Kaueranga Rivers and that it is quite thin (perhaps 300 mm or so) and is underlain by shingle and sand of some thickness. The shingle/sand layer would make a more user-friendly base for the lake while the silt could possibly be sold as topsoil once dry or otherwise could be used for reclaimed areas.

Pros and Cons of this alternative approach:

We believe that adoption of the Lake concept would result in a massive cost saving overall.

The sea wall would be a little longer and slightly higher than one on the existing intended alignment and it would be more exposed to wave action so would cost more. As was stated at the meeting the actual cost of the sea wall is a relatively small part of the overall cost.

The initial establishment of and ongoing costs of pumping would be totally eliminated.

The capacity requirement and cost of the required outlet floodgate structure would be greatly diminished.

There would be negligible disturbance to the existing adjacent land uses and, instead, the new lake would enhance the property values and amenities of the area.

The out to sea barrier wall location would likely provide sufficient wave protection for areas to the south east that the need for upgrading further south could be eliminated.

The new lake would be sufficiently large for its use for small boat sailing, kayaking and other water sports and would likely attract many visitors to Thames.

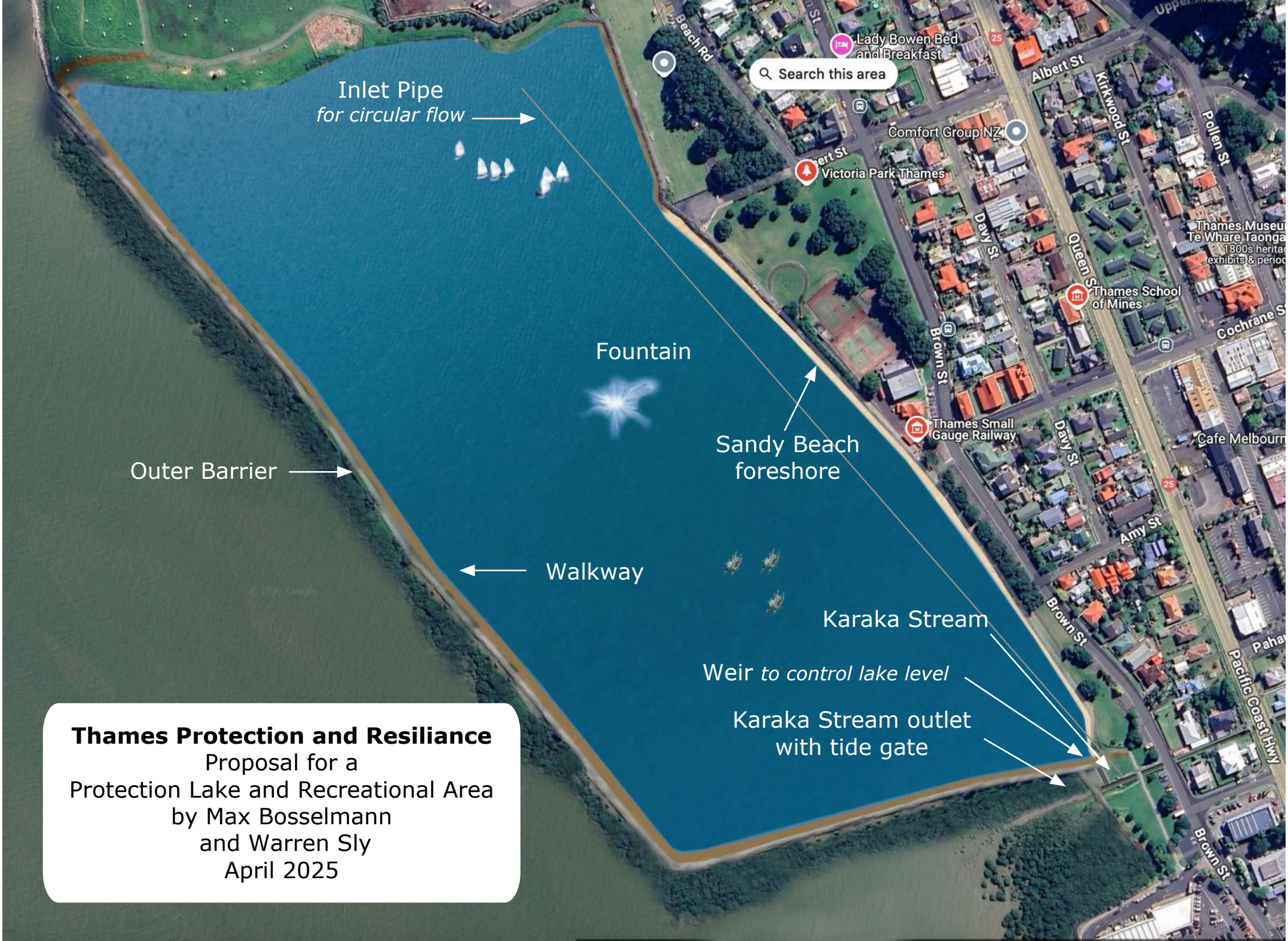
As a reliable outlet for overland flood flows the new lake should be able to totally eliminate ponding of flood water in the adjacent area.

This alternative comes with a huge aesthetic benefit that can be realised with modest extra expenditure. The existing foreshore in the vicinity has little to commend it from a visual point of view and the opportunity would exist to create something that would become the envy of many other towns.

Some would decry the loss of the existing foreshore mangroves but we believe they would soon re-establish on the outside of the new sea wall

Attachment:

We have attached an aerial photograph of the subject area on which has been marked the main features referred to in this preliminary proposal.



Thames Protection and Resiliance
Proposal for a
Protection Lake and Recreational Area
by Max Bosselmann
and Warren Sly
April 2025

Conclusion:

We hope that the suggestions we have made will be beneficial in deciding the best solution to this thorny problem and we will remain interested and available for any discussions readers should deem desirable in furthering the implementation of a satisfactory foreshore protection scheme.

Signed:

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Max Bosselmann	**Warren Sly**