northern beaches council

Community and Stakeholder Engagement Report

Feasibility study for the provision of water and wastewater services to Scotland Island

Impact level: Two

Report date: 2 November 2020

Contents

1. Introduction[1]

Project Title	Feasibility study for the provision of water and wastewater services to Scotland Island
Impact Level	2
Stages	2
Report Period	30 September to 28 October 2020
Version	2.0
Status	Final

This report outlines the community and stakeholder engagement conducted as part of the feasibility study for the provision of water and wastewater services to Scotland Island project. The consultation period documented is from 30 September 2020 to 28 October 2020.

317 submissions were received from a cross section of our community including:

- Scotland Island Residents Association
- local stormwater businesses
- Scotland Island residents
- residents of the Western Foreshores of Pittwater
- residents of the Northern Beaches
- Sydney Water

Feedback collected through the engagement process identified several recurring themes. The results of the engagement process indicated most Scotland Island residents support a water and wastewater scheme and are concerned with the existing water supply and wastewater disposal systems and the impacts on human and environmental health.

The majority of the 317 submissions received were overwhelmingly supportive of Council making a recommendation to the state government to provide a water and wastewater scheme for Scotland Island (96%), and willing to pay connections costs (77%). Most of those who responded were residents. Relative to the total number of people living on the island, there was a very high engagement rate.

A variety of topics were raised by the respondents including equality with the mainland, human and environmental wellbeing, and cost for individuals. While a high percentage were willing to pay connection fees, a smaller proportion of respondents expressed concerns about costs including that they were unwilling or unable to fund the connection expenses. There were also concerns about infrastructure servicing and the competence of the stakeholders involved in installing the associated infrastructure.

Sydney Water made a submission and based on their estimates, both Sydney Water and IPART consider servicing of the area to be financially unviable.

[1] Community and stakeholder views contained in this report do not necessarily reflect the views of the Northern Beaches Council or indicate a commitment to a particular course of action.

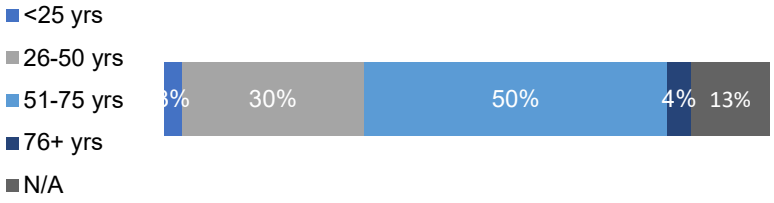
Further detail on the engagement approach and findings are available below.

1.1. Who we engaged[2]

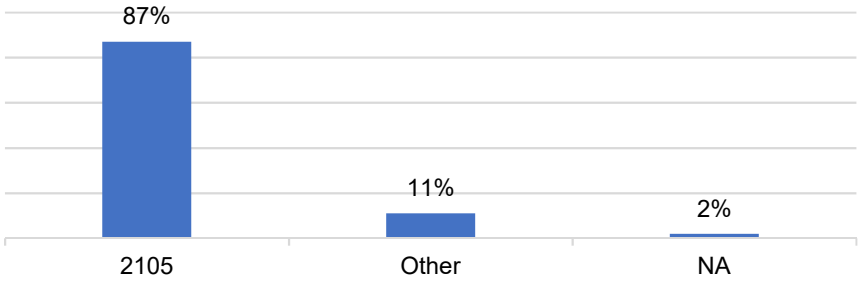
Total engaged	1469	Total submissions	317

Gender

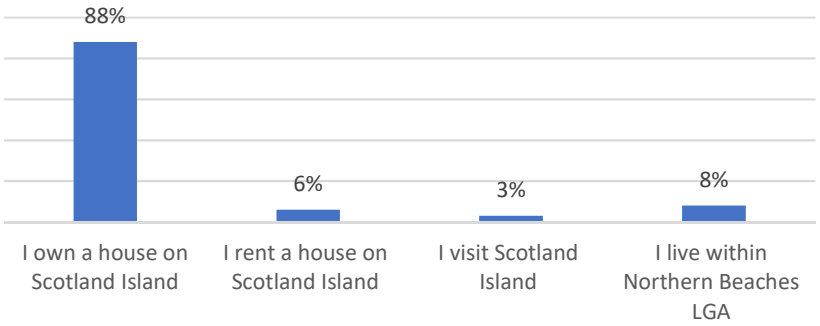
Age groups



Postcodes



Residents



1.2. How we engaged

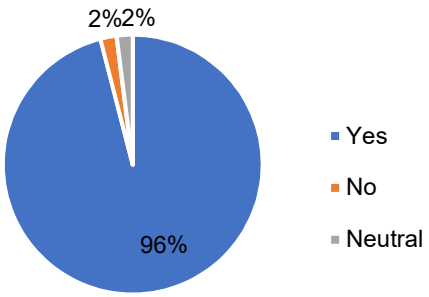
Have Your Say	Visitors: 753	Visits:1394	Av. time onsite: 3.5 minutes

[2] No demographic data was captured for respondents who contributed feedback through direct letter to Council

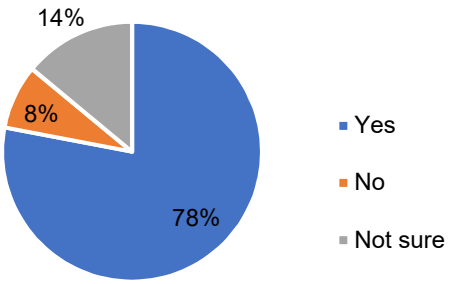
Face-to-face	Information session: 1 Pop up / Drop in: 3	Attendance: 35 Attendance: 40
Survey and form	Have Your Say survey: 1 Additional letters*: *Some people used both methods of communication. Their submissions have been counted once.	Completions: 313 Received: 10

1.3. Results

Question 1: Do you support Council making a recommendation to the state government to provide a water and wastewater scheme for Scotland Island?



Question 2: Would you be willing to pay connection costs for water and wastewater schemes?



 Feedback themes	• General support for a scheme. • Public health impacts. • Quality of current drinking water supply. • Environmental impacts. • No secure water supply for firefighting.	• Lack of equity with other similar areas. • Cost and ability to pay. • Increased demand for improved roads and stormwater drainage on the island.

2. Background

On behalf of the state government, Northern Beaches Council completed a feasibility study for the provision of water and wastewater services to Scotland Island. The study made recommendations on options for water and wastewater services and what they are expected to cost the government and residents to construct and operate.

The community were asked whether they support Council making a recommendation to the state government to provide a water and wastewater scheme for Scotland Island and whether they would be willing to pay connection costs. As the community would have to pay for the private property connection to the system, an indication of their willingness to pay is essential. Northern Beaches Council's willingness to lobby the State Government for services is predicated on having enough community support to progress a future scheme.

The project's community and stakeholder engagement was devised on a two-stage approach:

- **Stage 1:** Establishment of a resident working group made up of key stakeholders. Consultation was undertaken with the group to explore issues, constraints and assist in the identification of a shortlist of options.
- **Stage 2:** Public exhibition of feasibility study and associated reports.

3. Engagement objectives

Council's engagement objectives were to:

- provide accessible information so community and stakeholders can participate in a meaningful way (inform)
- identify community and stakeholder concerns, local knowledge and values (consult)
- recognise, manage and communicate the needs and interests of community and stakeholders, including decision makers (consult-involve)
- seek out and facilitate the involvement of those affected by or interested in a project (involve)
- communicate to community and stakeholders how their input was incorporated into the planning and decision-making process (inform).

4. Engagement approach

Community and stakeholder engagement for the feasibility study for the provision of water and wastewater services to Scotland Island project was conducted over a four week period, from 30 September to 28 October 2020 and consisted of a series of activities that provided opportunities for community and stakeholders to contribute feedback. Council strove to ensure information was presented in an accessible way to our community.

The engagement was planned, implemented and reported in accordance with Council's Community Engagement Matrix (2017). A documented consultation strategy is outlined in the Community and Stakeholder Engagement Strategy and Plan for the project (Stage 1: 5 April 2018 and Stage 2: 21 September 2020).

4.1. Engaging with 'hard to reach' communities

Lack of access to information or activities is a key barrier in engaging our offshore communities. We took a proactive approach to engagement by running drop-in sessions and an information session on the island and providing residents with the opportunity to complete their survey over the phone. By doing this we were able to access the less mobile residents on the island.

4.2. Engagement activities

Engagement activity	Overview
Desktop research	Existing feasibility studies for the provision of wastewater services for Scotland Island were reviewed, including community consultation conducted by the Scotland Island Resident's Association in recent years.
Have Your Say (online)	Your Say Northern Beaches was used to conduct online engagement. It provided a portal for users to visit, find information to support their engagement and provide their feedback.
Associated documentation	Exhibition documents including four technical reports and attachments, frequently asked questions and project background information were available on the Your Say project page.
Feedback form	An online form gave community and stakeholders an opportunity to provide quantitative project feedback. Specific questions were asked to gauge community support for the feasibility study recommendations and willingness to pay for any future water and wastewater supply system. A copy of the survey comments is available in the report appendices.
Face-to-Face drop-in / pop up / information sessions	Face-to-face sessions offered Scotland Island residents and property owners and visitors another opportunity to find out more from project staff, ask questions and provide feedback. Facilitators were available at the sessions to engage the public and provide a forum for deeper conversations. iPads were used to direct people to an online feedback form that captured feedback.

	Four face-to-face sessions held across the area, at Church Point and Scotland Island; Tennis Court Wharf and the Fire Shed, allowing face-to-face discussions with 70-75 community members. Of the total 313 surveys received, 6 were completed at these sessions.
Direct Australia Post mail	Letters to properties on the island inviting people to attend the drop-in sessions and visit the Your Say page.

5. Key findings[3]

Theme	Commentary	Response
Public health	The current water and wastewater provision significantly impacts public health, directly through poor drinking water quality; secondarily through pollution of soils and waterways on the island, pollution of Pittwater and aquatic species, odour, and mosquitoes. Clean drinking water and an environment that doesn't impact health is a basic right.	Noted. The proposed solution will address these concerns. Council's Environmental Health team has a dedicated officer to regulate wastewater systems on the island. These comments have been forwarded to Council's Environmental Health and will be provided to Sydney Water and NSW Health.
Need	Reticulated water and wastewater is needed on the Island now. A reticulated water supply is necessary as the current emergency water supply is inadequate for fire protection. The Island is unable to support on-site wastewater systems.	Noted. The proposed solution will address these concerns. These comments have been forwarded to the relevant staff in Council and will be provided to Rural Fire Service, Sydney Water and NSW Health.
Equity	Residents of Scotland Island deserve the same quality of life and services as the rest of Sydney and similar areas such as Dangar Island. Obligation under priority sewage program. Difficult and stressful to arrange drinking water and manage on-site wastewater system. Council and the State Government are in breach of their duty of care to Scotland Island residents.	The proposed solution will address these concerns. These comments will be forwarded to Sydney Water and NSW Health. Council and the State Government work within relevant legislation and guidelines for the supply and management of water and wastewater. Under the Local Government Act, on site sewerage management is the responsibility of single lot property owners.

[3] Note: This analysis does not include any 'late' feedback received after the advertised closing date for consultation except Sydney Water's submission.

Theme	Commentary	Response
Environment	Replacing on-site wastewater systems with a reticulated system is necessary to reduce the current impact on native vegetation on the Island, especially the Spotted Gum population, and the receiving waters.	Noted. The proposed solution will address these concerns. These comments have been forwarded to the relevant staff in Council and will be forwarded to Sydney Water.
Cost	Concerned about the ability to pay for upgrades to household plumbing of $12,500. Shouldn't have to pay. It would be necessary to provide assistance/payment plans for those able to demonstrate hardship Would only connect if costs were reasonable. Existing water is expensive. Project calculated to be financially unviable (Sydney Water). Flow rate calculations require clarification (Sydney Water).	Noted. Council acknowledges the estimated connection costs are not supported by some residents. This is the funding model currently in place by Sydney Water. These comments will be provided to Sydney Water. Noted. Council acknowledges the project delivery costs are not financially viable for Sydney Water. Noted. This information will be provided to the consultant.
Benefits and impacts if a scheme went ahead	Good local employment opportunities. The scheme should use renewable energy. Concerns about impacts to parking at Church Point. Public toilets should be provided on the Island. Council would need to address the condition of the Island roads and stormwater drainage. Connection needs to be forced.	Noted. These comments have been forwarded to the relevant staff in Council and will be provided to Sydney Water.
Unnecessary	New systems would be a waste of money as the current systems are suitable if they are made compliant. Not concerned about current water supply. Want to retain existing tanks.	Noted. These comments will be provided to Sydney Water.
Western Foreshores	The Western Foreshores of Pittwater should be included in	Noted. These comments will be provided to Sydney Water.

Theme	Commentary	Response
	any scheme to provide water and wastewater services to Scotland Island	

Appendix A – Full summary of community and stakeholder online verbatim responses

The Western Foreshore, which tip (Elvina Bay and McCarrs Creek) is as close to the Church Point as Scotland Island should, in my view, be included in this.
I think that this is a fantastic idea and should be fast tracked.
Would it be possible to pay in instalments?
It is important to have clean drinking water for people to drink and use for hand washing in the parks on Scotland island as well as toilet facilities. At the moment no drinking water or toilet facilities are available for people visiting the parks on the island
It would be wonderful to have fresh clean water, and it would be nice not to have the smelly dirty tanks and not to be fearful of swimming in the water and getting encephalitis and meningitis from the sewage in the water. I doubt that the $13,000 is near to the price and I would have trouble affording this. I'm concerned about stormwater running over the road down my property. I am very worried about how it could be done without major obstruction to roads I am disabled & need buggy to get to wharf.
The benefits to the health of the community and to the land quality and flora and fauna far outweigh the costs. It is puzzling why such a similar community as Dangar has had their waste and water supply upgraded but Scotland Island has not despite being one of the villages recognised in the original Sewerage Priority scheme. Given that we pay State taxes and Council rates it is hard to fathom why we don’t seem to be treated in the same way as other citizens.
Fresh clean drinking water should be available at the parks on Scotland Island as should proper toilet facilities at the moment there is nowhere visitors can wash get a drink of clean water wash their hands or go to the toilet unless they know someone on the island
I think it is important to have proper facilities for people that visit Scotland Island be it visiting friends or one of the parks on the island. Clean fresh water should be available for people to drink and wash their hands in. Also proper toilet facilities should be available for people visiting the parks which currently have no such facilities at all
I strongly urge NBC send a strongly worded recommendation to State Government to proceed urgently to approve implementation of the plan. At present the land surface on Scotland Island cannot cope with the wastewater produced by residents. Over the past 15 years I have noticed increased septic sullage unabsorbed in the heavy and stony clay soil. After rain the combination of septic waste and surface water flow pools and creates offensive pollution problems. This problem is exacerbated because of increased time between rain brings to pools higher concentrations of septic overflow. As a consequence the risk of infection is increased.
It is impossible to answer a question with regards to connection costs without giving a reasonable cap on those costs. Would b willing to contribute a sensible amount to connection costs but not open ended. Scotland Island needs to be treated equitably in comparison to other areas that were part of the PSP that Scotland Island was on and the Government allowed Sydney water to continually push out timeframes until it didn't happen.

As the study says the do nothing options are not viable or sustainable, it is time for local and state governments to make this happen as a priority
I am keen to see improvement of the quality of water and wastewater service for island residents. It is vital that this is addressed to mitigate public health risks. Clean drinking water and sanitation are essential to the realisation of all human rights. Australia recognizes that everyone has the right to an adequate standard of living under Article 11 of the International Covenant on Economic, Social and Cultural Rights, therefore action should be taken soonest!
This is an excellent initiative which will greatly assist all homeowners and residents in the island, as well as remove several hazards to general health and local waterways and environment. We hope this gets approved and goes ahead as soon as possible
A reticulated 'Town Sewage system is inevitable and urgently needed for all the reasons in the latest Study and all previous studies. The sooner the better.
Current sewerage disposal systems are very obviously sub-standard, as evidenced by numerous continuous seepage problems at numerous sites. The sample data also shows more accurately the unacceptable levels of nutrients and pathogens in soils across the island. As NBC appears unwilling and/or unable to effectively monitor and regulate the current system, an upgrade appears essential for the health of local residents and the environment, both on the island and in surrounding waterways. The health of the Endangered Ecological Community, Spotted Gum Forest, and the habitat of Vulnerable native species, the Powerful Owl, is being continuously and unnecessarily degraded by the current systems. Failure to act promptly ensures accelerating failure of the natural environment. Improvement please...asap
We would be willing to undertake this important work due to the sewage seepage from others into the water and around the island, recognising our Septic/water infrastructure is very new. There will be others unable to pay for this themselves I would imagine and it would be really good if there was a forced decision that everyone had to move to this, if there was hardship option/help to ensure the decommissioning of the individual tanks was able to be completed properly. Thank you
I am on the island every weekend and school holidays
Existing arrangements are detrimental to health and the local environment. The soil is being contaminated from septic runoff.
Happy with the proposal as outlined above.
Sewage is desperately in need of an upgrade. Land is full of contaminated water
As the connection costs are an estimate I would want this to be subsidised. I would want to be able to redirect our grey water to the block to maintain the health of our spotted gums, numbering over 40 to avoid a sudden removal of the water they now enjoy.
This is an excellent idea and I wholeheartedly approve.

