

ATTACHMENT G:

SCOTLAND ISLAND STAGE 1b WATER SERVICING OPTION REPORT

DETAILED DESCRIPTION OF SCOTLAND ISLAND

SCOTLAND ISLAND DESCRIPTION ⁽¹²⁾

The Pittwater Estuary is a drowned river valley located near the mouth of the Hawkesbury-Nepean River system. The estuary is about 10 km in length and 1 km in width, with a maximum depth of 20 metres. Water quality issues in Pittwater are mostly confined to shoreline areas and are more pronounced in the southern part of the waterway. Flushing is restricted in the bay areas, with wind driven currents more dominant than tidal currents in mixing and flushing processes. Dredged areas (common in the southern embayments) also have poorer water quality as flushing is reduced in deeper water.

Water quality in the tributaries, embayments and the main estuary body of Pittwater is poor to extremely poor following rainfall, and otherwise reasonable. Poor water quality following rainfall is mostly due to runoff from developed land areas.⁽¹²⁾

Pittwater is highly valued as an ecological and recreational resource. Numerous primary and secondary contact recreational activities take place, including swimming, sailing, kayaking, fishing, sailboarding, kite-surfing, water skiing and boat and shore fishing.

1 Scotland Island

Scotland Island is about 55 ha and located at the southern end of the Pittwater estuary. In the 2016 Census there were 579 people living in 359 private dwellings on Scotland Island. Only 209 of those dwellings were occupied at the time of the census. Over half the population is employed. These figures are down from 715 residents in 344 dwellings in the 2011 Census, with 252 dwellings occupied at the time of the census.

The proportion of permanent residents has gradually increased over time, although it has historically fluctuated.

Table 1-1: Scotland Island Population 2001 - 2016

| Census Data | |
|-------------|------------|
| Year | Population |
| 2016 | 579 |
| 2011 | 715 |
| 2006 | 642 |
| 2001 | 734 |

Source: Australian Bureau of Statistics

The only option for further development on Scotland Island is redevelopment of existing lots. This takes the form of knock-down-rebuilds or upgrading existing holiday house and beach shack accommodation to permanent residences. Redevelopment has been occurring for a number of years, seeing increases in the size of houses and the population. The size of housing is somewhat restricted by a requirement to maintain 80 percent of the property as landscaped area. Associated with an increase in the size and value of dwellings has been an expectation to have upgraded facilities such as dishwashers.

2 Existing water and wastewater services

2.1 Water supply

There is no true centralised water supply on Scotland Island. Residents rely on rainwater tanks, supplemented by purchases of water from an emergency supply line.

Around 1977, an emergency supply pipeline was built by Warringah Council to supply water for firefighting. The pipe was damaged by boats and replaced one metre below the estuary floor in 1988, at which time Council agreed that the supply could be used as an emergency top-up supply for rainwater tanks in the event of low rainfall.

Sydney Water ownership of the system ends at the connection at Church Point. Northern Beaches Council is responsible for the 37mm ID polyethylene submarine pipeline to the reservoir located at the top of Scotland Island.

When Pittwater Council attempted to disconnect the line due to safety concerns, SIRA accepted legal responsibility for the lines in 2002 and upgraded the system across Scotland Island. SIRA, acting on behalf of the residents, pays Council for the water, and then distributes it from the reservoir to residents for a fee. There are three polyethylene pipelines around Scotland Island, maintained by a trust fund derived from SIRA through a user pays arrangement. The pipeline distributes the water to standpipes, where residents can attach a hose to top-up their tanks.

A proportion of households use the emergency supply as their primary supply, as indicated by the average demand for Scotland Island of 13 kL per year over the last five years. There is high demand for the emergency supply during drought, when residents have to book in weeks in advance to fill their tanks.

When it was last assessed, the pipe was in poor condition and exposed in many locations, meaning it is susceptible to puncture, burning and melting and at risk of wastewater infiltration. Limited testing of water supplies on Scotland Island in a 1996 study found faecal coliforms present in private rainwater tanks (most likely due to animal droppings) with some exceeding recommended levels for potable water, and in the emergency water supply line (possibly due to wastewater infiltration).

Pittwater Council Policy No. 76 notes that it is a non-potable supply that should be clearly sign-posted for that purpose, to only be used in the manner and for the specific purposes specified under the (unsigned) agreement with Sydney Water. SIRA's agreement for sale also clearly notes that the water is non-potable. While Sydney Water is required to deliver water that meets Australian Drinking Water Guidelines to the connection point, there is no similar requirement on SIRA for the water they deliver to island residents.

A small number of properties on Florence Terrace have a private water supply connection to Taylor's Point on the mainland. They operate as the Scotland Island Pipeline Company (SIPCO). SIPCO investigated expanding their scheme in 2013, but abandoned the process due to the cost of submitting a development application.