I believe this is a natural progression for the island to enhance the health of residents as well as the health of the natural environment.
Smell of Septic tanks is pervasive. Always wet patches on roads from septic tank trench and distribution system breakdowns. Appears poor maintenance or none of existing tanks, with little obvious oversight by Council officers. Concerns for Pittwater effluent effects Concerns for hygiene in public spaces especially for children Support resident house owners contributing to cost of sewage system, however concern that such costs of $1000s needs to be amortised across five or ten years of rate periods so that owners, not all of whom are wealthy, can afford to contribute without being forced into debt. Thankyou. Bring it on.
"Generally current water and sewerage systems are insufficient and in many instances are failing." Reason enough to upgrade the systems for the 370 dwellings currently on Scotland Island to reduce the risks to public health and the local environment. I would urge consideration be given to the initial cost of implementation in regard to a property owner's financial situation. Low-interest loans perhaps and non-adjustment of Council rates re water and sewerage until the loan is paid off.
These services would be beneficial to both the occupants of homes on the Island as well as the general wellbeing and restoration of the natural environment
I feel that Scotland Island deserves to have the same wastewater facilities as the mainland and (I believe) Dangar Island. Surely having standing water which smells distinctly of sewerage is a health hazard and should be dealt with as soon as possible?
It's about time!
I would be willing to pay as long as upfront costs were manageable I.e instalments. Totally in favour of looking ahead to the future and not having to wonder about the dysfunctional septic systems on island as difficult to get fixed and serviced. Also buying water is stressful. Anything to make life easier and better for the environment.
Great idea and initiative. We are behind the scheme.
Much needed service. Will be good.
Connecting water and wastewater services is critically important to Scotland Island. I strongly support Council making a recommendation to the state government for these services, as determined in the feasibility study.
I’m a pensioner, and could not afford it.
There are plenty of people on the island that will not have the money to pay to connect, and they will most likely be the ones with the older systems that need to be replaced. Also we already pay a lot of money for parking our cars and boats as well as other costs with very little to show for the expense. The car parks are in a state of disrepair, the boat parks

don't have enough parking places for residence to park their boats and now we maybe asked to pay for a service that most likely should have been provide a while ago.
Looking forward to this getting underway.
I would be willing to pay $12500 however, if costs to home owners became astronomical we wouldn't be able to take the offer.
Anything would be better than the system currently used on the island where the roads get flooded with water from leaking tanks/underground streams, causing potential health hazards and stinking dirty standing water - a health hazard and disgusting sight!
Scotland Island desperately needs a decent sewer system. Please make this happen!
Should this scheme go ahead, what is the timeframe for completion and what disruptions could we expect? Would this involve Sydney Water commandeering part of the old car park?
We agree on the basis of the information provided above.
We are on tank water that tastes like eucalyptus an upgrade would be much appreciated.
I would only be willing to pay the similar costs that Dangar Island residents paid to have their systems connected. It seems crazy that we are a suburb of Sydney without water and sewage.
From a safety point of view would there be funds for drains and curvature of road correction with these works.
We really need our wastewater issue addressed. Current method of wastewater unsatisfactory.
Strongly support for health and environmental benefits to community
During the exhibition, I was told that the cost to each household was estimated to be in the order of $29,000 which would possibly be subsidised to reduce it to $12,500. Will consideration be given to allowing householders to make their own arrangements for tanks and macerators to be installed?
This is a must - the current wastewater arrangements on the island are destroying the ecosystem, you just have to look at the deterioration of the trees across the island, let alone the significant amount of run-off into the Pittwater. This is not a WANT, this is an absolute NEED and a fundamental responsibility of the Northern Beaches Council to manage the environment responsibly.
We are a family of five. Both of us work fulltime to support our family and live a very humble life. We pay our rates like every other home owner on the northern beaches. We simply could not afford this additional cost. Water services installed would be beneficial to all surrounding water ways too, not just us as individuals. Pollution reduction from the septic tanks that are all within the 200m of the water line would be no more.

The expectation for home owners to pay is simply not achievable for majority of residents, including ourselves.
Scotland Island is the only suburb in the Sydney metropolitan district with no water and no sewerage. In heavy rain our septic systems drain into the pristine waters of Pittwater. It is totally unacceptable that we are now in the third decade of the new millennium without services that the rest of Sydney have taken for granted for decades.
An assessment needs to be done re what effect the loss of the nutrients and water will have on the Islands vegetation.
As soon as possible please!
We need to have access to water and especially to sewage. The number of residents on Scotland Island is now too high for the current septic system to perform properly. We need a proper system that is not going to pollute the land and the water,
I believe and recommend that the roads will need to be sealed and kerbed and guttered and better stormwater piping into Pittwater provided shortly after sewer and Sydney water supply is completed, as part of the funding because 1. sewer and water supply will be in and along roadways 2. they will be exposed to damage by essential truck service Danger Island is a precedent
Supportive of this initiative for the following reasons: [1] quality of life equity for residents [2] mitigate the public health risk issue [3] address environmental impact and soil coliform saturation [4] it is the twenty first century and this is a first world country
Very keen to improve the condition of the island and the public health and environmental impacts.
This scheme is needed for the next generation.
Excellent project. Desperately needed.
We live with young children on the island and I am very concerned about the negative health implications of the wastewater run-off, sewerage tanks overflow and the associated mosquito problem. A mains water and wastewater service for the island is not a nice to have it's a vital and necessary public service.
This proposal is overdue. The situation needs urgent attention due especially to pollution of the environment. I urge council to move quickly.
It's been a long time coming, with the clay soils and dying trees on Scotland island this should have been undertaken years ago.
I have lived on the Island for 25 years and have always been told that water and sewage is 10 years away. From what I have read here the state government and NBC are responsible for several breaches of different environmental laws/rules for letting so many houses be on SI, so should immediately get started on the best system to make the area safe for all the ratepayers/taxpayers as well as taking care of the natural environment that they are responsible for too.

I fully support water and sewerage scheme.
I think septic is an issue on the island, however, considering the already high costs for island residents to potentially park at church point (mostly never getting a spot), residents are likely to be sceptical that this will benefit them at all.
It's a shame on council and State Government to ask. You never ask for electricity upgrade that works are now destroying our beach. You never asked for NBN that is 2 years late and speeds are like in third world country. Why is that Scotland island is the only post code in Sydney without these essential services and you dare asking if we would like. I was born in third world country and we got sewerage and water 1963. Shame
Scotland Island services are well below those provided to mainland properties despite Scotland Island residents paying Land tax, rates, Government taxes, and Stamp Duty. It has been determined that the water and waste water quality is below acceptable National Standards that is a risk to human health and the environment, therefore the Water and Waste water services should be installed to match those of our neighbouring suburbs on the mainland.
This needs to happen.
These services should be taken for granted in a suburb of any major city. The wastewater system in particular would be most welcome as the local conditions - a combination of small lot sizes and clay soils - are unsuitable for on-site disposal. These systems would provide significant environmental and health benefits and it is well beyond time that they were available on Scotland Island.
I wholeheartedly support this excellent study. Water and wastewater provision to Scotland Island is an absolute necessity for public health and environmental reasons. The proposed solutions seem entirely sensible and appropriate in my view and given the pressing and urgent health and environmental concerns are entirely writhing the gift of state government to fund, particularly given the focus on infrastructure projects during this difficult time of Covid-19 recovery.
* own the house with mortgage * not sure how to pay for high connection cost of $12,000 but it seems to be only cheaper available option. The best support we need is to divide into small amount of instalments with no interest or fee charge.
The sooner the better. So we can have the same convenience as mainland for fresh water for drinking and washing and a wastewater system to prevent any wastewater leaking from tanks.
This a no-brainer , the environment is screaming for this to happen ..... Spotted gum trees won't be as badly affected (overflowing / leaking septics flowing into the root systems) .... No stench on the daily stroll around the Island . Is this the last ' suburb ' in greater Sydney to get mains water and sewage ?????? To my knowledge it is ..... IT'S ABOUT TIME IT HAPPENED !!!!!!!
With respect to the Risk Analysis in the Commercial Assessment please consider the following risks: 1)The risk of pump failure after warranty period has expired has not been considered

the likelihood would be likely with a consequence of moderate giving a high risk what mitigation strategies are planned for this occurrence ?. The hybrid system which has some houses using gravity to drain away waste water would reduce the number of pressure pumps that will eventually fail and require replacement 2)The risk that project is slow to be implemented or not implemented at all the Likelihood is likely the consequence is major giving an extreme risk what mitigation strategies are intended for this scenario of clean water not being easily accessible by residents on the island, resulting in many families not being able to easily bath in wash in or drink clean water. With their waste water being disposed of in a fashion that can have detrimental effects on their health and the environment. Mitigation strategies in these circumstances would be to improve the existing system making use of the poly pipework and the connection to the mainland water already in place. improving the water reticulation system so that there are permanent connections to the household water tanks of anyone that wants such a connection and water meters provided at each tank to allow an easy monitoring system for the purchase of water directly related to the household consuming it. also non-return valves to be included at each tank connection to stop contamination of the system from the water tank being filled. Waste water to be separated into grey (Shower, bath, washing machine and dishwasher)and black water (toilet), black water only to go to septic tank with separate absorption trench to that for grey water. that way septic tanks do not become overloaded providing adequate time in the tank for processing of the effluent thus substantially reducing bad odours and germs emanating from the septic system . This is a relatively low cost strategy that can be implemented quickly and it will have a highly beneficial impact on the residents of and visitors to the island not to mention the environment itself. This is something that can and should be done straight away. This can be done as an interim measure until the recommendations of this feasibility study are adopted and implemented which if history is any indicator could take many years. Would it not be prudent to have an implementation strategy possibly attacking this project in stages addressing the lower cost, higher impact facets (in terms of improving the life of island residents) of the project first, namely the provision of clean water to the residents this is roughly one fifth the cost of providing waste water management according to figures quoted in this study i.e. approx $15,000,000 compared to $70,000,000 I can't see how having more clean water on the island can be considered detrimental especially if its distribution is controlled and metered so people pay for what they use. The waste water management could be addressed as the next stage. In this way the gaping need of the Scotland Island community for clean fresh water could be filled relatively quickly
About time. It has been too long watching the beautiful spotted gums die from excessive septic.
I am mostly in favour of the scheme, but we simply don't have $12,500 (and certainly not $39,000!!!) lying about to pay for connection. If there was a payment plan available with some co-funding, then it would be a possibility, perhaps. Council needs to remember that many of the people living on the island are retirees, artists or gig-based workers and, especially lately, our finances have taken a big hit. Many of us came to the island chasing a dream of affordable home ownership on the northern beaches, and many of us feel that this is being eroded by the constant 'island taxes' that seem to be cropping up. Parking fees (for non-existent parking spaces), fees to tie up our boats at wharves, fees to have a

vehicle on the island are all things that clip the ticket, and make somewhere that used to be idyllic, less so.
Most household septic system are malfunctioning. The Island desperately needs this solution
Island land seems to be pretty well saturated and smells of sewage after rain. Extremely hazardous to health of residents and our children and pets.
This is an excellent idea.
Scotland Island is the only suburb in the Sydney metropolitan that is not connected to water and sewerage. The water and wastewater scheme for Scotland Island is long, long overdue. NSW State Government must prioritise this project.
The environmental benefits would be a very exciting development for all on and around the Island. Please try and get this done. We are happy to respond quickly to see this come to fruition. Many thanks to all involved.
Many residents on Scotland island would not have the capacity to pay the $12,000 connection cost. In the interests of the environment the State Government should be covering these costs. If reports are true which indicate septic overflow then it is negligent for the government and Council not to resolve immediately
I understand there probably needs to be some sort of cost associated with getting these services but it need to be accessible to ll some sort of payment plan though rates or something as the suggested cost all up front would be tough for people When do you propose to start if it goes ahead??
We have a state of the art rainwater/septic system installed 3 years ago with a lifespan of 30 years...69 million dollars for 377 house is a ridiculous waste of tax payers money...$183,000 per household. The current water supply system works fine.
I think this would be great! The environmental impact of the current (failing) waste water systems is enormous! Drinking water connection is less of a concern.
Given the track record of the environmental mismanagement on Scotland Island, (Case in point: Carols beach at the moment), there is no guarantee that this would not be another disaster. While I am not qualified to comment on wastewater management, I do feel the pressure to suburbanise the island by wealthy investors is palpable and instils a sense of helplessness in those of us who have loved and lived on this island for many years and cared for its fragile environment. In my opinion, if every property had to have a proper wastewater management system (Enviro-cycle) and proper tanks for collecting rain water, Scotland Island would be better served. I am not against progress and I get that I am probably a lone voice that nobody will listen to, but I am really angry about what Ausgrid has done to Carols without ever consulting or apologising to the residents, or telling us what they are now doing, or if , in fact, they will ever be able to restore the beach, or give us a timeline. The pipe they have installed just under the water without any lights or warning, has already wrecked propellers and the beach is contaminated. I do not trust this

state govt. to undertake the enormous project of providing a responsible new wastewater and water scheme to the island, given what has already happened with trying to install a new power supply.
I own and live on Scotland Island permanently - family of 4.
Infrastructure Option 1 would be the most cost effective long term solution. This amenity is a necessity for the residents of Scotland Island and also for those who use Pittwater for recreational activities. My concern would be that a small proportion of lower income householders on the island would struggle to pay the connection and ongoing fees associated with this project. These households would likely benefit from a loan arrangement with SW or State Government. The cost per household needs to be very clearly explained so that residents understand the importance of finally getting this desperately needed infrastructure.
Fully supported - long overdue to bring the Island into the 21st century. It will eliminate a few people illegally tapping into the RFS water supply that runs across the seabed from Taylors Pt, and bring about a system that is equitable to all on the Island. A proper sewerage system will eventually eliminate the pollution of Pittwater that has occurred after long periods of heavy rains, which results in benefits to all living in the LGA. There will probably be those that moan about the cost involved but, many on the mainland have had to go thru similar expense in the past. It's all part of improving society. If you move to an Island in suburbia because it's cheaper and with less infrastructure, then with time, you have to expect that improvements will be required and that there will be a cost burden involved.
2 years ago I was forced to spend $30,000 for a new wastewater system (including septic trenches) due to Council rules. This year I spent another $10,000 on new water tanks, as my old tank is reaching end of life. To expect that I now have to pay another $12,500 is extremely unreasonable. The connections should be fully funded by the government. This is a base utility. Islanders have already been forking out large amounts of money that their mainlander neighbours have not due to the slackness of the government to provide this basic utility. I think we've paid enough!
Many of the dwellings on the island were built as weekenders or holiday houses and had minimal septic systems installed for their occasional use. These are now used as primary full time dwellings and the septic systems may not have been upgraded. The house we bought required the septic system to be upgraded because of this reason. Even modern built dwellings have been built without adequate wastewater systems with D.A approvals hiding bedroom capacities listed as offices etc. to avoid the build costs of larger septic systems . I know of at least one specific case regarding this matter. The benefit to the local ecosystem of a first world wastewater system cannot be underestimated. The surrounding waterways, seagrasses and the spotted gum forest on the island would benefit greatly. The safety of all who use Pittwater for recreational would also be greatly improved.
For all the reasons listed in the Council's document, this project is vital and long overdue. The status quo is indefensible and unacceptable in a Sydney metropolitan region in this age. A subsidised program such as a payment plan should be offered to the residents who are financially challenged. The State Government should help as much as it possibly can,

and should. Perhaps there are federal financial support schemes available for helping with environmental issues, as this one is.
It is a necessary for the environment and the water quality of the waters around the island
The provision of water and sewerage is long overdue, the current systems are an environmental and health issue for island residents and impact on the water quality of Pittwater. The cost per resident is estimated at $12 500 per property, multiplied by 377 properties equals to $4 712 500 which is approx. 7% of the overall $69 000 000 project costs. Given similar project in other areas e.g. Dangar Island were totally funded, why should Island residents have to pay this amount? Why shouldn't Sydney Water fund the Project in its entirety, including connection to each household?
Full support for the report & the report's recommendations. Current issues with water collection, dependency on the non-potable water supply due to drought, septic odours, septic runoff, faecal coliform levels & the unusually high mosquito population due to large amounts of standing water supplies make acting on the report essential.
In 2020 it is unacceptable that one of the most significant and environmentally sensitive waterways in Sydney, a wealthy, modern international city, has untreated human waste leeched into it every time it rains. Scotland Island smells of human waste after rains. Swimming in Pittwater after rains causes illness and infections. Oysters around the island are dangerous to eat, other sea creatures are probably suspect. The soil of my backyard is constantly soaked with untreated wastewater. When we have guests raw sewage water flows through the yard because the gradient is so steep and the soil is mostly clay. During sustained periods of rain the soil can no longer absorb all the wastewater and it flows openly. Even when our own system doesn't overflow we can smell the wastewater overflow around the island. The current system is a hazard to health and a blight on what could be a pristine waterway. The local environment - Pittwater, Ku-Ring-Gai National Park, Broken Bay is heavily used by many people: Sydney residents and visitors. Both the land and water and the people who enjoy them, deserve better than constant exposure to untreated human waste.
A wastewater scheme is absolutely essential in bringing Scotland Island up to the service and hygiene standards of the times. There are so many risks associated with the improvised septic systems that characterise Scotland Island - ask any resident how many times they have picked up gastro or another nasty bug to get an idea. I anticipate resistance with having to pay for this scheme, so hopefully this side of things will be well thought out, with payment plans and subsidies in place to get the more reluctant residents on board. Parking is an ongoing issue for residents, and council should consider alternatives to using the Church Point car park as it complicates daily life for residents in a way that I think is difficult to grasp for non-locals.
I think it is critical to deliver a proper wastewater system in particular in order to protect the beautiful environment of the island.
Such a scheme is LONG overdue. My only suggestion would be that residents have the option of retaining their existing water storage tanks and that the new supply feeds those tanks rather than direct to the house

While getting sewerage services on Scotland Island is well overdue I feel that the cost to connect is going to be prohibitive for low-income earners. I would hope a long-term payment plan can be made available to those who require it.
The current non-potable water reticulation system runs counter to the environment of Scotland Island: a) Surface dispersal of water from Enviro-cycle type units adds to the growth of noxious and imported weeds (i.e. Trad [Tradescantia fluminensis] and lantana). Being shallow rooted ground covers they prevent the growth of deeper rooted vegetation needed for substrata stabilisation. In addition there has been a recent upsurge in the growth of madeira vines which climb and cover existing trees. The issue of die-back has already been addressed. b) The evolution of the emergency water supply into a de facto system without the concomitant commitment to waste water disposal results in an excess of water the island has to cope with, as the non-potable supply combines with naturally occurring rainwater to inundate native growth which has not evolved to cope with a constant excess of water. This excess of water contributes to the degradation erosion of the island's roads system, adding a greater impost on Council; c) The cost of the island's non-potable water far exceeds the cost of potable water at Church Point (these costs include SIRA levy 100%; compulsory SIRA membership to obtain water $25; fees to line monitors (between $5 and $10 per fill) as well as the cost of tanks and their maintenance--transport of a replacement tank between Church Point and to an island residence can exceed $300)
Would be willing to pay subsidised connection costs totalling $12500 only, which is expensive. You do not make clear whether owners who do not connect would pay the service charges despite not connecting
As I'm renting I would expect the property owner to take care of the connection to the water supply.
We are in. But does this imply that the car park would again have restricted areas for the works? There must be a better proposal than the current Ausgrid "solution" we are enduring (begrudgingly) now. Perhaps restrict non-essential parking at the reserve and new carpark to residents only? Please?
Not having this type of system is a major health hazard. Most septic systems on the island are totally inadequate. There is not enough land and the soil is not suitable for septic trenches. This has been an ongoing problem for a long time. With Airbnb rentals increasing on the island, existing inadequate systems are being even more overloaded.
This will be an important improvement to Scotland in many ways. Improved water and soil quality, improved water quality in Pittwater, less offensive odours and sludge areas on roads and around houses, no requirement for septic "pump-outs" and maintenance inspections, less insects and vermin congregating around areas of sewage overflow, bringing us more into line with other areas in the Sydney metropolitan region. We fully support this recommendation.

Willing to pay reasonable and fair costs for connection as long as it is not astronomical. The community really needs this to be sorted, it is an environmental and public health hazard to have our effluent draining into Pittwater
1) I support delivery of reticulated water and sewerage services to Scotland Island 2) Delivery of a sewerage service will reduce the incidence of pollution into the surrounding waterways from leaking septic systems 3) Energy will be required to pressurise the sewerage system. This energy should be 100% supplied by renewable energy, preferably generated locally to avoid electricity distribution system losses.
Very happy with these proposals.
This water system would ensure Pittwater would be pristine for generations to come and should have been completed many years ago. Full support
Thanks to Council for managing this Feasibility Study and of course thanks to the NSW Government for funding it. The options proposed seem to be the most sensible and practical. This solution to our water and wastewater problems has been a long time coming and though there will be short term costs the longer term health, environment and community benefits will be significant. One additional advantage is that this project will also create economically stimulating employment opportunities.
Living full time on the island and seeing the wide variety of systems, most non-compliant, it is the only way to ensure the preservation and protection of the environment. A levy payable on the sale of their house should be placed on people who say they can't raise the money
Yes yes yes. I have an old septic and worry about the environment! I am not very financial but believe this is an important vital long term investment.
There has to be a financial support programme for people who cannot afford the connection costs. If this is not made clear, many people will be against this even though it is absolutely necessary to do this and to do it as quickly as possible. Our entire family suffers from repeated parasite infections due to the poor quality of local water (our own house water supply is UV treated with various filters and probably better than what comes out of the tap on the mainland) and the pollution cause by septic tank run off which makes most of the island smell like an open sewer after heavy rainfall. Many of our friends have had similar health issues. Please do not delay this any further.
Absolutely discussing the waste that flows into the Pittwater every time it rains. Pollution is sickening (literally). It's not just about overflowing septics it's due to over population on the island and decades of septic being pumped into the soil. After rain people get sick of they swim. God knows what it does to the fish. Please get sewage for this island.
The option look good. The overall cost as well. I am wondering if Harold Park will be impacted to the extend the community cannot use the side any longer. While the cost of

connection is estimated at 12.5K, clarification is required whether or not this includes the new pressure tank and transport costs on the island. I would support additional financial support as it adds up, there is also the decommissioning of the septic tank which would cost significantly. Also, Our site being very steep, I would appreciate some understanding of the new works constraints.
Bring it on! Great proposal. Full support.
This is a long overdue service that's needs attention ASAP. I feel it should be funded by the Government & Council entirely as residents are sick & tired of this councils unfair user pays system in this area. This is a serious health risk & also a environmental disaster waiting to happen.
$12.5k to connect is a serious cost, which not all residents can afford. This should be brought down within local residents budgets. Otherwise, I'm happy with the proposal
This is long outstanding piece of infrastructure required for a first world community both to preserve the environment on Scotland Island And Quality of water in Pittwater .
this is a great idea and the island would be a much better place without all the enviro cycles and septic systems. Taking out all the tanks would reduce the mosquito population as well. Let's do it....
Under the PSP Scotland Island was to be connected to sewerage by 2011. Scotland Island should be provided with a wastewater scheme equitable to those provided to other communities under the PSP. State Government and Sydney Water should not be permitted to avoid their obligations under the PSP. Scotland Island currently has no viable potable water supply, which simply cannot be allowed to continue in a suburban community. Thank you
Yes I completely support a networked water supply on Scotland Island. The local environment and waterways are severely impacted by sewerage systems. Native trees that have a shallow root system due to excess water and are affected by the higher level of nutrients create a danger to residents and buildings. Native vegetation is also impacted including the threatened ecological community of the Pittwater Wagstaff Spotted Gum Forest. Our household would be willing to pay a reasonable fee for this essential service to be installed. The current utilities on Scotland Island are not suited to this high density residential suburb and an upgrade is decades overdue. Thanks for the opportunity to provide comment.
In the early 1990s the Scotland Island Landcare Group commissioned several expert wastewater reports funded through government grant programs that concluded that water and sewerage was the only sustainable option for Scotland Island. Following submission of these reports to Sydney Water, Scotland Island was placed on the Priority Sewerage Program (PSP) with a program date of 2011/2012. It was subsequently removed from the PSP by Sydney Water without reference to the community.

There is a lack of equity with other communities such as Galston and Glenorie that are currently being connected to water and sewer as part of the PSP and at no cost to the residents. There is also a need to coordinate infrastructure service projects to ensure efficient integration and minimise damage to roads and drainage. There needs to be consideration given to disruption to car parking at Church Point with alternate arrangements put in place.
Scotland Island was on Sydney Waters list to sewer for free in the early 2000s with a promise to complete in 2010. Why do we now need to pay as previously this was going to be done for free? Sydney Water still owes at least explanation. Waster/Water on the Island will be good but I am concerned with environmental, roads and parking at Church Point impacts.
I can't find reference to what the impact will be on the main land... if any? Will all the infrastructure be underground? The Church Point mainland has been subjected to months of drilling from Ausgrid for the new underwater electricity cables to Scotland Island. The heavy vibration is resulting in houses and retaining walls cracking, land is subsiding and working from home is a struggle due to the noise. There doesn't seem to be any allowance for this type of impact to local residents, has this been considered in the options?
This has all the hallmarks of an exercise in obfuscation, where a proposal is put forward with a proposed unjustifiable cost (levied on NO other Sydney residents) and that is designed to fail. I note that the residents of Dangar Island were not charged for the provision of water/sewage services, and as many residents would likely be unable to pay the proposed $12,500 cost, especially while most people are reeling from the economic impact of the pandemic this proposal represents an abrogation of the duty of both Northern Beaches Council and the NSW State Government. Four years ago I installed a state of the art AWTS while building a new dwelling (a condition of the DA) which functions perfectly, causes no ground pollution and no contaminated runoff into Pittwater. Accordingly I would probably opt in for the provision of a mains water supply however I understand that this would not be available unless I accept the sewage package as well (at $12,500) and this is just plain price gouging and manipulation. A further question that begs asking is why NBC (and previously Pittwater Council) has been unable to adequately address the inadequate storm water management and road maintenance issues on Scotland Island.
I think providing water and septic to Scotland island is essential for the health and sustainability of the island, it's inhabitants and Pittwater.
Obviously, we need an improved water and wastewater system, but we should have funding from the government for its implementation.
I believe this is an extremely important issue for the island and fully support it. I would like to suggest however, that when discussing the costs of the upgrades per household, that council also suggests some sort of payment scheme. The fear of a large payment for something like this may drive many islanders away, but if they know there is some longer term support available (loan, bond issue etc.) then I believe more people would be on side

The state government or the people of Scotland Island should be paying for anything 'extra' the residents require on top of the basic necessities.
I would lend cautious support to the project, if a commitment is made to hold the water service charge and water the usage charges to the same levels as the adjacent mainland. Elevating charges for decades on an essential and mandated service, to payback an installation cost, is very likely to generate significant community resentment. Feeling around the new Church Point car-park provides a useful guide to this. As an alternative, I would support more rigorously enforcing maintenance, and replacement over time, of the current (mostly decades old) waste water treatment systems. Such a solution is likely to provide similar environmental results, at a tiny fraction of the $69 million cost estimate. For under $4 million, every house could have a new state-of the-art Aerated Septic System or similar, including installation (Please see attached quote). This solution uses existing household piping and requires no new public infrastructure. New Aerated Septic systems are likely to cost effectively reduce both nutrient and faecal coliform levels, as such addressing all the main concerns expressed by the community.
Health risks and ongoing damage to vegetation, particularly at the bottom of slopes suffering run off from septic systems, are an unacceptable situation in a first world country. This problem has developed over a long time and will continue to grow until an acceptable system for sewage disposal is provided.
From an environmental and public health perspective it sounds like the right thing to do.
This essential service has been debated for the last 30 years as mentioned in the report. I believe that we are entitled to the same essential service as other metropolitan suburbs have in the greater county of Cumberland. Not the impose of additional fees to selective citizens.
Scotland Island has been on the Priority Sewerage Program for many years and has not been progressed due to reluctance by Sydney Water to invest in the necessary infrastructure. The lot sizes and the nature of the soils on Scotland Island make it impossible to have compliant septic systems with resulting health and environment problems due to contaminated ground water. The feasibility study shows that it both feasible and practical to deliver both water & wastewater services to Scotland Island. We now need the State Government to proceed to fund the necessary infrastructure investment to ensure an equitable outcome for Scotland Island residents.
The septic tank system on the island at present just can't cope with the density of population and the consequent amount of wastewater this produces. A new system of waste disposal is crucial to improving the local environment - the soil, trees and vegetation and the surrounding waterways - and the health of residents, visitors and users of Pittwater. I do think residents will need to be encouraged to keep collecting water from their roofs to assist in the control of erosion and water pollution from runoff.
I am not that concerned with water connection however sewage removal would be great for Scotland Island.
After rain like this weekend the island stinks as run off from peoples enviro cycle sprinkler beds wash out onto the road. As summer comes on the mosquitoes own the night and we all live in a haze of

insecticide. Town water and sewage would make such a huge difference to the island ...it would cure both these problems
I think it is a great idea that is long overdue and will make the island a happier, healthier and less smelly place!
I fully support these developments. In particular, I am concerned about the present sewage arrangements in relation to the health of the native trees on the island, as well as the effect that the current septic systems have on encouraging mosquitoes and invasive weeds, both of which are major pests on the island. I also have some concerns about the island's current water supply and its implications for criminal liability under the Public Health Act 2010 (NSW). In short, s 15 prohibits the supply, by means of a reticulated water system, of 'drinking water'. The problem lies with the definition of 'drinking water' as found in s 13: water intended, OR LIKELY, to be drunk or used for cooking etc. There is no point in denying that many households rely on the island's 'emergency' water system, run by the residents' association (SIRA), for all their domestic needs. Undoubtedly SIRA, as well as the individuals involved in the water supply, are altruistically motivated. The island is vulnerable to bushfire, and it is vital that every household be able to maintain a full water tank if the fire brigade is to stand any chance of defending houses. Without SIRA's water system it would be impossible for households to maintain a full tank during dry periods. I submit that it is unconscionable that well-meaning and public-spirited individuals should be exposed to even the suggestion of criminal liability when they simply trying to attenuate the effects of failings by public bodies to provide a water supply.
The island is recognised as being home to the Pittwater Wagstaff spotted gum endangered ecological community of the Sydney Bioregion. A majority of blocks are quite small and have limited space for wastewater absorption. Characterized by steep topography and shallow topsoil wastewater travels over the clay subsurface having an adverse effect on the endangered forest community due to changes in nutrients and moisture levels. During rain runoff flows downhill into the Pittwater estuary. The Scotland Island Water and Wastewater study (D. Martens 1997) highlighted the contamination to stormwater runoff from the island to Pittwater estuary, a significant recreational site for swimming, boating and fishing for local and Sydney resident. Septic runoff has been an issue for our household causing the death of 2 mature spotted gums adjacent to our septic field, ear infection from swimming and a possible longer term intestinal upset. The issues are easily verified by the turbidity of the water surrounding the island after rain, the loss of canopy and dieback of the forest trees and weed growth in water logged soils. Moist soil and pooled runoff provide an ideal breeding ground for mosquitoes which carry diseases of the Barmah Forest and the Ross River Fever viruses and have been reported on the Northern Beaches. While the Scotland Island is not a large island land mass it is densely populated with between 800 and 1000 inhabitants and about 350 homes. Until sewage and water are available to the island fire remains a very real threat to the community. The island rural first service is dependent on access to residents private water tanks and two emergency at the top of the island. With only 4 minutes of water on a single truck there is no chance of stopping an intense fire. With increasing periods of drought, erratic weather and intense storms having an

improved water supply makes good sense not only for the local community, but those across the water that might experience ember attack.
Some 25 years ago when we were at Bayview, we were then connected to the Sewerage system To the best of my knowledge we did not have to pay anything. Perhaps it was built into the annual/quarterly fees over a period. Can you tell me what the situation would have been then. If we are being asked to pay now, then that would be inequitable. We await your answer on this so that we can modify our answers. I'm tipping that a large % of home owners on Scotland Island would find it very difficult to come up with an amount of $12000 (an estimate that almost certainly will increase) Therefore a small amount over a period should be set down as a related question in regard to this question 'will you be willing to pay?' - if this is the same situation as with the mainland
I fully support bringing water and wastewater service to Scotland island, please make it happen!
Water and Waste water are vital for our off shore community for health and safety reasons not to mention keeping the Pittwater free from septic run off.
The number of mosquitos are increasing each year and recently there have been cases of ross River fever, which comes from mosquitos. Even with septic checks there are occasions when septic tanks are overflowing and it is quite unpleasant. Recently we have been unable to obtain a septic waste clear cut as the operating has been unable to come to the island. For hygiene and safety main waters would alleviate these issues.
The danger of a fire on Scotland Island & not having adequate water pressure to fight fires. Overflow of septic systems with water lying around, being a breeding ground for mosquitos - The lack of good drinking water
My concern that if there's a fire on the island we're very vulnerable having no water pressure to fight the fire. The quality of the drinking water is poor. The overflow of the septic systems leaving water lying around, mosquitos breeding - there's been a number of Ross River Fever cases diagnosed recently.
After last summer's fires the reality of the vulnerability of the residents of Scotland Island having inadequate water pressure to fight any fires. The health issues that are arising - cases of Ross River Fever due to overflowing septic systems with water lying around . The quality of the drinking water.
As a resident on Scotland Island, we have major concerns of the fire risks on the island without proper under pressure water to fight fires. The major concern of overflowing septic systems with water lying around where mosquitoes are breeding & I'm aware of three cases of Ross River Fever recently. Good healthy clean water for the residents including children on the island.
I strongly support the need to for the count in and the state government to support the need to provide water and wastewater to Scotland Island. Having lived on the island for 3

years I have witness the pollutions from septic systems and also noted the water quality in Pittwater is poorer as a result Scotland Island not have a proper wastewater management scheme in place. I've also experience that even though most residents rely on rain water harvesting global warming is definitely impacting harvesting and there should be an encouragement to have water supplemented with rainwater harvesting. This is good responsible step that the council is make with proposing water and wastewater scheme for the island.
HOPEFULLY, THIS WILL BE NOT BE JUST ANOTHER SURVEY THAT GOES NOWHERE. IN 2020 IT IS UNBELIEVABLE THAT A SUBURB OF SYDNEY HAS NO SEWERAGE AND NO WATER SUPPLY.
We've had our home here for 17 years and this infrastructure is long overdue. Everywhere else in Sydney has this infrastructure , which is a first world service. We've seen many trees die and our arborist believes this is due to the effluent run-off and detergents . I imagine the run-off into Pittwater detrimentally affects the marine life. I would appreciate your urgent consideration to this matter.
I have been a resident for 20 years. When I moved to the island I was excited that a water and sewage Sydney Water connection was a government priority and was due to occur within a few years. I have been highly disappointed that this has still not eventuated and it has even somehow slipped of the priority list, despite growing number of houses and people on the island. Not being provided clean drinking water when it is easily available within a metropolitan area is a public health risk and shows obvious inaction by government. There is inequality between Island residents and other residents with the Northern Beaches as water on the Island is not subject to regular testing and does not have fluoride and disinfectant. Having mains water under pressure would be an enormous benefit toward firefighting and again lack of mains water for this purpose is neglect by the government. The emergency firefighting water is a poor substitute as this line is regularly unavailable, it has poor pressure and it cannot be relied upon. The time for connection to mains water is more than urgent than ever considering the increasingly more intense weather we are receiving. There are approx 560 people of the island (2016 census) and the current firefighting resources are useless. A reliable water supply would significantly enhance our ability toward controlling fire. Not being provided with a modern sewerage system is likely to create significant public health and environmental risks. There is likely to be high number of unreported community sickness and also environmental impacts. Old septic tanks and similar waste water systems are not acceptable when a sewerage system is available within a metropolitan area. Many island waste water systems are too old and well beyond their use by date, patched together in a band-aid manner. Many are not designed for their current load and it is not possible that regulatory overview can satisfactorily address all of their deficiencies. I have often noticed areas around waste water systems that have puddles, over land flow, odour, mosquitoes and noxious weeds. There have been times where it is embarrassing to have friends over due to strong odours noticed from

neighbouring waste water systems. It is likely that the good water quality results are noted due to dilution and tidal flushing in Pittwater. Water sampling taken close to the island and/or in small creeks on the Island may provide significantly differing results. The planning for the island does not allow for satisfactory land application sizes to adequately manage on site waste water. Further the soil type, dense overhead foliage, aspect and steep slopes are other factors on the Island that significantly reduce the effectiveness of waste water land application. I have personally noticed an increase in gum tree dye back. The spotted gums on the Island are protected and are meant to be significant to the area. There is serious encroachment of weeds that are impossible to control and overland water is noticed at times - particularly on washing day. Urgent action toward reducing pollution, nutrients, land and water contamination from waste water systems is required and this can only be achieved by a sewerage system that takes sewage off site. I strongly support the connection of the Island to a sewerage system and mains water. It will be a tremendous environmental and public health benefit. It will also be a huge achievement for the government if this can be delivered in a timely manner. Further during this difficult economic period due to COVID, this project will stimulate many necessary jobs in different sectors and provide a huge positive impact to our local community and beyond.
I can't believe that a place in such a beautiful part of Sydney still doesn't have fresh clean water readily available to its residents. There seems to be a school of thought that thinks the islanders if given the privilege of having easy access to clean fresh water will over indulge in the use of this precious resource and add to the waste water problems of the island. Firstly I don't see why people who truly know the value of this precious resource people who have had to frugally managed its use over years would turn around and blatantly waste it especially when they will be charged for its use Secondly regarding the waste water issues maybe more consideration could be given to on site separation of grey water and black water with appropriate treatment to each to minimize adverse effects. This approach would be relatively low cost and would greatly improve the living conditions of the islanders and other off sure residents with no detrimental effects to the environment
I am 2 years old if I could write ,this is what I would say I wish I could have a bath in clean water without the danger of getting sick I wish I could drink the water from our tap without getting a tummy ache I wish mummy could wash my nappies in our washing machine and they look cleaner after they have been washed I wish I could go to preschool on the island and be able to have a drink of water and go to the toilet and wash my hands if I need to. I wish I could go outside and not be bitten by mozzies that have been breading in water storage tanks I wish my mummy and daddy didn’t have to worry if we will have enough water to drink, shower and wash our bodies and clothes in, and cook and do the washing up this is a constant worry for my family And a source of great anxiety to me