The emergency water supply has insufficient pressure to use for fire-fighting purposes (despite being originally provided for this). In a study in the 1990's, the Warringah Pittwater Bush Fire Service concluded that there was a high potential for loss of life and property.

2.2 Wastewater

There is no centralised wastewater system on Scotland Island. Septic systems with soil absorption trenches account for the majority of wastewater disposal. A small number of properties have aerobic wastewater treatment units (AWTS) and composting toilets. It is likely that a percentage of the septic systems have never been pumped out and many could be of a significant age. Most new developments on Scotland Island are now required to install an AWTS, so it might be assumed that wastewater management has improved to some degree in recent years.

Disposal areas are generally smaller than recommended in the Australian Standard. Some of the waterfront properties dispose of wastewater directly into estuarine sands, and for some, tidal sea water accesses and 'flushes' their disposal area. In these cases, little post-disposal treatment occurs before the water enters Pittwater.

If a reticulated town water supply were brought to Scotland Island without an accompanying reticulated wastewater network, it is likely that the current septic systems would become hydraulically overloaded and fail. It should be noted that this may already be occurring with those properties relying on the emergency water supply as their primary supply.

3 Land capability for wastewater disposal

Scotland Island is steep-sided bedrock with shallow soils of sandy loam (highly permeable) with sandy clay loam sub-soils (highly impermeable). Both layers are highly acidic and encourage nutrients and contaminants to leach away from wastewater disposal areas. Previous mapping has indicated that up to 44 percent of Scotland Island is unsuitable for existing wastewater disposal systems.

The ephemeral streams in 15 water catchments on Scotland Island have been found in previous monitoring studies to have elevated nutrient, sediment and bacterial concentrations exceeding the ANZECC (1992) guidelines for surface water and saltwater estuaries. More recent data is not available. Streams require rainfall of 2-5mm/hr to generate runoff, after which water flows rapidly to Pittwater. Due to the soil's low capacity to accept and treat wastewater, it is dispersed from land application areas via sub-surface flow and surface runoff.

An additional source of dispersal is sediments, which absorb pollutants at the source and then migrate them to waterways. A study in 1997 suggested that up to 80 percent of the daily inflow to septic tanks may be transported from the adjoining absorption trenches to surrounding soil.

The steep slopes of Scotland Island contribute to an extreme erosion hazard for both non-concentrated and concentrated flows. Continuing redevelopment is contributing to sources of erodible sediment, with many building sites lacking erosion control measures. The isolation of Scotland Island has meant ensuring compliance has been difficult with the limited resources available at Council. It is possible that Scotland Island contributes in excess of 14 tonnes per hectare per year of suspended sediment to Pittwater, much of which is likely to be contaminated from exposure to on-site wastewater disposal.

Native vegetation responds poorly to elevated nutrient supplies and some dieback in Eucalypt species has been observed.

When considering soils, drainage lines, slope, proximity to waterways etc, approximately 40 percent of Scotland Island is unsuitable or marginal for on-site wastewater disposal.

4 Existing On Site Systems ⁽¹¹⁾

There are 343 On-Site Sewerage Management Systems listed on Scotland Island all are listed as Domestic systems

Treatment type

- a) 118 are listed as AWTS,
- b) 225 are listed as Septic Tanks
- c) Land Application Area
 - a. 234 have Absorption trenches
 - b. 77 have surface spray
 - c. 25 for sub surface irrigation
 - d. 1 drip line
 - e. 1 mound
 - f. 5 unknown

Table 4-1 : Existing Waste Water Systems Condition/Performance

| Risk rating | Number systems | Current Approval to Operate an On-Site Sewerage Management System | No current Approval to Operate an On-Site Sewerage Management System | Never received an Approval to Operate an On-Site Sewerage Management System | History of Failure requiring action this calendar year | Did not pass initial Approval to Operate an On-Site Sewerage Management System inspection | Local Government Act Notices since keeping of electronic records |
|-------------|----------------|---|--|---|--|---|--|
| Low | 43 | 36 | 2 | 5 | | | |
| Medium | 143 | 126 | 10 | 7 | | | |
| High | 157 | 93 | 62 | 2 | | | |
| Total | 343 | 255 | 74 | 14 | 34 | 104 | 115 |

Typical Issues include but not limited to:

- Due to Scotland Island's shallow clay soil the land application areas often fail due to too much load
- Few properties meet the NSW Environmental & Health Protection Guidelines On-site Sewage Management for Single Households buffer distances to a permanent water source
- few properties meet the NSW Environmental & Health Protection Guidelines On-site Sewage Management for Single Households buffer distance to boundaries
- few properties meet the AS1547 for wet weather storage
- few properties meet the AS1547 for reserve land application areas
- the entire Island is shaded by tall trees that hinder evapotranspiration
- Majority of properties have been overdeveloped in regards to Design Load Rates

- Pump out of systems is incredibly hard due to needing a pump out barge or a barge to transport over a pump out truck, which is hard to access all sites due to poor roads
- The topography of Scotland Island is a major limiting factor in regards to installing tanks and Land Application Areas
- Scotland Island does not have much vegetation that is in accordance schedule 7 of the NSW Environmental & Health Protection Guidelines On-site Sewage Management for Single Households

5 Community expectations and lobbying history

The Scotland Island Residents' Association is a representative body of the residents of Scotland Island and has been lobbying the Government, Pittwater Council and Sydney Water on behalf of the residents for improved water and wastewater services for over 30 years. A 2015 survey of residents indicated that 96 percent of the 383 respondents wanted a wastewater connection on the condition that the only cost to households was the connection to the mains system.