Scotland Island has been waiting a long time to receive what most residents in suburban metropolitan Sydney take for granted. We need these services NOW, not in another 20 or so years! Sydney Water quoted what has proven to be a grossly exaggerated cost to provide water and wastewater infrastructure to the Island, now the real cost has been determined there should be no delay in planning and design to progress these services. We have a public health issue with our soils being contaminated by effluent, there is insufficient water to provide good supply during fire emergencies, the mosquitoes just about carry you away and are a source of Ross River Fever (most recently some residents have become very ill), our environment is suffering with trees dying and falling on property and losing our canopy. The PSP programme is within the license agreement of Sydney Water and grant funding was made available to provide reticulated water to Dangar Island years ago. We deserve this consideration and there should be no delay in planning to provide this essential infrastructure to our community.
I strongly support the proposal for both water schemes to be adapted and enacted as a matter of urgency. The waste water issue on the island is evident by the constant odour that is present in many areas. There are systems that are not maintained and managed in a proper fashion. I own a property that is next to a rental property, the system immediately to the south is a constant issue and is a health hazard to my property as it regularly sprays waste water on my roof when it malfunctions. This situation causes the need for disinfecting and washing my roof in order to collect rain water and store it for our household! It is certainly NOT a positive contribution to a harmonious neighbourhood.
As the population on the island has increased and may continue to do so it is essential that Sydney water finally take charge of its responsibility to secure safe drinking water and sewage removal to the island community. The matter is urgent as septic systems are constantly failing all over the island for various reasons, The reasons are.... - lot sizes are too small for effective high volume soaking of grey water. - The island has deep clay soils which means wastewater trenches can become saturated reducing effectiveness . - In combination with often saturated clay soils, most lots are steeply sloped meaning water from Septic trenches discharge back to the surface, often onto neighbouring property, dirt roads, bushland and I have been told into the seawater of Pittwater . - We own two home properties on the island and are experiencing all these problems as I have mentioned above on both lots. In conclusion because Septic Systems are generally incompatible with the geography, topography, lot sizes, population density and saturated clay soil of Scotland Island there is no excuse for Sydney Water and other entities to not finally engage, to work towards resolving a long standing environmental issue. It's well worth investing in.
this has been too long in coming
I am concerned on the amount of pollution enters the Pittwater after heavy rain from overflow of the septic tanks. Often the smell can be very unpleasant. Concern for swimmers. Soil Pollution from wastewater from tanks not safe. Please can we fix this problem we are now living in the 2020s and the time has come to fix old methods with new.
Most houses here have smallish waste water systems (catered for part timers it seems of the Island), and as soon as visitors come or during covid when everyone was Home, we could see lots of places in the Island where the seats was evidently overflowing onto the

road, making it slimey & un-pleasant. I cannot help to think of that is good for the environment here & the water as all run off into Pittwater with big rains.
If it ain't broke don't waste NSW taxpayers (net positive) cash.
Our children deserve to live in a sewerage-free environment. It is unhygienic and unhealthy and we should't have to pay for basic hygiene standards like everyone in any other suburb.
Our children deserve to live in a sewerage-free environment. It is unhygienic and unhealthy and we should't have to pay for basic hygiene standards like everyone in any other suburb.
We believe the homeowners of Scotland island deserve the same treatment as other residents in Sydney and the water and sewage services are way overdue. Please support funding for this. We also would like to see action on more reliable parking for offshore residents.
We really need the water and waste scheme to happen urgently, having lived on Scotland Island for over 20 years the population has become far more dense. Many more residents live here now permenantly instead of it being mostly holiday homes, This increases the usage of water and strains the septic systems. I have noticed spotted gums trees have become unhealthy and I expect this is to do with the septic systems. We need upgrades please.
We need a normal water and waste water system just like every other Suburb in Sydney has. We pay the same rates but don't receive the same infrastructure. It is time to correct this.
Sooner the better
I think Scotland Island needs to have water and sewerage. Septic seeping into Pittwater after rain as stormwater drains overflow and the ground becomes waterlogged is disgusting. Its environmentally unsustainable as there are more people moving onto the island all the time so.. more septic. Thank you. Please fix.
Clean Healthy water, No more pollutions running into Pittwater
Excellent initiative and long overdue. Much better for the environment and the pristine waters of Pittwater.
The number of houses on the Island now and the age of a number of septic trenches make it a necessity to have water and sewage on the Island.
Long overdue. This will benefit the environment and residents alike.

Appendix B – Submissions received by mail

24 October 2020

Northern Beaches Council
P.O. Box 82,
Manly, 2095 NSW
Council@northernbeaches.nsw.gov.au

Re: Scotland Island Water and Wastewater Feasibility Study

The Scotland Island Residents Association (SIRA) would like to thank Northern Beaches Council for facilitating the Water and Wastewater Study and the deliverables to investigate the feasibility of providing water and wastewater services to the residents of Scotland Island.
SIRA supports the findings highlighted in the Study and commends the transparency of the methodology and reporting. SIRA is also supportive of the recommendations made in the Study report. We are strongly of the view that doing nothing is not an option.
The Study findings are very important to our community. SIRA stresses that getting access to a secure water supply and wastewater services is critical for Scotland Island residents:

- **Scotland Island has a Category 1, Bush Fire Prone Rating,** the highest risk for bush fire. The vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production.

  Apart for the bushfire risk, Scotland Island Rural Fire Brigade also has responsibility for any structural/building fires involving the 364 dwellings on the Island. The residents have to rely on the Scotland Island Rural Fire Brigade volunteer supported by the willing community members to manage any bushfire and/or structure fire on the Island. The lack of access to a reliable water source is a critical safety concern. Access to a reliable water supply, would significantly increase the defensibility and safety of Island residents, particularly during times of limited rainfall.
  - Sydney Water has reduced the pressure in its water mains in the vicinity of Church Point, which has resulted in the inability to fill the fire-fighting reservoirs on top of Scotland Island through the HDPE "emergency water supply" line, which was installed initially for the purpose of mitigating risk of bushfire.
  - Residents have a limited supply of water through household water tank storage; in the event of a bushfire, those storage tanks are unlikely to be sufficient, especially when tank levels are low in dry periods. This was the case during the 1994 bush fire emergency in the Ku-ring-gai Chase National Park. The lack of adequate water

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pressure to enable the use of hoses when fighting amber attacks is also a major concern.
    - Roads are not equipped with fire hydrants for the fire trucks to be able to operate effectively.

- **Scotland Island is not a rural community, but truly a suburban community** with 364 out of 377 blocks built upon, plus there is also a Community Hall and Children's Centre in Catherine Park. Scotland Island was overlooked when the Northern Beaches was connected to sewer and water mains. The blocks are of a size similar to other suburban blocks i.e. as small as 650 m^2 and up to 1200 m^2 are associated with the steep terrain, shallow soils and clay profiles causing all sorts of issues for effluent infiltration.
    - The Water and Wastewater Feasibility Study report acknowledges that even the most advanced "on-site" effluent treatment technology is not suitable on Scotland Island. This is incompatible with the use of backyard for recreation or vegetable gardens.
    - Scotland Island's services are not equitable with other Sydney Metro suburban areas.

- **Risks to health** are a significant concern for most, even more for families with young children.
    - SIRA would point out that the numbers put forward in the reports are based on the 2016 census which does not appear to be correct. The 2016 survey counted 579 residents, SIRA believes it would be closer to 800 as the island boasts a high number of families with school age children and now has 364 built blocks.
    - Leaking effluent release systems, subsurface flow release of effluent due to saturated and shallow soils and ponding effluent water are breeding nests for mosquitoes. The very high level of mosquitoes while not pleasant is also a concern to health as Ross River fever is present in the Northern Beaches. Access to sewer services would significantly reduce the risk. On Dangar Island, the population of mosquitoes decreased dramatically after sewerage installation.
    - Children play on the local beaches, roads and backyards. While the evidence is more anecdotal and none may have been reported to NSW Health (residents would only consult a doctor after a few days of illness), children being affected by contaminated soils is not uncommon.
    - The risk to health is exacerbated by the changing demographic of new owners with a high sense of entitlement (higher water usage, low understanding of natural environment and less willingness to adapt).

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- **Environmental impacts:** The Island community lives under the canopy of the Pittwater and Wagstaffe Spotted Gum Forest Endangered Ecological Community. The impact of wastewater disposal on the environment has been documented overtime with the observation of die back in the native species, and continued loss of tree canopy. The Water and Wastewater Feasibility Study report also identifies related issues as including soil saturation, high levels of nitrogen and proliferation of noxious weeds.

Both Necessary and affordable: The Water and Wastewater Feasibility Study report estimated the cost of installation of both water supply and wastewater systems to be 69 million AUD, which is significantly less than the cost estimated by Sydney Water, and consistent with the costs occurred at Dangar Island. To note, SIRA has long time advocated Sydney Water has not fulfilled its licence requirements. As a result, there are currently three different water supply substandard schemes (SIRA emergency water system and two private ones to about 18 houses) operating on the Island prone to failure. Thank you again for providing the support of Council's team to facilitate this study and for advocating on the behalf of Scotland Island community.

Yours sincerely,

Colin Haskell
President – Scotland Island Residents Association

p.p. Sharon Kinnison
Vice President

Scotland Island Residents' Association Inc
P O Box 70, Church Point 2105 ABN 19 163 341 913
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October 27th 2020

To The Honourable Melinda Pavey MP, and The Honourable Rob Stokes MP.

Thanks for taking a moment to read this letter. I hope you and yours are healthy and happy during the current times.

I'm writing about the supply of water and wastewater on Scotland Island.

We've lived on the island for about 4 years, and love the community and scenery. Our place is located at the top of the back of the island, so, when it comes to our current situation with water, there's a distinct lack of fun times happening. I'm respectful of your time so will prevent myself from creating the enormous missive I'm tempted to write, inspired and somewhat enraged by the daily issues we go through. In short, these are the ones that are most super fun:

- **Water:** We ran out of water on Saturday. As in totally. Why? Are we random and disorganised types? Nope. We're disappointingly organised, verging on anally retentive in our attention to booking our times on Line 3, to pump water into our tank. But (and this is the truly hilarious part) we've gone from filling our 22,000 litre tank in 10 hours, which was the situation when we moved on to the island, to getting just under 2,000 litres. In 12 hours. That's right. About a week to 10 days worth of water for a family of 4. And it takes 12 hours. Now, I'm sure we can agree that's not the dream situation. You may be tempted to say that we moved here, by our own volition, so should expect things wont be the same as they are on the far, far distant mainland. All of 300 metres away. But you'd be sadly mistaken Because when we bought the house, we knew it wouldn't be as simple as a town water situation.. but we also knew we'd have access to the pumped water, when we needed it, on a reliable service. Fast forward 4 years, and here we are with no water because 1) We can only get 2,000 litres per 12 hours and 2)We can only make a booking roughly every 6 weeks because the pressure is SO LOW at this height on the island that all the users of line 3 have booked in for water, for long slots, because none of us has access to enough water. No toilet facilities. No drinking water. No showers to keep our bodies clean during this global pandemic; and no washing machine to do the same for our clothes and bedding. Not fun times.
- **Sustainability**: We want to be more sustainable, having built a veggie patch, by hand, to grow our own crops. But given the water ponding around the tanks, and runoff from the top of the island during rain, we're concerned about the levels of pollution in our soil.Another fun conversation to have with ourselves and our kids.. you can't have a shower because we have no water, and we're not sure if we should feed you these home grown veggies due to the dangerously high levels of pollutants in our soil.

- **Smell:** Yep, that's right, the current onsite sewage treatment tank smells. On a good day with a following wind, we can sit happily on the balcony or make use of our garden. ON a still day - so essentially nearly the whole of summer and autumn, when it's hot and still.. good luck. The smell is outrageous.
- **Fire:** From October 2019 to March 2020, I didn't sleep through the night once. I was too panicked about getting our children to safety if the Gospers Mountain fire spread and we had an ember attack, or even a fire started on the island. Again, yes, we were aware of the increased fire risk when we moved to the island.. but at that point we didn't have super fires from seasons like that one, and also we did have a relatively decent water supply. With no access to reticulated water, therefore no hydrants.. our lovely RFS team literally cannot fight fires. The advice given to us was to leave, until the fire threat passed. A good plan.. other than the fact last fire season it would have meant we had to find a home, partially during Covid, for 4 months. Which isnt' really ideal now is it.
- **Mozzies.** Little blighters love it on the island - who can blame them really, with such lovely breeding grounds provided by the on site sewerage systems and ponding/release of water. With the detection of Ross River fever on the island, it's another unacceptable danger passed on by the lack of access to appropriate water and sewage.
- **Access:** Sydney Water interestingly own the piece of land directly behind our property. We are told the original intention was to put a giant water tank there and gravity feed water to the homes nearby, and potentially all of the island. Seems smart. However this hasn't happened, clearly, and we now have a situation where the council won't gazette the road on this land as it belongs to Sydney Water.. and Sydney Water won't upkeep the land, or put a tank on it. So, here we are with no water, and a track full of holes meaning in the event of floods or fires, our chances of getting out at all, but particularly without breaking a leg trying to get done the road,are pretty slim.
- **The elephant in the room**. The comparative community, Dangar Island, was given these things in 1971. So, we're not being precious little snowflakes asking for it in 2020, really are we?

Whilst we fully, and happily, accept that offshore living has its differences and downsides when compared to the comparative convenience of the mainland, we don't think that access to safe water should be one of these. We're not looking for a bridge to the mainland. Champagne on tap. Roads like ribbons. We're simply making what seems to be a pretty reasonable request to have access to safe, accessible water and sewage systems.

Dear Mr Stokes and Northern Beaches Council Members,

We have been residents on Scotland Island for 22 years. During that time, we have endured constant smell from sewage, not only ours, but from all around the island. It is disgusting.

We would like to swim in the ocean, but after hearing of studies done several years ago now, we began to wonder if we were in danger of illness. When we swim, if we swim, we make sure to not put our heads in the water. More than one study has been carried out on the quality of the soil and water around the island. After rain, evidence can be seen of the runoff as the water turns brown. Now yet another study is being done. How many more studies will it take for our state government to wake up and realise that we are living in substandard conditions where adults as well as children are getting sick because of the contamination of the soil from years of sewage leaking into the soil. It doesn't matter how up to date one's system is, with so many people living on the island, this problem, which we have been living with for 22 years is not going away; it is only getting worse.

We don't drink the water from our tank anymore, even though it is a new tank, because we never know how clean it really is. Leaves in the gutter as well as bird droppings can leech into the water.

Filling our tank can take up to 10-12 hours because the pressure is so low. But we are still expected to pay the same council rates as everyone else who has town water and sewage. This disadvantage is added to the parking fees we need to pay yearly that people on the mainland get to do for free.

It is time to bring the offshore community into the 21st century and allow us to live a modern life. The island ecology is suffering and the native canopy struggles to survive.

We are only asking to be able to live free of potential disease and illness in what looks like a pristine environment but is far from it thanks to people who allow surveys, but fail to act.

Thank you for your serious consideration in the this matter.

The Hon Melinda Pavey MP – Minister for Water

By email oxley@parliament.nsw.gov.au

Dear Minister

I am writing to you with a plea that something be done to improve the water and sewerage infrastructure on Scotland Island which currently is akin to living in a third world environment of no permanent water and no sewerage.

Northern Beaches Council has recently completed a study that makes compelling reading as to why we should have such basic services.

I have been a resident of Scotland island for 17 years and I therefore have seen first hand the affects of the unsewered water discharge on local trees and waterways. During this time and particularly after rain you can see the detergents used by household mixed with effluent turn the water brown around the island.

Ie have also witnessed native gum trees die on our property. Our arborist advice is the increasing numbers of gum trees that are dying is from the distress of the sewerage seeping through the soils.

We also have a disturbing health risk you might not be aware of. The island now has a large concentration of mozquitoes due to the effluent discharge and we know of people now struck down with Ross River fever. The mozquitoes are the spreaders of this invasive and deliberating disease and if we could have sewerage managed better we would not have this infestation of mosquitoes. This is very urgent consideration as Ross River fever has only more recently been known to exist on the island.

What is particular concerning is the fire risk, given we live in a high fire zone its very disconcerting that there is no permanent water supply for fire hydrants to fight any fire. I think this is an essential requirement for any high risk fire zone.

I support the principal that the user should pay and as the Council report has suggested the cost should be reasonable given residents want this service.

Sydney Water has in the past identified the infrastructure requirement in forward planning but alas they have not taken action despite every indication they would be.

Yours sincerely

[redacted]

Copy to

The Hon. Rob Stokes, MP by email pittwater@parliament.nsw.gov.au

Northern Beaches Council, by email council@northernbeaches.nsw.gov.au

SIRA, by email president@sira.org.au

Scotland Island NSW 2105

26 October 2020

The Hon Melinda Pavey MP
By email
oxley@parliament.nsw.gov.au

Dear Minister

Re: Scotland Island - In need of Water and Sewerage Infrastructure

Decades ago there wasn't the number of people living on Scotland Island, that there is now.
I met a woman two years ago in her late 80s who says she and her husband were one of the first couples to live here on Scotland Island. They built their house with their own hands, carrying the material to their building site which was on higher ground. It's understandable there wasn't water and sewerage back then.

With the growth of population, and many houses being very close together, we need the water and sewerage infrastructure. We've had neighbours who have had a couple of visitors too many over some weekends, causing their sewerage system to stink, as it was unable to cope with the numbers of people. That is a stench that one comes across from various places at various times walking around the island. After rain the water takes on a sinister brownish look. All very unhygienic especially for the kids. Bear in mind Scotland Island is a part of the capital of New South Wales.

We've had to call in an aborist to cut down dead spotted gums on our property. He believed that the number of gum trees that are dying on Scotland Island is from the distress of the sewerage seeping through the soils.

NSW Health has noted that Ross River virus and other such viruses which are spread by mosquitoes have been detected on the Northern Beaches. Mosquitoes thrive in wet environments created by on-site sewerage systems. We can use mosquito repellent, but that can be forgotten, coming home from work, shops, carrying babies, etc. This has become an urgent health matter as Scotland Island is particularly prone with the numerous septic tanks all working hard alongside each other from the bottom to the top of the island.

After last summer's horrific bushfires it is alarming that we don't have reticulated water and therefore no fire hydrants. Scotland Island is in a bushfire zone area, the cost of our insurance premiums sure confirm that. This is another urgent reason for the need of water and sewerage to help keep us safe.

My husband and I understand that we would pay for our share of cost which apparently is reasonable because many residents want this infrastructure.

I ask you Minister to be a Voice for us in this. Dangar Island which is in Hornsby electorate was connected to the water supply system by the then Metropolitan Water Sewerage and Drainage Board in 1971. That island has since been connected to the Sydney sewerage system by Sydney Water. What is it that is holding Scotland Island back from such a basic service? Please help us in this matter.

Yours sincerely
[redacted]

Copy to: The Hon. Rob Stokes, MP by email pittwater@parliament.nsw.gov.au
Northern Beaches Council, by email council@northernbeaches.nsw.au
SIRA, by email president@sira.org.au

Northern Beaches Council
Response to comments – Scotland Island October 2020

Attention: Environment and Climate Change

Scotland Island Water and Wastewater Feasibility Study

On behalf of [redacted] please consider the following comments that attempt to take account of the Scotland Island Community and the practical implementation of best practice management capable of future city ideology for 50-100 year lifestyle project. The general tenant of this feasibility proposal is much needed and comprehensively justified infrastructure project for implementation.

It would be an abandonment by Government to not fund without cost to the Community the tenant of the project as the stakeholder with responsibility for public health and equitable regard. As a retrofit project, there is no mitigating reason to consider a new public housing proposal for the imminent Ingleside land release as any different priority for the business case of the Scotland Island proposal for either local infrastructure works proposed.

[redacted] is a local water industry participant with well over 35 years' experience in this local area for water reticulation, harvesting systems, stormwater management and sewage management systems. [redacted] well understands the conditions of Scotland Island and the issues that have been associated with the community and its local characteristics. One Water is a long established water business in Northern Beaches Council area and has the experience of performance design of innovative product solutions and installations incorporating the contemporary IoT smart application applied to regional water balance, WSUD for stormwater and sewage management facilities and the integration applied to Natures water cycle.

A core philosophy is for water as a natural and renewable resource that human needs and urban disruptions rely upon must integrate the outcomes to nurture and support Nature for the solutions Nature and its ecology provides to our sustainability. The sub-optimal solutions we tend to use for developments and our human needs still revert to using Nature as an economic offset with little regard to the many pathways and processes Nature provides to guarantee the outcomes for urbanization and its disruptions. Thus as a fundamental approach any solution needs to be Nature focused and supported with the capability of solutions available to us to nurture nature to be able to live in harmony with the sustainability of resources we rely on. [redacted] has solutions and innovations that are contributory to climate change responses and the preservation of the Northern Beaches environment for the unique amenity and commercial development for the Northern Beaches Community.

Preliminary

1. Scotland Island is an interesting urban location and environmental potential where any proposed site development and infrastructure installations should not impact the natural conditions of the location and its surrounds, albeit a tidal waterway as a critical amenity for transport, recreational and some commercial application.

> Northern Beaches Council recently completed a study, funded by the NSW Government, to investigate the feasibility of providing water and wastewater services to Scotland Island.
>
> The study listed the key benefits of providing Scotland Island with a networked water supply and wastewater collection system as:

- addressing a long-standing community need for the services, which have been provided to similar communities in the past, and at a cost that is comparable to similar schemes
- improving the quality of water and wastewater service for island residents
- significantly improving the local environment, both on and off the island
- reducing public health risks
- upgrading currently non-compliant system.

The Case for Investment Report recommends that the state government fund and operate the networked water supply and pressure sewerage system.

Property owners would (at a minimum) need to pay to connect to these new systems, . . .

2. Scotland island properties are under development controlled of NBC LEP where water and sewage services are in the operating and development licence of Sydney Water. This report appears to create a conflict as to the real stakeholders that are not fully identified in this report, where the authority lies for any approval or infrastructure development and what rights the Scotland Island community have in relation to compulsory development and cost of this proposal. The concept of water services upgrade is welcome and long overdue as it affects the wider local community and the environment just as the contamination issues of septic sewage and other sewage management facilities (SMF) were an environmental and commercial disaster at the time of the introduction of new SMF legislation of 1995 with AS/NZS 1546: part 3 as solutions accredited by NSW Health.

3. The writer applied to NBC for community engagement at the commencement when advertised by NBC but no response was received. Contact was made with the report authors and no response was further engaged in. However at the present stage of this considerations and for limited 'have your say' available, these submissions only have time to basically address the Report 1B. [redacted] would welcome further input as the feasibility progresses as expected.

4. The pathway subject of this feasibility is concerning, limited and somewhat archaic at its highest credit for a major infrastructure project with an expected 50-100 year life cycle as a public health and environmental impact responsibility.

4.1.1 2019 Feasibility study

To identify a pathway for provision of acceptable water supply and sewerage services on Scotland Island, the State Government's Stronger Communities Fund has funded a feasibility study. This report is Stage 1b of a three-stage process:

- Stage 1a - identification of environmental and social factors associated with water infrastructure servicing (Completed March 2019);
- Stage 1b - review of previous reports and identification of servicing options, shortlisting two in each category, and
- Stage 2 is the commercial assessment and identification of the pathway to delivering services on Scotland Island.

The objective of this Stage 1b report is to identify and assess options for water and sewerage servicing of Scotland Island, and shortlist two options for the next stage of the project which is the commercial viability assessment. This report supplements the Environmental and Social report that was developed and submitted to Council in March 2019.

5. This consultant report appears to have already determined the pathway for implementation that for one misses a unique opportunity to provide innovation in solutions for critical water sustainability in future city type development and to also recognise the existing regulatory framework for new water developments, controls and impacts that others are obliged to act in compliance.

6. The formulation of solutions should also consider any Basix provisions typically required for construction approvals. Understandably this study is public works however any such proposal would be subject to certain controls that have not been raised as far as can be seen!

   6.1. Basix provisions would be a very useful tool for water conservation purposes as a foundation to this community level proposal.

      6.1.1. *Existing Water Infrastructure Systems*
      This current arrangement carries risk to public health. The water supply is non-potable, provided to residents without monitoring and used after being stored within rainwater tanks. As a result, there is potentially low to zero levels of disinfection.

   6.2. The apparent non-potable supply comes from an existing overlayed supply from Church Point that only lacks backflow protections at the property boundary albeit in an unregulated supply pipeline.

   6.3. There is no known public health outbreak that is evident, whether that is because of on-site treatment processes by occupants like boiling water where rainwater tank collection is an important, regulated and effective water sources under the regulation of NSW Health, so should not be poorly regarded that otherwise would have approved air gap for backflow protection for any tank top-up as described, rendering these comments as questionable.

      6.3.1. Evidence of overflow of septic systems was observed during the site inspection and audit conducted as part of this investigation.

   6.4. This generalist comment has not been substantiated in the report beyond its remark that is less than appropriate. If the extent of this coverall claim has militating impact for the purpose of such a study, it would otherwise indicate a failure of regulatory oversight and/or maintenance for serviceability of any SMF for such site(s) as a major condition that has not be shown, not otherwise raised in any detail if at all in attached environmental reporting and is without qualification. The report appears as inadequate to address the community concerns as a foundation of the study.

7. The project proposal is largely a function of streamlining solutions to bring current systems up to a necessary public health, environmental and sustainable standard that appears challenging due to the nature of Scotland Island and the amenity it provides to largely sophisticated inhabitants loosely described as an off-grid type Community. Any investment for public infrastructure essentials would normally be undertaken by public service provisions given the delays and intransigence of Government instrumentalities to commit to essential services, thus the cost proposals for households is questionable. Any such relevant cost can be better planned than the demonstration of this report otherwise using tier 1 contractors but is eminently achievable with supported local businesses involved in delivering this project proposal to build an industry cluster of knowledge and practical skills that should apply in the planning.

8. For the design of an integrated water distribution and wastewater discharge of a site, any design must take account of scarce resources, delivery constraints, alternate water sources and cost. This report would be advanced with appropriate consideration of all the issues and variables to formulate and justify the premise of such a report and its feasibility.

Water Balance

From the Water Balance analysis, the following design criteria has been used to establish the scheme's inputs which in turn helped to establish the options for assessment.

Table 1-1 Preliminary water balance assessment for Scotland Island

Item	Criteria
Number of Lots	377
Ultimate Holiday Population	1,413 EP
TOTAL Water	75 kL/person per year OR 226 kL/home/y Estimated maximum flow rate 30 L/s
Peak Sewage Daily Total	300 kL/day

 # It is noted that the Peak Sewage Daily wastewater flow total(s) of the cost estimation at Option B.9 for an STP of 150 kL/day of treatment is only half this demand requirement as a misrepresentation to the estimates provided!

 # It is also noted that the TOTAL (waste)Water Daily wastewater flow rate of Table 1.1 is 35 L/s averaged across the whole days that would distort the design criteria of peak flows and the average across the daily spectrum as performance of the system estimates of the indicative designs proposed!

 # it is questioned that these estimates are reflective of a proper quantitative design model for the system proposed especially any deviation from accepted per person usage (whether for water inflows or water outflows) for the purpose of water balance for Scotland Island.

5.1. These figures appear to be based on an average household of 3 EP units up to 3.75 EP units from holiday populations that is otherwise a design specification criterion by Sydney Water. A more appropriate estimation would be some realistic foundation for this proposal!

The Report

6. The depth of analysis is claimed to have been undertaken by a multi-disciplined team and peer reviewed which renders this feasibility report as somewhat surprising in its basic analysis as reported. The cut and paste approach using other recent studies is not a reliable foundation for a different project and needs a more detailed analysis and review to reliably consider the implications of the feasibility. The feasibility undertake leaves no alternative than to address the options as listed.

> 7. *Shortlisted Options*
>
> The options shortlisted from the selection process for detailed costing and commercial funding modelling analysis are:
>
> Sewage Collection System options
>
> A.2 Pressure Sewerage System
>
> A.4 Hybrid System, combination of gravity and pressure sewerage systems
>
> Sewage Treatment and Disposal options
>
> B.9 Installation of a sewerage collection system discharging to a treatment system on Scotland Island, with disposal to Pittwater
>
> B.11 Collect Sewage to central pumping station and pump to Sydney Water sewerage system at Church point
>
> Water Supply options
>
> C.4 Replace Small Bore Supply and provide a low flow drinking water point within the residence and provide a low flow top up to rainwater tanks
>
> C.6 Direct mains pressure supply from Sydney Water mains / pressure boost if required

8. These options appear as standalone approaches that do not reflect the objectives of advanced water management systems essentially needed for sustainability and future city design concepts that should be provided for such long-term infrastructure for a contemporary and well-integrated solution that is available and economically viable with a more thorough report for options that are commercially recognised.

FEASIBILITY STUDY

July 2019

SCOTLAND ISLAND
WATER AND WASTEWATER FEASIBILITY STUDY
STAGE 1b OPTIONS REPORT

PS Solutions
PRESSURE SYSTEM SOLUTIONS PTY LTD

northern beaches council

Figure 1 - Feasibility Report proposing a range of Options for consideration.

9. The remaining lists are however the shortlisted options for consideration of cost modelling analysis that these remarks will address!

   9.1. Option A.2 is a commencement point where pressure sewage system is more than likely the preferred option in all contexts.

POINT RISK AND THREATS

9.1.1. This report in my view does not sufficiently take into account the whole of the water balance given a proposal for additional potable water reticulation and the taken-for-granted wastewater and other site discharges considered as a holistic solution for the expenditure proposed.

9.1.2. How can the wastewater resource typically taken as discharges be accounted for economically aside from a basic consideration like dumping to Sydney Water existing sewer main at Church Point?

That dumping is a cost and is expensive processing if capacity is considered on the basis of as an exclamation of capability of Sydney Water sewer infrastructure – that has not taken account of the impending parallel demand from the Ingleside land release for 6,000 new housing developments compared to 377 development on Scotland Island !.

Although Warriewood STP is only to level 2 treatment for ocean disposal, this lassie-faire approach is unsatisfactory premise for the feasibility and may be untenable to the wider local community where compelling innovations should be considered in this unique opportunity to make Scotland Island a feature best practice for water sustainability and infrastructure to support climate change responses that can be achieved within these cost estimates.

9.2. Option B.9 for discharge to Pittwater waterway as blackwater or leachate type wastewater regardless of treatment that would be expected to be at the lower scale of investment and operational cost applied by Sydney Water if at all, given a discernible current management philosophy to rail against expanded services {seen in iPart hearings in November, 2019} even like in Western Sydney Metropolis developments is concerning if not beyond neglect for any authoritive input.

Sydney Water has outsourced its planning responsibility for the next 10 years thus any contribution by Sydney Water should be reduced to temporary unavoidable facilitation only as the current licence holder for water supply and wastewater services. This new management direction of Sydney Water has set back essential and integrated water infrastructure in the Greater Sydney Region that can be seen as disingenuous and grab for revenues led by foreign management ideology that is unsuited to a developing global city, environmental regard and economic development that in comparison Scotland island is a feature region as an excellent opportunity for world best practice and economic growth opportunity.

Sydney Water has rendered itself as no more than a gatekeeper for regulation and revenues from water services although it holds the legislated responsibility and unassailable monopoly for provision of such services that requires a work-around to avoid arbitrary impedance of this project!

POINT RISK AND THREATS – FEASIBILITY REPORT STAKEHOLDER REVIEW

9.2.1. The proposal for a dedicated full-process STP on-island is expected to be advantageous in avoiding mechanical means for site disposals of all sewer but is impractical for the finite scale of the Island.

5.8.5 Technical Risk

The Collection system would be required to transport septic effluent to a sewage pumping station, for pumping across Pittwater to the mainland.

Technical complexities would arise with the various property connection configurations and arrangements required to collect effluent from existing septic tanks.

The under bore required across Pittwater, also has complexities associated with this option, such as:

- *Pumping (septic, treated) effluent across Pittwater for discharge into suitable location within the Sydney Water network;*
- *Effluent pumps required at each property (same principle as pressure sewer system, but different type of pumps).*

***Evaluation team deemed**: Technically negative impact / high risk option,*[1]

9.2.2. 5.9 Installation of a Sewerage Collection System Discharging to a Treatment System on the Island, with Disposal to Pittwater[2]

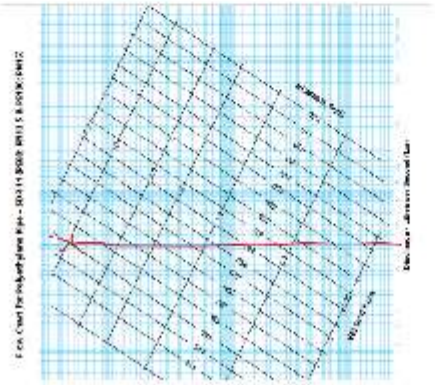
5.9.1 Description of an option as B.9 for installation of a new sewerage collection system, discharging to a treatment facility located on Scotland Island, with treated effluent disposal into Pittwater. Decommissioning/removal of on- site septic systems. Assumption: Pressure sewerage system was evaluated as the collection system for this option.

5.11 Collect Sewage and Pump to Sydney Water sewerage system

5.11.1 Description of Option Installation of a new sewerage collection system, with pumped flow via an under bore across Pittwater, discharging into Sydney Water's sewerage system. Decommissioning/removal of on-site septic systems.

9.2.3. *Another issues is the under tunneling to Church Point in a 140mm polyethylene pipe for discharge into Sydney Water existing gravitational mains creates pipeline dip issues that would need to have a clearing mechanism and a break pressure point on the mainland that is not tenable.*

 # it is noted that the flow rate of a 140mm PE #100 PN 16 pipe is 30 L/Sec requiring 3 M/S velocity for every second of the day 360/24/7 has not met the design criteria and appears underspecified. The report indictive specification and costing appears unreliable.



9.2.4. *Direct discharge into existing sewage main at Church Point will only*

[1] Stage 1b Option Evaluation Workshop Notes Issue F pp47(53)
[2] Ibid pp 48(54)

occur at higher pressure given the nature of the sizing and laying of a protected main across from the Island to Church Point. The technical specifications for gravity sewer mains is 2 litres per second that would be significantly exceeded. Thus Sydney Water sewage mains is of itself a questionable discharge point for multiple issues that do not need reciting here with the current design proposal.

9.2.5. *Even though this option is readily achievable on the physical development however any STP on the island is more than likely to the extent of highly unlikely, is not a valid option amazingly displayed in the 1B report cover page {see* Figure 1 - Feasibility Report proposing a range of Options for consideration.*}*

9.2.6. *This hybrid proposal for Scotland Island circumstances would likely be rejected on environmental and amenity grounds. It would be a lower order and expensive option. This Option would result in lowering property values and disruption of the nature of the Island, waterways pollution reliant on nature to overcome that would significantly damage recreational and tourism amenity that is the prime asset of Pittwater, thus would not be justifiable.*

9.3. New Option B.9.A as a proposal by One Water, should be considered in a different light. Taking the upstream issues for cost of treatment, delivery to the alternate proposed STP and environmental impact of secondary treatment before disposal to any waterways outfall into account (discharge at mouth of Pittwater or directional drilling under Bilgola to an ocean outfall), the same investment for a modern natural energy option is eminently viable and efficient option to undertake for the needed waste processing. The way in which Option B.9.A is engineered incorporated the below in varying degrees and configurations.

9.3.1. *The basic analysis of a Sewage Management Facility (SMF) is 'water in verses water out' (WiWo). Given the inclusion of a water supply requirement for a Scotland island cluster of residential servicing, a smarter analysis of WIWO should be considered.*

9.3.2. *An effluent processing STP on Scotland Island can provide an environmentally and community resource at a lower cost of treatment or carriage of waste options without environment impact.*

9.3.3. *Option B.9.A as a standalone effluent treatment processing as a* **decentralized system** *for a community facility of the size of the Island is eminently viable using clean energy resources and Natures biological processes for high grade healthy naturally processed water that can be discharged at the extremities of Pittwater. The Capex and Opex option of this proposal stands with considerable economic and environmental merit for the finite size of this Island project.*

9.4. [redacted] *would see Scotland Island as a potential pilot for international acclaim as BPM for not only renewable /climate response in energy and water resources but incorporated waste reduction especially as dry waste recycling that can be transferred to and from the island safely and economically that adds value to the locality for economic development as well.*

9.4.1. *Stakeholders express concern that Scotland Island is not politically attractive especially to Sydney Water as the monopoly licence holder of questionable and divesting capability affecting the whole of Greater Sydney. Sydney Water bemoan increasing their client services with expansion relying on iPart to simply increase pricing as much as 50% with 60% dam level reserves to artificially sustain Sydney Water as a licensed water operator. This conduct when taking account of their waste, their exploiting public financial appropriation, their political dividends and in the circumstances where they have demonstrated they have made themselves irrelevant to the planning schemes like the Greater Sydney planning Commission (GSPC). The point of any reliance on Sydney Water is totally misguided where Sydney Water have little or no initiative for innovative schemes to reduce the cost of water and wastewater, have not provided for Sydney expansions and water resilience preferring to surround Sydney with their sewage plant discharges so that the whole of Greater Sydney is totally surrounded by an increasing polluted water and other deleterious environments. Until there is a step change in the operating conditions of the regulated monopoly licence holder other considerations and Government support is needed independently.*

This irrefutable situation renders Sydney Water irrelevant such that stakeholders otherwise have a strong business case to independently develop the essential public health infrastructure for Scotland island and build economic activity for Pittwater and Northern Beaches as a part of the process of this infrastructure development.