SIRA has had an active history in advocating for improved infrastructure for Scotland Island:

- 1997 Scotland Island Landcare Group won a grant, administered by SIRA to investigate the environmental and public health impacts of current on-site wastewater disposal on Scotland Island, and consider water and wastewater options for Scotland Island.
- 2001 Scotland Island announced as one of 20 villages to receive improved wastewater infrastructure as part of Stage 2 of the Priority Sewerage Program (PSP).
- Jun 2005 SIRA held a workshop with key stakeholders to discuss future water and wastewater infrastructure for Scotland Island.
- Mar 2010 Pittwater Council raised concerns directly with Sydney Water that Scotland Island appeared to have been removed from the program for PSP.
- Apr 2010 The Hon. Rob Stokes (Member for Pittwater) raised in Parliament the question of when PSP work would begin on Scotland Island. The response was that planning would begin in 2011, subject to funding *and a resolution by residents to upgrade* local water infrastructure.
- Jan 2011 Soon to be Premier Barry O'Farrell committed to the fast-tracking of wastewater connections to a number of PSP identified villages in Wollondilly and Hornsby Shires, and said the remaining villages including Scotland Island were a priority.
- Dec 2012 NSW Government commitment in Northern Beaches Regional Action Plan (under NSW 2021) to better manage wastewater and upgrade wastewater treatment facilities to Scotland Island as a matter of priority.
- Aug 2014 SIRA submission to review of Sydney Water's Operating Licence review in support of Sydney Water retaining responsibility for delivery of the Priority Sewage Program as part of their next operating license.
- Jan 2015 PR and letter campaign by SIRA and residents to Minister Humphries, IPART and EPA in response to a concern that Sydney Water was going to be released from the PSP as part of their Operating Licence conditions.
- Jun 2015 Sydney Water's new Operating Licence has no firm commitment to deliver the PSP to Scotland Island.

- Aug 2015 SIRA met with The Hon. Rob Stokes, Member for Pittwater.
- Nov 2015 SIRA met with The Hon. Niall Blair, Minister for Lands and Water regarding installation of wastewater infrastructure plus subsequent correspondence.
- Apr 2016 SIRA met with The Hon. Rob Stokes and decentralised service providers regarding options for water and wastewater provision on Scotland Island.
- 2016 Draft Pittwater Waterways Review Discussion Paper notes key issues raised in stakeholder engagement were sewage runoff from Scotland Island.

6 Stakeholders

Key stakeholders include Northern Beaches Council, Scotland Island Residents Association, Sydney Water, NSW Department of Planning and Environment, NSW Office Environment and Heritage (including NSW National Parks and Wildlife Service), NSW Health, residents of Scotland Island, recreational users of the Pittwater waterway, and environmental and community groups associated with Pittwater and its environs.

NORTHERN BEACHES COUNCIL

| | |
|-----------------------------------|--|
| Business units | NECC and TCI |
| Key Subject Matter Experts | Ruby Ardren, Project Leader - Water Management |
| Executive Leadership Team | Todd Dickinson |
| Councillors | Kylie Ferguson - Pittwater Ward Alex McTannart - Pittwater Ward Ian White – Pittwater Ward |

Council and Government Stakeholders

| | |
|--------------------------|--|
| Government Depts | The Hon. Rob Stokes, Member for Pittwater Dept Local Government Rural Fire Service Office Environment and Heritage |
| Service providers | Northern Beaches Council |
| Utilities | Sydney Water |

External Stakeholders and Community

| | | |
|--|---------------------|---------|
| Local residents and property owners | All Scotland Island | Tenants |
|--|---------------------|---------|

| | | | |
|--------------------------------|--|---|---|
| Local businesses | Operating from Scotland Island | Accommodation providers | Scotland Island Off-shore Children's Services (Scotland Island Kindy) |
| Users of facility/ area | Island Visitors | Recreational Pittwater Waterway users | |
| Community groups | Scotland Island Residents Association (SIRA) | Scotland Island Pipeline Company (SIPCO) - private consortium | |
| Environment groups | Bushcare Groups | | |

Others

- Beach Watch
- EPA
- Health Department
- Fisheries
- National Parks