9.4.2. *The present proposal is however limited in outlook as low pressure sewage schemes are no longer so innovative where IoT autonomously managing these schemes is relevant and necessary for a 50-100 life-cycle project essential for such a proposal and is only estimated to be $69 million investment (typically the NSW Government attempts to off-sets that cost upon the Community that is an exploitative business case on their part). A proper business case in the current economic climate of low interest rate warrants this project progressing now and in line with the parallel investment for electricity supply upgraded to the Island currently underway. An essential service that renders an*

expected return on investment that I can predict as $200 - $500 million economic benefit in a 5 to 10 year horizon dependent on the commitment to the Pittwater area if our Government Planning Minister local representative means anything, is otherwise a compelling opportunity!

9.4.3. *With managed wastewater out balancing the water in can be optimised through IoT that would ideally incorporate this Option B.9.A for an effluent facility (clean energy and minimal water effects), this scheme for the Island with an integrated managed water supply plus what can be innovatively matched to a household end-use study is the innovation that steps ahead as a **WIWO** system without any increase in anticipated project cost that have been estimated via this report.*

There are available regulatory provisions including from Basix compliance that also contributes to the overall outcomes to reduce the water and energy consumption by 50% shown to be achievable over 10-12 years of the Basix regulations but these matters appear to have been overlooked.

9.4.4. *One Water envision this facility would also be a part of household waste processing leading to the efficiency of a dry solids waste removal service to the island that would be metamorphosed as a reusable resource. # more on that later!*

9.4.5. *Surfacewater / stormwater and sub-surface drainage has been identified as collecting and carrying contaminates into Pittwater waterways. Typically as occurred in the Hawkesbury River catchment that destroyed Oyster farming through contamination, the updated regulation for AS/NZS 1546:part 3 was introduced for SMF. However this proposed SMF scheme would be subject to AS/NZS 1546: part 1 that would otherwise require NBC approvals for each site and be subject to the costs of such an application and approvals process so many of the tools are in place as drivers and support for the proposed innovation for Option B.9.A.*

9.4.6. *The issue of contamination of Pittwater from surfacewater flows from substantial topographical gradients as raised in this report has not been adequately addressed as a part of the whole water balance and environmental protection. This situation would exclude some of the options proposed like repurposing older septic tanks and even AWTS that one would expect should have been addressed by this report. Any installation of less than optimal sewer pods on each property used as an example by the report needs reconsidering with practical application and maintenance issues ongoing with the products proposed in the report that are deficient and inconsistent with other Council directed policy throughout the state and particularly Victoria with considerable policy provisions well in excess of Sydney Water performance. This aspect is further referenced at {section xccvvb below}*

9.5. Option B.11 is a straightforward if uninspired approach however this option does not attempt to provide a water resource solution or an improved environmental solution that otherwise is a cost to the Water Authority and an environmental

impact beyond option B.9.

9.5.1. With the use of this option all wastewater is emulsified creating greater treatment processing at the Warriewood STP

9.5.2. Warriewood STP is also expected to have a significant increase in sewage loads from the imminent Ingleside land release for 6,000 houses predicted for approval before 2021 in conjunction with transport upgrades in bus services and Mona Vale Road upgrade for that land release purpose. Thus the casual reference to Sydney Water saying it has capacity in sewer mains and at Warriewood STP is questionable proposition.

9.6. Option C.4 would not advance the water supply facility that is a worthless cost option that would not last the life cycle requirements.

9.7. Option C.6 is the only intelligent distributed water supply option for a modern urban residential area whether to supplement a rainwater harvesting on-site installation. The Basix provisions would then allow conservation of the water resource using a rainwater tank and a change-over device commonly used in new housing construction that priorities rainwater harvesting and ensures a guaranteed water supply for a household when alternate water resources are not available.

10. The feasibility report option for top-up of rainwater tanks already installed on Scotland Island is inappropriate and without current knowledge of smart water resource systems that renders the authors knowledge questionable. This top-up system is inefficient, energy intensive and prone to addition public health risk that was abandoned by the water industry 6 months after the introduction of Basix legislation some 12 years ago. The introduction of change-over devices to improve to water resources supply was led by Onga Water Switch, Davey Rainbank and OneWater WiWo and another alternate pure mechanical changeover device that the report has failed to recognise. Indicative costing estimates given in Table 1-3 appear excessive.

10.1. Project costing estimate skews the cost without demonstrating what is involved or how value is derived from such high cost estimates. There are significant project management cost savings available as indicated below.

10.2. Whilst wastewater collection and delivery costs applicable to Option A.2 need to be examined more closely the value from Hybrid system is not of any value proposition. Wastewater treatment and disposal costs shown are widely variant that off-set costs for Option B.11 do not appear to have been properly contended. Option B.9 in a more efficient WIWO water balance and select innovative processing would be roughly be equivalent to the direct disposal from option B.11

Alternate Table 1-3

Project	Management edge and IoT cloud management with predictive maintenance and operational control.	50% reduction to estimate

Water	C.6 reticulated system	25% reduction t estimate
Wastewater collection and delivery	A.2 Low pressure System for SMF	50% reduction to estimate
Wastewater treatment and disposal	B.9 On-island effluent treatment facility 80% reduction of discharge to Sydney Water land / submerged gravitational transport to local STP	25% reduction to estimate
Total cost systems combined		$10,000,000 $ 12,500,000 $14,250,000 $28,250,000 $65,000,000
Total cost per lot (377)	Minimum 30% cost reduction per lot below estimate	$172,400
Smart Water Balance system value improvement	Water conservation 50% reduction Energy conservation 25% reduction Project management and operational cost with smart monitoring for sentinel oversight and supervision high level control with IoT cloud plus edge meshed IoT systems for autonomous operation	+ 25% economic value improvement + 25% resource demand improvement + 25% environmental impact reductions

10.3. The Scope of the feasibility study has displayed mixed and narrow option justifications. Local conditions and externalities do not appear to have been mentioned in this report such that the scope outline appears limited in innovation and contemporary water balance capability for engineering and emerging solutions.

2.1 Scope

This feasibility study is for the water supply and sewerage servicing of all the residential lots on Scotland Island. The scope of the study includes:

- Water Supply servicing from Sydney Water services on the mainland, Church

Point

- Decentralised Sewage solutions
- Innovative solutions treatment and reuse and hybrid systems
- Centralised treatment and disposal system
- Pumped discharge to Sydney Water Sewerage System on the mainland

Key Areas

- Safety
- Environment
- Community / Key Stakeholder engagement
- Engineering / Technical
- Commercial / Legal / Financial
- Delivery / Operating Models

10.4. Any available Church Point water and sewage services is an unqualified option used by the report to base such a premise upon, especially without a deeper analysis of local conditions.

10.4.1. Church Point and Bayview Heights struggle for water supply in heatwave conditions and bushfires as seen in 1994 where this whole area was under intense fire conditions and without mains water supplies being accessible.

The water supply conditions have seen a reduction in water mains guaranteed pressure supply due to the extremity of the supply lines to that location and general pressure reductions by Sydney Water.

10.4.1.1. There is also an issue in the locality of mains bursts from the nature of the infrastructure and the conditions in occupies. Although some lateral branch line improvements have occurred there is still a reduced supply to the Church Point area. No doubt the Option C.4 is directed to that circumstance without identifying its purpose relevant to its inclusion.

10.4.1.2. Attachment E of the feasibility report details a discharge rate that significantly exceeds Sydney Water inflow to sewer main provisions, that would otherwise compromise the existing sewage main and potentially cause surcharges that needs further investigation and approval. This issue contributes to the notion of an on-island effluent treatment facility as a system wide improvement.

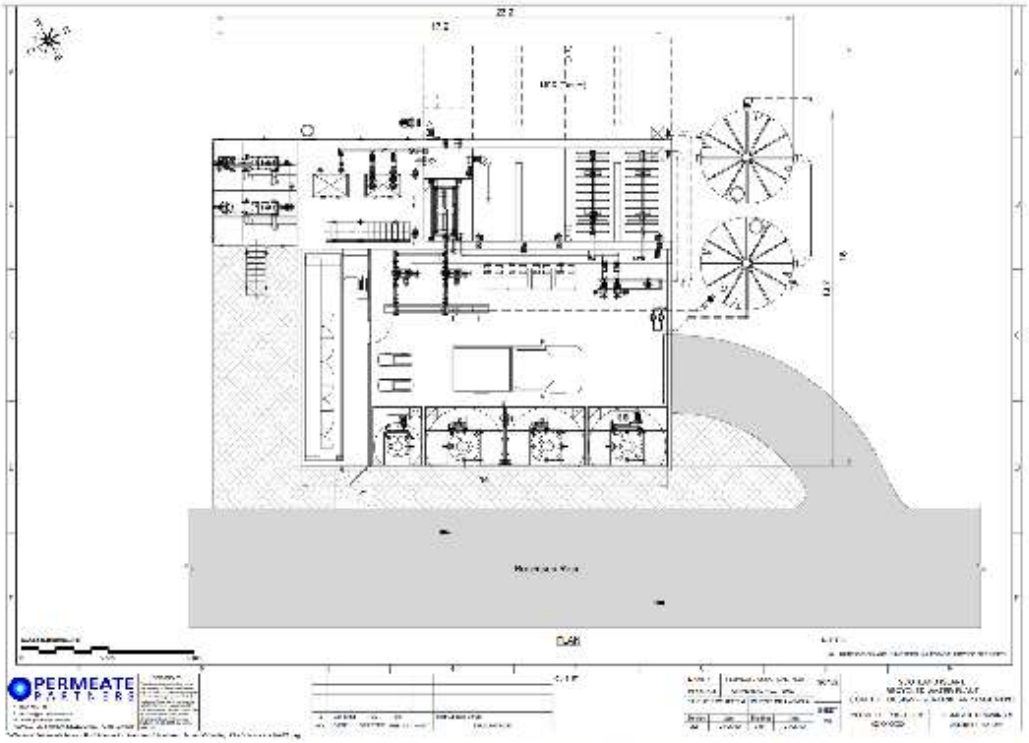


Figure 2 - an unacceptable and high cost proposal that is no more than half the estimated capacity of 300kL per day deemed as a minimum requirement in this proposal

10.4.2. The existing sewage gravitational main network is below the tidal level for the area and is subject to regular pump station to raise the wastewater elevating to the next gravity segment all the way back to Warriewood STP. Warriewood STP treatment is a limited secondary class treatment relying on waste discharge to an ocean outfall that contributes to Sydney Water waste discharge circling the Greater Sydney region through the Hawkesbury and Nepean River, Berowra Creek and others discharge system from other inland STP facilities. Thus an on-island effluent treatment facility would be a significant reduction in volumes and reductions to contaminate issues that must avoid impeding local waterway ecology and reach the recreational conditions that must be undertaken to reduce the overall level of Sydney Water waste convenience.

10.4.3. An on-island effluent treatment facility (ETF) would provide high quality from wastewater as a substantial environmental improvement to Warriewood STP discharges with the Scotland Island EFT high grade water quality discharged to its dedicated small pipe DN200 to a suitable determined ocean outfall largely using a gravitational discharge. The options for an Ocean outfall of non-potable standard would be acceptable with potential outfalls located at either of:

- To the east of Lion Island (would be preferred for cost and environmental reductions)

- A directional drilled discharge line under Avalon Golf Course to Bilgola Headland ocean discharge

These ocean outlets are preferable with high grade treated water devoid of nitrogen and phosphorous would be acceptable with minimum impact on the environment or recreational issues given the low cost of directional drilling.

10.4.3.1. This Option B.9 proposed fully treatment STP plant and its larger infrastructure requirements would be considered as inappropriate and in a poor proposed location. It would be considered as unnecessary and excessive to the requirements of an effluent plant using transpiration and vegetation uptake of nutrient and other contaminate reduction measures without operating costs or excessive environmental impact largely created by the area of land usage that also has the design advantage of landscaped buffering and concealment in a highly vegetated Scotland Island.

The naturally processed effluent treatment option B.9.A overcomes the deleterious provisions of a full STP where such a plant would otherwise demand a high energy requirement and a high chemical storage and usage that is unacceptable and high risk on the environment. A substantial infrastructure impact on the island would also be an unavoidable impact and cost that would otherwise be out of scale for the island and transform its character unwarrantedly

The question of ongoing cost and maintenance is significant and there also remains a high concentration sludge waste component still requiring disposal otherwise proposed to be emptied into Pittwater as an unacceptable proposal.

10.4.3.2. A naturally aspirating and low-impact treatment process would be an industry leading advancement and only represent 35% of the Opex and Capex cost of the ETP off-set development.

Figure 3 - Ocean Outfall facility for secondary treatment processing – Surfrider Foundation

10.4.3.3. Any residue solids waste would be preferentially removed from the Island to a dry waste or recycling facility for soils or fertilizer use to make better use of that resource as conducted at North Head STP and others in the Sydney region. These processes are highly achievable and desirable for environmental protects that is an alternative to dumping such waste on nature in waterways that is untenable in today's outlook and climate change issues that must be addressed rather than taking the easy route for waste disposal that is not evidenced in this feasibility outlook. The residents and visitors as well as local community are quite green orientated and would accept these measures as progressive and acceptable in a long-term infrastructure implementation that would easily mitigate any inadvertent discharges of concern.

11. These matters are a part of the solution consideration that now requires a deeper regard to water balance for scarce water resources. The Scotland Island community is used to conservation measures and would welcome a modern technology to manage their water needs whilst at the same time provide resilience and sustainability in a green environmental setting.

The Way Ahead

12. A closer analysis of the current proposal for Option A.2: Pressure Sewerage *{see Draft Final Report, option assessment summary sheet pp 32}* is needed to balance the remarks for objective balance. The concept design developed for the assumptions given need to be reviewed and considerations expanded before any finalisation and progress to Stage 2.

12.1. The technology outline may be considered as staid and has a requirement for a more progressive solution and emphasis of the key components of such concept.

Technology

- Small diameter pipes are end of line dimensions that increase in line with dwelling waste capacity. Directional core drilling is the ideal method of pipe installation however the short run nature of Scotland Island service connections remains as somewhat costly installation.
- A booster pump station for cross Pittwater flows understates the lack of detail of the concept plan.

Cost minimization for the project calls for additional steps in innovation. Those steps are engineering and capacity design issues however the concept has an indicative cost estimate that is likely to be misrepresented as a reliable feasibility estimate in many categories highlighted, like for instance rock for every meter of pipe line installation as variation expense, duplication of expenses for an integrated wastewater collection and water reticulation installation expense, on property expenses that exceed relevant and worthwhile expenses for misguided solutions incorporating or decommissioning existing rain water tanks and septic / SMF resources and proposal for the lowest gradient locations for low pressure sewage pods especially around the foreshore.

Environmental Impact

- The remediation potential for decommissioned septic SMF is overlooked that may leave a legacy of environmental impacts for waterway leaching for many years that should be reconsidered.
- Stormwater management has not been taken into account for a proper water balance consideration. A stormwater management plan is essential given the contaminate issues of legacy SMF of septic and AWTS that have been operated for so many years. The potential for

addressed waterways contamination is just as critical for consideration and remediation as other aspects – appearing as solely directed to cost issues and neglecting the protection of the environment and nurturing Nature for the intricate part Nature plays in the total water cycle and such neglect or regard that is a route cause of climate change impact for the Scotland Island ecology and its fauna and flora.

#These matters are equally critical and must not be disregarded in a proper feasibility planning that has postured on detail of Options to the exclusion of a holistic report for the true feasibility for Scotland Island and its surrounding community and commercial considerations.

it is noted that the Water Authority for South East Melbourne undertook a replacement program for all existing septic and apparent AWTS systems of the order of 2,000-3,000 lots withing there area of responsibility for the very purpose of ground contamination issues for remediation.

- The highlighted advantage from any potential sewage leaching into the soils and ground water using an enclosed system like a low pressures sewage system is positive but there is no assurance that a concept design has been sufficient to ensure this risk is substantially or fully avoided. Mechanical breakdowns can result from installation failures, simple blockages, lack of maintenance, power interruptions and power conditioning etc.

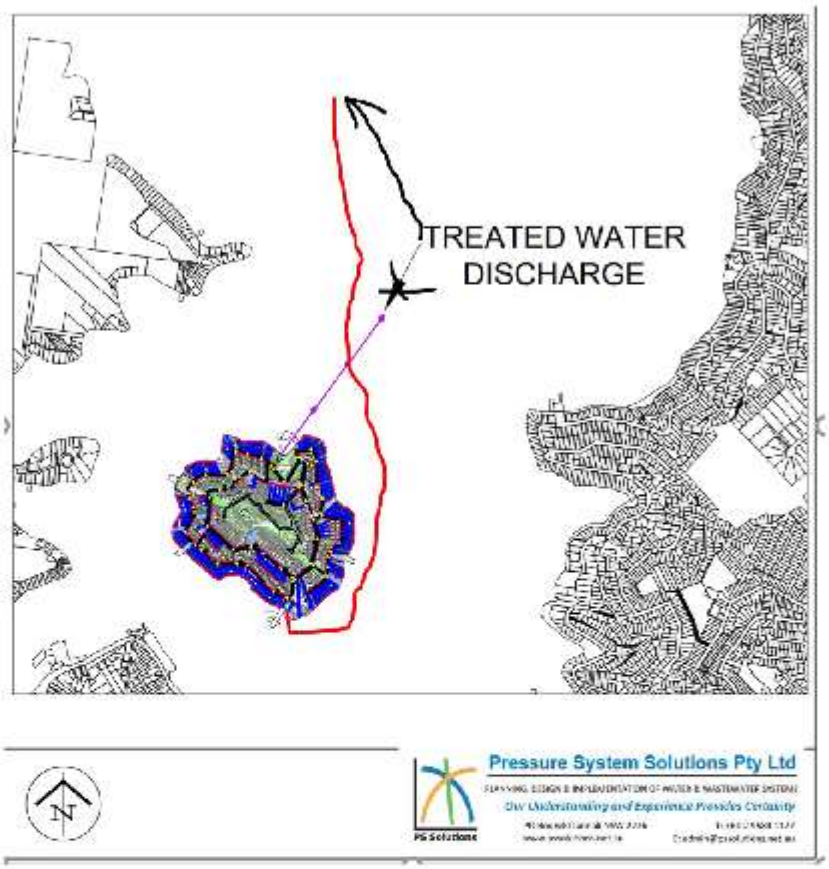
Stakeholder Acceptance

- Certainly a positive proposition for such a dual service project.
- SWC relies on tendered project for such infrastructure works usually at the lowest economic cost, thus the previous experience or likelihood of the contractor being anything other than a planned project that is not prescriptive but independently designed and delivered is not guaranteed to be applied in a new and more detailed scenario with dual services installations in an off-shore location as unique as Scotland Island.
- I reject the similarity applied to Danger Island as not relevant for topology, ground conditions and stage of technology advancement.

Technology Risk

- Such insidious claim(s) undermine the premise of a feasibility report based on the location. If this claim was relevant there would be no need for any expensive and limited feasibility report nor the significant unqualified costs proposed.
- Gravity sewer have a long history of performance and low risk operation when installed in accordance with a prescribed design and standards. Gravity sewers are functional, minimalist servicing costs and reliable long-life infrastructure. Installation costs are significant however with work practices for hands-free plant and procedures additional costs arise. However much the same circumstance occurs with directional drilling with cost savings resulting from non-disturbance and restoration costs to the extent of long run installations like crossing the divide across Pittwater. The Scotland Island costs of directional drillings may be only slightly beneficial where the service main has to be access for every property at some 40 meter iterations that gravity sewer installations avoid as additional costs.
- The reliance in low pressure sewer distributed networks on allied services for power, maintenance of mechanical equipment like pumps with a life expectancy of 5-10 years, sludge build-up, emulsifying all sewage requiring far more treatment than separation technology is a substantial additional hidden cost that cannot be excluded and dismissed in a proper indicative cost of operations feasibility study.

12.2. IoT is available and well programmed {*see attachment Pressure Sewer Description & Rules - Scotland Island*} to integrate with some market solutions beyond the current identification of proprietary product solutions used in this study of a mere mechanical nature.



12.3. There are a number of well setout policy guidelines including Goulburn Valley Water and others that have not been referenced in the feasibility report.

GOULBURN VALLEY WATER

Urban Utilities

Guidelines for Pressure Sewer

Date: 25 November 2016

QUU Low Pressure Sewers – 2011

The pump and system components available for use are defined in the GVW preferred equipment list. In general the pump assembly shall be:

- Fitted with an alarm system, which is activated by a high level alarm switch and which provides both visual and audible warning to the property owner;
- Fitted with a pressure switch to stop the pump operation when the downstream pressure head exceeds 50 metres;
- Wired from a separate RCD circuit breaker on the property switchboard with all wiring complying with AS 3000; and
- The control panel is to provide option for the future installation of telemetry to enable communication with the GVW SCADA system. This may require an aerial to be fitted to the control panel or the side/roof of the building.

Pump Assembly Sizing

- For a standard residential property with a mean daily discharge of <700 litres, a single progressing cavity grinder-pump unit, which has operating parameters between 0.4 litres/sec @ 50 metre head and 0.8 litres/sec @ 10 metre head, housed in a 1,100 litre pit, is considered appropriate.
- For a residential dwelling with high-water usage fixtures such as a spa bath and swimming pool backwash, a 1,500-litre pit should be considered.
- For commercial/industrial and public/community facilities, the mean daily discharge must be assessed and the pump capacity and pit volume selected accordingly.
- If the daily discharge is significantly greater than 700 litres, a larger capacity pump, which has operating parameters between 1.0 litres/sec @ 50-metre head and 1.8 litres/sec @ 10 metre head, housed in the larger 1,600 litre pit, is considered appropriate.

Pump Selection

Figure 4- partial extract of GVW low pressure system specifications - typical

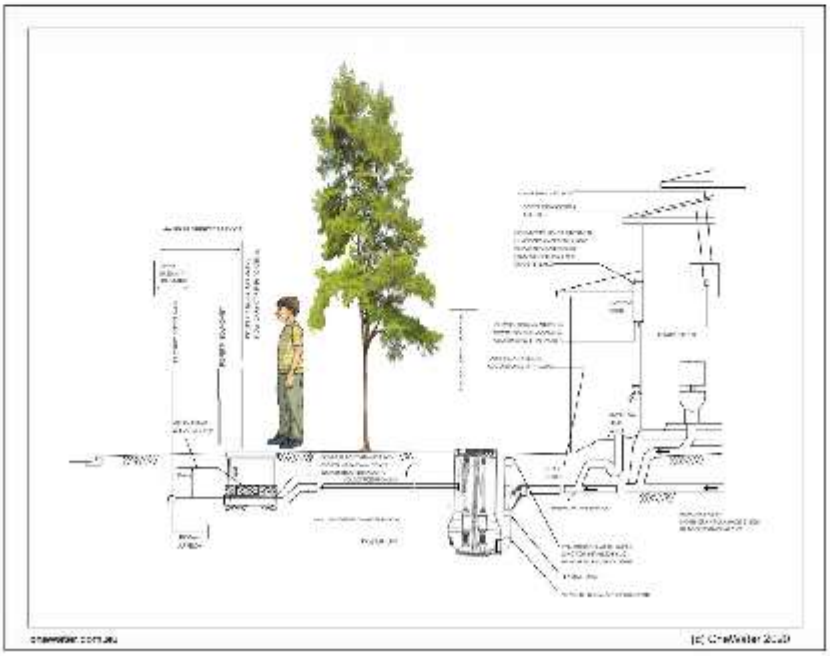


Figure 5 - illustration of alternate SMF with additional specification including for tank capacity, controls and IoT at a higher value solution similarly represented as layout from AS/NZS 3500.

12.4. The feasibility {*Attachment E – concept drawings*} concept displaying product solutions is questioned. There is no acknowledgement of commercial drawings that appear to be a preferred solution for each site installation otherwise claimed as typical. This highlighted design contradicts the well-established policy of other instrumentalities with well researched specifications and may only be represented for commercial interests aligned with limited supply option of any outlook by the authors in this specialist field of low-pressure systems. Given the limitations of the design for capacity, flows and operational performance with considerable risk issues the feasibility report appears without credibility for contemporary and innovative solutions beyond expedience otherwise claimed as typical that should be questioned.

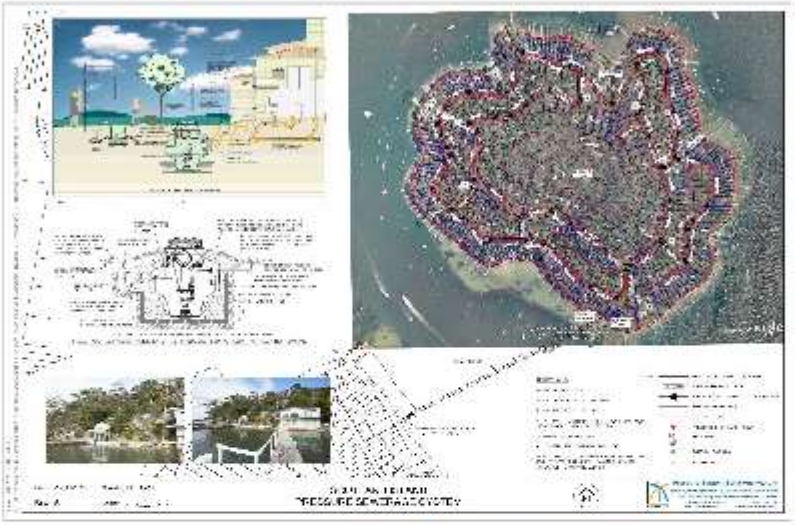


Figure 7 - reference detail of low-pressure sewage system claimed as typical detail Page 2 Attachment E. The limited and pressured inflow capacity and issues with breakdown has to be considered for any typical application. A compromised reuse of existing septic tanks is also questionable, environmentally constrained and potentially expensive option

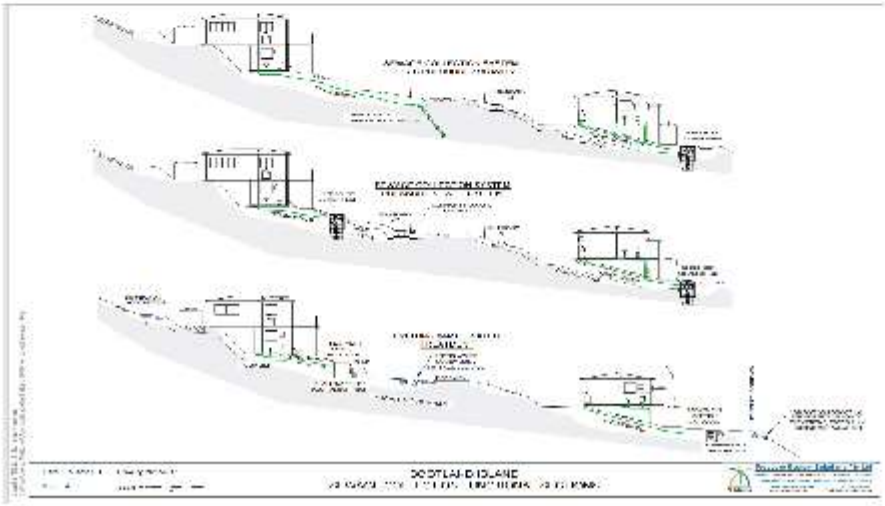


Figure 6 - application layout proposal - alternate collection well detail shown. The eOne system is a deep installation that may not be as serviceable for the Scotland Island sewer maintenance requirements!

13. Some application details are given in the report that presents a limited approach to the scope of the feasibility project

14. There remains nothing innovative about this feasibility and proposal contrary to the scope of the study. This study does not provide any compelling reasons for adoption in the current form, where it would be expected that available, technologically advanced and cost mitigating proposals could and should have been identified in the study for proper consideration.

15. Solutions are available and warranted however this proposal and its feasibility could not be considered to be in accord with the scope of the study and has not gone to outline those detrimental aspects briefly discussed here to allow the formation of the decision process and consideration of stakeholders.

16. [redacted] would propose that savings can be made using a shared sewer pod amongst the design concept briefly outlined that can be expanded for detail and operation in due collaborations. The IoT capability would facilitate a better management system to support the ETP of Option B.9.A where a dual pump feeds effluent to the ETP. This concept manages the solids waste for land reuse or disposal and safe transport by barge across Pittwater reducing the dependance on Warriewood STP, delivers useful recycling and avoids waste dumping into natural systems like waterways for solid and highly contaminated wastes as some innovation to a climate change response with smarter system design and advantages being sought by the community of NSW and NBC. A maintenance benefit and cost benefit results with a well-developed integrated solution to the sewage requirements of Scotland Island that is recommended for consideration beyond the obvious and expedience for legacy solutions that have not kept pace and utility and avoidance of waterways for environmental disregard.

17. In respect of the water supply proposals there is no benefit of Option C.4 over the similar cost of Option C.6.

    17.1. Option C.6 is the only feasible option in respect of the public health protections and significant fire risk on Scotland island, although fire is somewhat of a rare event there have been instances of catastrophic conditions that do not have any reliable community emergency options other than jumping in Pittwater and swimming out as inherent danger.

    17.2. The opportunity for world class water balance and supply infrastructure has a strong reliance on IoT for more complex autonomous management of the Scotland Island circumstance thus a metered supply network facilitates the reductions of wastewater discharge from each dwelling and other public interest measures – like in the current pandemic that would be prudent to take into account.

    17.3. Rainwater tank top-up interferes and removes the benefit of having installed a rainwater harvesting system with roof catchments for the supply of alternate low-cost water supply. A top-up of rainwater tanks is totally unnecessary with a properly engineered reticulated water supply system. This on-site tank top-up system was abandoned by the industry 12 years ago so it is questioned as to why it has been proposed whether in ignorance or if a considered proposal by the author(s) that has not been explained. Utilising such system of top-up causes additional costs as energy is need for total household supply and reliance on mechanical pumps and controls with life expectancy of about 5 year replacement cycle. The only meaningful benefit is for reduced supply pressure from a rainwater pressure pump that may convert to conservation of water use with less wastage. Todays WELS certified water appliances and hot water systems rely on the conservation with a measured supply to achieve their rating so Option C.6 is more relevant as a supply

option.

17.4. The misguidance of considering rainwater tank top-up as part of the delivery of potable water supplies curiously overlooks the regulations, standards and guidelines available and immediate compromise of the mains distributed supply blended into a rainwater harvested resource. Mainland water systems where a mains delivery water resource is available is then considered by NSW Health as non-potable water for household applications. These households would basically have a plumbed household system to AS/NZS 3500 compliance so there is no reason or justification to facilitate a single kitchen sink tap scenario, which for a credible feasibility report is at its highest relevance an unimaginable option suggesting the author(s) do not have a proper understanding of rudimentary reticulated water systems. With such proposition any subsequent credibility for water balance is lost from a proper feasibility report and adoption in the future infrastructure project for Scotland Island, such that Option C.6 is not relevant for consideration as put.

17.5. The risk and public responsibility profile must utilises option C.6. The value of the properties of Scotland Island with substantially improved developments taking place demands Option C.6. Any lesser system would waste the opportunity and the cost of a sub-optimal solution. Anything less than Option C.6 would potentially compromise any proposed low pressure sewage and processing system for Scotland island. The environmental impact and any environmental improvements would eb best served by Option C.6 in the absence of any more advanced proposal that the feasibility has not been able to properly advance.

17.6. A good supply of water also represents economic growth and the local community in collaboration with mainland facilities is a dynamic approach to the value Scotland Island and its unique environment and natural conditions represents for the future amenity and prosperity of the community.

18. The parallel water supply option is not well integrated and costed.

Key Drivers for the Recommended Technical Solutions {Draft Final Report – page 71}

19. It is noted that this report claims . . the opportunities for alternate delivery models are limited by the topography and urban context of Scotland island'. This observation could be considered as overly simplistic and its justification is questioned for the purpose of the recommendation.

    19.1. The key driver is that a low pressure sewage system is contemporary engineering but not just on account of the concept of an enclosed wastewater disposal capability otherwise achieved otherwise compared with a low cost of operational gravity solution in a mainland location, but the advanced means to monitor, manage through supervision for disruptions, predictive maintenance and a balanced scheme of discharge to lower the cost of installation for a 24/7 operational all-weather facility for a modern infrastructure project is the intelligent and economic option of choice for locations at the extremity of the Licensee authority network. Due to the occasional capacity of that network to function to the service needs of the community a more independent system is the best solution for adoption.

    19.2. The commercial opportunity for the local community is not served by the limitation of this report that has direct feasibility implications.

    19.3. That said the low-pressure sewage system is a preferred option in the circumstance where the performance and marginal operational aspects are optimised to service the finite needs of a standalone system for the expected life span of 50 – 100 years. Modern materials should have that capability where ease of servicing is designed into the structure of the network. Waste is a key consideration and waterways certainly have a coping mechanism but over reliance on waterways has contaminated the whole of the waterways systems surrounding greater Sydney to the detriment of future generations and their wellbeing. We can address that situation and the contributory effect on climate response with a more innovative solutions that does not represent additional costs for the value of a BPM for a signature solution that Scotland Island represents. The local regional economy can be advanced in the right circumstances and a better service for the community can be achieved with a better proposal to this feasibility that presently represents mediocre concepts and questionable justifications and costs.

    19.4. The key stakeholders holding out for public investment with reimbursement sought by the Government investment instrumentality is misplaced. The residents of Scotland island deserves this long awaited facility to boost local commerce and business for no less than tourism, skills and enterprise advancement and a signature project to promote to the legacy Sydney Water and the world as best practice with environmental improvement and a positive response contribution to mitigate a measure of climate change.

20. The feasibility reporting relies on disparate information that may compromise a compelling basis for a strong business case to propose to the government and its entities identified as the stakeholder(s) for decisions on the proposal. This report appears to attempt to shift the cost of the public infrastructure onto the community that is unreasonable and excessive with a subjective, marginal and questionable compilation for the report. I reject the quality of the report however wish to support the tenant of the project proposal that can be substantially improved into a world class project that the local community can add to the significant improvements in and around Scotland Island and its preferred transit facilities of Church Point.

[redacted] welcomes any feedback and would be available to further advance the consideration of a holistic design for water balance and community advantage.

[redacted]

Annexure A - Autonomous Pressure Sewer Management System

This project is outlined for Scotland Island project adaption for any additional necessities of such system for an autonomous pressure sewer management system. The system would consist of a cluster of Pump Controllers (SMS) that are each managing their own Tank and Pump set. A cluster might include just a few systems, or a few hundred systems.

Each system should be able to operate independently of all other systems, or in conjunction with connected systems. Each system will consist of wastewater tank, two water pumps, an interface module with **LoRa** mesh networking capability, and a Pump Controller to manage the aforementioned pumps. Pressure transducers would monitor the tank fill level and the discharge pipe pressure.

The job of the interface modules is to establish the priority level of its attached tank and negotiate with the other SMS in the cluster to autonomously prioritise when, and which pumps are allowed to run.

The network would make its decision based on the level of water in a tank, how fast it is filling, and how long since it was emptied.

The tank with the most need would have the highest priority and would be allowed to pump first. When the highest priority tank has started pumping the next highest priority system would be allowed to start pumping also, but, only if the Main Line Pressure is below the individual system's pumping start threshold. This process would continue in sequence until all tanks are empty.

However, the priority level needs to be dynamic so that a low priority tank can be accommodated if its level rises before its turn arrives.

The system would include full integration into the OneSense cloud platform and provide a dashboard for the overall system's status and each individual Sub-System.

Basic Priority rules

1 – The tank with the highest water level is the highest priority

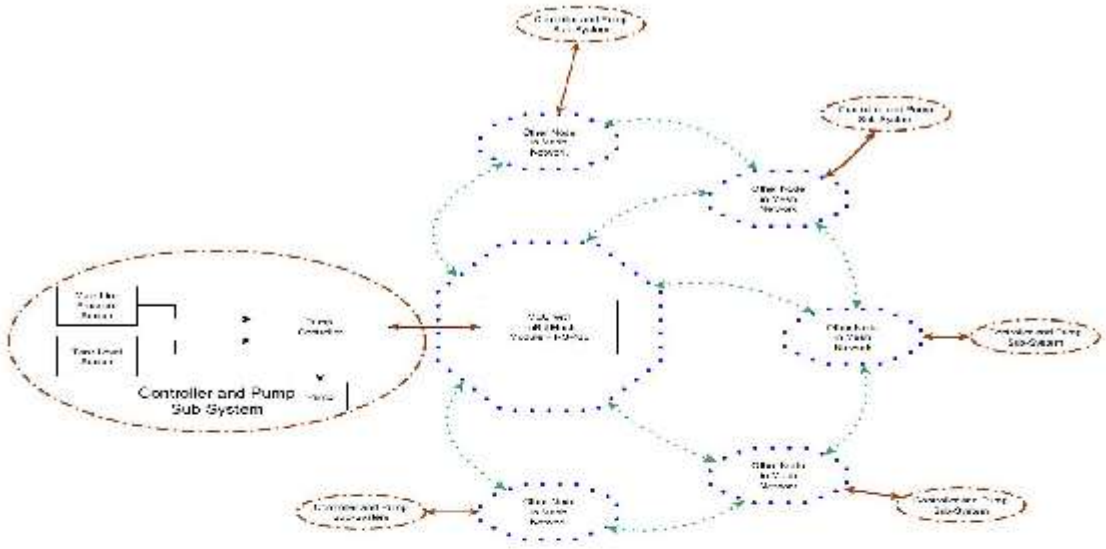
2 – If two or more tanks are at the same water level, the 'rate of fill' will be used to set the priority. The fill rate can be calculated as follows.

a. Each pump controller will be monitored by its dedicated interface. The interface will check the tank water level every (say) 60 seconds and store the time stamped value.
b. The interface will calculate a 'rolling' rate-of-fill for the previous . . . period i.e.
    i. Fill rate = Current Value – Previous Value = Variation ÷ Current Value = Fill Rate
        i. a rise from 50% to . . . .
        ii. a rise from 40% to . . .
        iii. a rise from 20% to . . .

3 – Each node will calculate its own priority level and share it with the other meshed interfaces

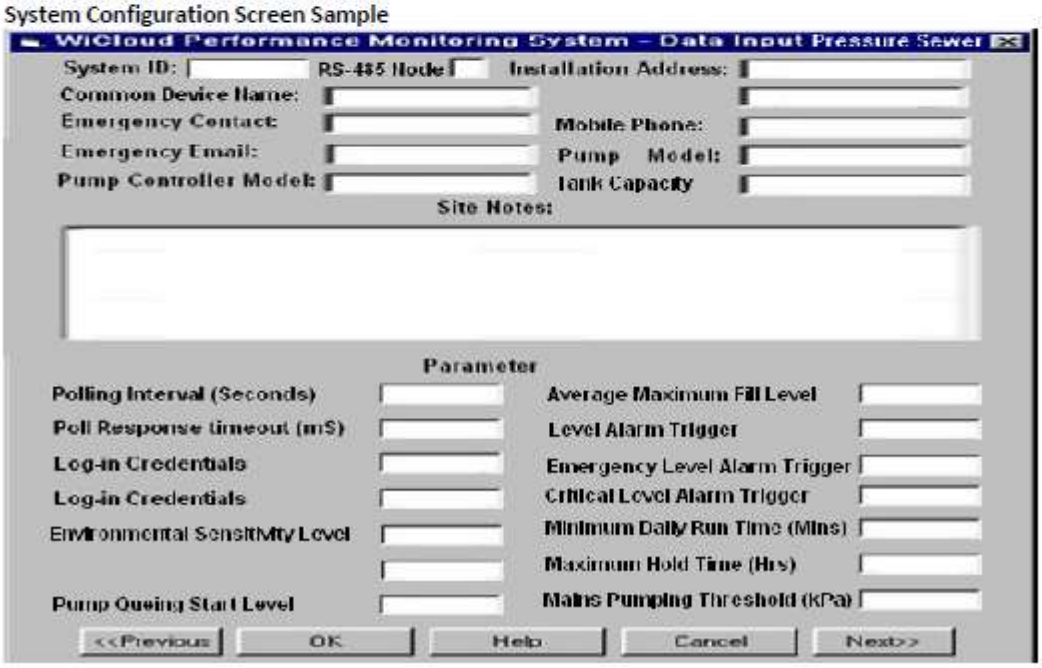
4 – Pumping should not start if the Pressure Sewer Main line is above the pre-defined threshold for an individual system.

5 – Systems that are located in an environmentally sensitive area or a system where an overflow might present a higher risk to the community have higher priority that non-sensitive systems.



1. All Nodes commun cate via a mesh topography to negotiate pump ng priority base on a series of ru es.
2. - Each Node has its own attached Sub-System of Controller, Pump, and Pressure sensors

System Configuration Screen Sample



Pressure Sewer "A.I." Parameters

The household water usage estimates used here are drawn from the Yarra Valley End Use Water Study conducted across the Melbourne region in 2012. Sewage outflow information is extracted from the findings of the Himatangi Beach (NZ) Pressure Sewer System Case Study undertaken by Beca Ltd (New Zealand). Both studies support the estimated average sewage outflow of 250 ~ 300 L/day.

Pressure sewage systems must have enough reserve capacity to protect against power outages and a high demand on the discharge pressure pipeline. Therefore, the following system requirements can be established.

Anticipated Sewage Outflow	= 275 litres/household/day.
Tank Capacity	= 1,100 litres
Maximum Hold Time	= 24 hrs
Maximum discharge pressure	= 50 M

Required Functions

1) System learns the 'Normal' 24 Hr mains pressure profile for each day of the week.
2) System learns the 'Normal' 24 Hr household sewage output volume and output volume profile for each day of the week.
3) System learns the seasonal variations in mains pressure profile and household sewage output i.e. Summer, Winter, Autumn, & Spring.
4) System prioritises environmentally sensitive areas.
5) System monitors tank levels and manages excess effluent accumulation.
6) System prioritises high-output households.
7) Failsafe mode allows individual systems to manage effluent pumping when central control is unavailable, or communications fail.

Rules

These rules use the guidelines set out for the Himatangi Beach case study

1) Pump queuing . . .
2) Average fill level . . .
3) Alarm level . . .
4) Tank priority . . .
5) Emergency Mode . . .
6) Critical Mode . . .
7) Each pump must run once per day for at least 1 minute . . .

Normal Operating Mode

During normal operation individual systems will commence the pumping sequence when the tank level reaches five percent (5%), approximately 50 litres.

1) Individual systems will . . .
2) Individual systems will . . .
3) The central controller will manage the network . . .

Alarm Mode

Alarm Mode will commence when the tank level reaches . . .

Emergency Mode

When an individual system reaches . . .

Critical Mode

When an individual system reaches . . .

Failsafe mode

Failsafe mode will be entered when . . .

Central Controller Response

Should the central controller lose contact with an individual system for more than . . . , the central controller will;

1) Notify the maintenance crew that the individual system is not reporting and advise the crew of the systems status.
2) Dispatch a maintenance crew to the site as required.

Local Power Fail Recovery

Following a local power failure, individual systems must enter a 'staged' . . .

Central Controller Power Fail Recovery

Following a power failure, the central controller will poll . . .

Individual System Tank Status

Aerial View of site

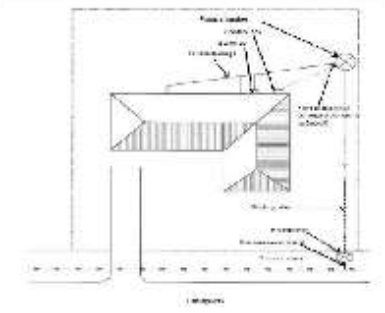


Figure 8- Example of Individual Pressure Sewer Site Configuration

25 October, 2020

The Hon Melinda Pavey MP
Minister For Water
GPO Box 5341
Sydney NSW 2001

Why we need reticulate water and wastewater services on Scotland Island

A Day in the Life of a Scotland Islander

* Wake up after a poor night's sleep disturbed by mosquitoes. Apparently they thrive in wet environments created by on-site sewerage systems and let's not forget the health risk from mosquito-born diseases. Best practice. Burn mozzie coils and go to bed redolent in repellent and buy a net.
* Morning shower, warm water and plenty of it. Thank goodness I had the foresight to make a booking three weeks ago to buy water. The lack of rain has seen my tank levels drop. (I manage to connect to the water line. At my age, these things can be a challenge.) Lucky I'm on Line 2 where a couple of hours can see the tanks replenished. Not like residents on Line 3 who need to book for 10-12 hours because of poor pressure. Recent case on Line 3 10hrs for 1,300 litres.
* A glass of water for a healthy start to the day. Better use filtered, same goes for teeth cleaning. Probably need to buy a new filter for the water pump and another 5lt cardboard water pack. Personal health note. I've had several bouts or Urinary Tract Infection, possibly attributable to the tank water.
* Need to book Dave for the regular roof and gutter clean. Leaves, twigs and possum poo do not make for healthy water for domestic use. And ice blocks with a brown tinge are not a good look in a gin and tonic.
* Laundry day. Forget about white bed linen, shirts, towels, socks and underwear, they'll soon be a pale shade of grey.
* As a child living in the country, I was used to a backyard toilet and sheets of newspaper on a nail, but times have changed and we are aware of the dangers posed by waterlogged soils and the runoff threat to our endangered ecological community well represented on Scotland Island. Not forgetting unpleasant smells and regular pump-outs adding to my household maintenance. Personal health note. I've had several bouts of Urinary Tract infections possibly attributable to water supply.
"We want and need a healthy place to live for ourselves and our kids." Said Bill Gye, President of Scotland Island Residents' Association, July 2015 in his AGM report. He was referring to Scotland Island's listing in the Priority Sewerage Program in Sydney Water's Operating Licence for 2010-2015. Residents had been waiting five years for detailed plans but now it's time for action.

Re: Scotland Island Water & Waste Water

The Hon Melinda Pavey MP
The Hon Rob Stokes MP
Northern Beaches Council

Thursday 22 Oct 20

I am a resident and owner of a properly on Scotland Island. As you will be aware Scotland Island residents have no access to sewerage or town water ...we rely on septic tanks which are in many instances over 30 years old with soils (clay and rock) that cannot cope...with the consequence being that with heavy rainfall the septics overflow into Pittwater. The damage to the environmnet and to or health is unacceptable.

The World Health Organisation notes on their website (https://www.who.int/news-room/fact-sheets/detail/sanitation) that 14% of the world's population (1 billion people) used toilets or latrines where excreta were disposed of in situ. That describes Scotland Island - whilst the rest of Sydney live in the developed world our government has turned a blind eye.

Moreover, the impact of questionable waste water management systems on the island present health risks to the population with respect to mosquito borne illnesses and diseases.

The situation is unacceptable.

If Dangar Island can have a sewerage system and the rest of Sydney's population can have their health protected with modern sanitation systems (sewerage and running water) - why can't the population of Scotland Island have the same services?

We pay taxes, we are families, we contribute - we are human - yet we are treated no better than the 1 billion on the planet that live in squalor without sanitation!

This situation is shit!

Do something about it please

Yours sincerely

Friday 23 October 2020

Dear Councillors,

I am writing to support the connection of town water and sewerage service to Scotland Island. My family and I have lived here going on for twenty four years. During this time we have mostly relied upon tank water and the septic system. However this system is increasingly problematic for several reasons.

We are living in an increasingly variable environment with long periods of drought followed by rainfall. This is a public health risk for several reasons. Firstly the emergency town water is non potable due to the piping quality to supply this water. As we have extended dry periods residents are forced to carry their drinking water onto the island or run the gauntlet and drink it anyway as they are not physically able to carry 20 Li containers of drinking water.

Tank water every year becomes very brown due to the bark shedding of spotted gums. Tannins discolour the water and this in turns causes issues. Mosquito larvae can hatch in and around tanks and pooled water providing a great breeding ground and increasing the risk of mosquito borne diseases. Apart from the need to use a lot of mosquito repellent, there is a risk to human health from mosquito-borne diseases. (Ross River virus and and Port Macquarie, Barmah Forest virus have been detected by NSW Health in mosquitoes trapped in Sydney Northern Beaches. Reference - https://www.health.nsw.gov.au/environment/pests/vector/Publications/nswasp-weekly-report-2020-04-24.pdf

The run off after heavy rain is huge and contaminants held in the soil flow into Pittwater. Waterlogged soils can be dangerously polluted from wastewater infiltration and runoff at levels thousands of times higher than those recommended as safe. On site sewerage systems currently in use result in water ponding, subsurface flows and release of treated effluent (unsuited soils profile)Reference - https://www.scotlandisland.org.au/sira/scotland-island-sewerage/. This has resulted in not permitting my children to swim for several days after such an event. During periods of wild weather and heavy rain boat owners often have to rescue boats which involves getting in the contaminated water. This is a health risk which would be reduced with a reticulated water and sewerage system. Odours are more prominent at these times and plant and tree health is affected.

We live in a bush fire zone and fire safety is a big issue. There are a few tanks with fire retardant water on the island but these would be totally inadequate in an emergency situation as they would quickly run out of water.

Residents often don't have a spare supply due to problems and issues with accessing town emergency water. Each time we need to access town water, we have to walk through rough bush, climb over rocks and check that every person on our line has their stand pipe connection turned off. This is quite hazardous especially at night if your booking starts at 10 pm and finishes at 5 am. Additionally with a high tick population it's not unusual to pick up a few. Then there's the trip to Bell Wharf to read the meter. (We are still on this system). Currently work has been done to improve the flow on line three but receiving 1300 Li when filling up over night, as a resident recently experienced, is extremely poor and dangerous. One of our experiences involved a neighbour cutting the supply pipe which crossed her rental property path, thus cutting our ability to receive water for living let alone fire fighting purposes. Without ready and constant access to a water supply we cannot fight fires.

The Water and Wastewater Feasibility Study has estimated the cost of works to be much lower than previously estimated by Sydney Water (69 million) and in the same order of what delivered to Dangar Island.

I am a Sydney Water customer at other property I own in Sydney which has access to a reliable water supply and sewerage services and it is time for Scotland Island to have this same access and equity with the rest of Sydney and not be discriminated against.

I ask for your favourable consideration and support in achieving an articulated water supply and sewerage system for Scotland Island. I look forward to hearing from you.

Your sincerely.

Sydney WATER

28 October 2020

Environment and Climate Change
Northern Beaches Council
PO Box 82, Manly NSW 1655

Scotland Island Water and Wastewater

Thank you for the opportunity to comment on Council's 'Scotland Island Water and Wastewater Feasibility Study'.

Scotland Island covers an area of about 55 ha and 377 lots with lot sizes that are typical of urbanised areas. The island does not have a reticulated drinking water supply or wastewater service. Scotland Island is identified in Sydney Water's Operating Licence as a Priority Sewage Program (PSP) area, however, there is no obligation for Sydney Water to provide a wastewater service to the PSP scheme areas within a particular timeframe.

Northern Beaches Council has engaged Pressure System Solutions (PSS) to conduct a commercial feasibility study for the provision of water and wastewater infrastructure to service Scotland Island. In 2019, Sydney Water provided information to Council to assist with its investigation. The information included capacity assessment on the existing water and wastewater systems assuming a maximum flow rate of 15 L/s for water supply and a daily maximum flow of 300 kL/day of wastewater, as specified by Council.

PSS completed a feasibility study for Council in August 2020 and a copy of the report has been published in the council's website for public comment. The feasibility study report details a long list of options, multi criteria assessment and cost estimates of the short-listed options for drinking water, wastewater and wastewater treatment services to the island.

Drinking Water

The existing water supply system in Scotland Island consists of household rainwater tanks and an emergency pipeline connected to Sydney Water's potable water network at Church Point. The supply was originally intended for firefighting purposes and emergency drinking water.

In 2019, Sydney Water assessed the capacity of the existing nearby water network to supply a maximum flow rate of 15 L/s to Scotland Island. Advice regarding available pressure based on this flow rate was provided to Council. However, the report by PSS details the estimated maximum flow rate as 30 L/s.

The preferred option outlined in the PSS report is to directly supply drinking water from Sydney Water mains, with a booster pump if required. The assets considered in the report only account for those required within the Island, with no amplification identified to Sydney Water's supply network. If the required flow rate is now greater than 15 L/s as per the PSS report, further planning is needed to confirm whether augmentation or operational changes to our assets would be required in order to mitigate adverse impacts to upstream customers.

Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | sydneywater.com.au
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Wastewater

Properties on Scotland Island have on-site management systems. They are currently not serviced by Sydney Water's wastewater system. The closest wastewater system to Church Point is Newport SCAMP, which is within the Warriewood wastewater system. The assessment carried out in 2019 indicated that the wastewater trunk network at Church Point has adequate capacity to accommodate a maximum flow of 300 kL/d from Scotland Island.

The preferred option in the PSS report is for a Pressure Sewerage System and transfer to Church Point to connect to Warriewood system. The assets identified in the report include those required within the Island, as well as the transfer system to connect to the Sydney Water network. The Sydney Water network has enough capacity to accept the flows.

Cost Estimates

The feasibility study report consists of preliminary capital cost estimates for the water and wastewater preferred options. Sydney Water's cost estimate for the Pressure Sewer System is higher than the cost estimate by PSS. Since the cost breakdown is not available, it is not possible to undertake a detailed review of the cost estimate in Council's report.

Sydney Water did not identify the preferred option to supply drinking water to the Island and therefore does not have a recent cost estimate for the drinking water supply for comparison.

Sections of the report imply that Sydney Water would operate and maintain the proposed infrastructure. However, this has yet to be agreed. We anticipate that operation and maintenance costs will be higher in this location, given its remote nature and environmental conditions.

Commercial Viability

As per Sydney Water's cost estimate, the cost per lot to provide wastewater services only was about $250K. The cost per lot in the council report is about $188K to provide both water and wastewater services. Based on our estimates, both Sydney Water and IPART have considered servicing of the area to be financially unviable. Even at Council's reduced estimate, Sydney Water does not consider this to be an investment our broader customer base should pay for.

If you have any questions regarding our submission, please contact Paul Mulley, Manager Precinct Planning on paul.mulley@sydneywater.com.au / 0409 046 925.

Yours sincerely

Kate Miles
Head of Systems and Asset Planning