

# Draft MidCoast Rural Strategy

## Paper Subdivisions Analysis Report

Date: June 2021



# Table of Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
<b>2</b>	<b>STRATEGIC AND LEGISLATIVE CONSIDERATIONS</b>	<b>6</b>
2.1	Planning for Paper Subdivisions Guidelines .....	6
2.2	NSW RFS Planning for Bushfire Protection .....	8
2.3	Other legislation and policy .....	9
2.4	Ministerial Directions .....	9
2.5	Hunter Regional Plan 2036 .....	10
2.6	MidCoast 2030: Shared Vision, Shared Responsibility .....	13
2.7	Infrastructure and services .....	14
	Roads .....	14
	Water & Sewer .....	15
	Telecommunications and Electricity .....	16
	Community facilities and services .....	16
<b>3</b>	<b>PAPER SUBDIVISIONS AND CLAUSE 4.2A</b>	<b>17</b>
<b>4</b>	<b>OPTIONS FOR OWNERS OF LAND IN PAPER SUBDIVISIONS</b>	<b>23</b>
4.1	Option 1 Retain – land owner purchases to consolidate .....	25
4.2	Option 2 Transfer –transfer to Council on hardship grounds .....	27
4.3	Option 3 Pursue – satisfy or change development restrictions .....	29
	Option 3A – Satisfy existing zone and development standards .....	29
	Option 3B – Change zone and standards by Subdivision Order .....	33
<b>5</b>	<b>PAPER SUBDIVISION ANALYSIS BY LOCATION</b>	<b>36</b>
5.1	Rural Strategy Land Use Zone Principles .....	37
	Bundabah .....	39
	Carrington .....	43
	Coolongolook .....	47
	Copeland and Copeland Common .....	51
	Hamilton .....	55
	Krambach .....	59
	Limekilns, Tea Gardens .....	63
	North Arm Cove .....	67
	Pindimar .....	77
	The Branch .....	83
	Wingham North (Rifle Range Road) .....	87
<b>6</b>	<b>REFERENCES</b>	<b>90</b>



## Table of Tables

Table 1. Goals and Actions from MidCoast 2030 relevant to Paper Subdivisions	13
Table 2. Dwelling entitlement search applications in the MidCoast LGA 2016-2021	20
Table 3. Development Applications reliant upon a Clause 4.6 variation to lot size in MidCoast	22

## Table of Figures

Figure 1. Paper Subdivisions adjoining Port Stephens Bay	4
Figure 2. Three options available to owners of land in a paper subdivision	24
Figure 3. Lakes Macquarie LEP 2014 Key Site - South Buttaba Hills	31
Figure 4. Lakes Macquarie LEP 2014 R2 Low Density Residential zone at South Buttaba Hills	32
Figure 5. Lakes Macquarie LEP 2014 R2 450sqm Minimum Lot Size at South Buttaba Hills	32

# 1 Introduction

This analysis report presents the findings of a review of paper subdivisions within the rural areas of the MidCoast local government area.

A “paper subdivision” is a term used to describe land containing lots that only have recognition on paper and, in most cases, have no formed roads, drainage, reticulated water, sewer or electricity. Most paper subdivisions have been in existence for many years, some originating as long ago as the late 1800s or early 1900s.

Paper subdivisions exist for many reasons and can be found in various locations including but not limited to North Arm Cove, Pindimar, Bundabah, Carrington and the former gold mining town of Copeland.

Many of these locations historically formed part of large rural holdings owned by the Australian Agricultural Company.

In the early 1900s some areas were planned as towns for returned soldiers or put forward as a location for the new Australian capital. Subdivision and concept plans were prepared to reflect these aspirations, but the land remained part of the larger property holding.

**Figure 1. Paper Subdivisions adjoining Port Stephens Bay**



When planning legislation came into force in the 1960s, irrespective of the conceptual subdivision plans, an urban zone was generally only applied to those areas where existing development was identified.

As a result, our towns and villages were recognised in planning legislation, but the remaining areas became ‘non-urban’ paper subdivisions, that did not have the same development rights.

When the land in these paper subdivisions was sold by the original companies, evidence from the time shows that most lots were on-sold to mum-and-dad investors on the promise that the land would be rezoned for urban purposes to allow a dwelling on their land.

As a result, some families have owned land in paper subdivisions for several decades in the belief that the land would be rezoned.



Despite advice from Council that planning legislation does not allow urban development in these areas and that rezoning is highly unlikely due to legislative, policy and locational constraints, land owners continue to question when the land will be rezoned to allow development.

The enquiries about rezoning land in paper subdivisions have been exacerbated in recent years as a result not only of increasing property prices in metropolitan areas and a growing interest in making a sea- or tree-change to the MidCoast, but increased property pressures in regional areas as a result of the desire to relocate in response to the social and economic impacts of COVID 19.

At the commencement of the Rural Strategy program, MidCoast Council recognised that the ongoing uncertainty about the future of land in paper subdivisions must be addressed and that clear and consistent recommendations must be provided as part of the new MidCoast planning framework. This resolve has only increased with the more recent pressures, ongoing concern and interest from the owners of land within paper subdivisions about the future use of their land.

The purpose of this analysis report is to:

1. provide a transparent and consistent analysis of the constraints that apply to identified paper subdivisions;
2. provide high-level recommendations on the future conservation or development opportunities for these areas; and
3. provide clear and consistent information on the options available to land owners, based on this analysis and the State planning framework that applies.

This report provides a high-level review of the challenges and opportunities in using land within paper subdivisions. It documents three options available to land owners and potential planning controls and criteria for an assessment framework for these areas.

The report includes an analysis of several paper subdivisions within the MidCoast. However, it is acknowledged that:

- the paper subdivisions identified in the appendix are not exhaustive;
- this report does not address in detail, individual under-size rural allotments that are not within an identified paper subdivision; and
- the analysis is high-level and strategic in nature, based on information and data available at the time of writing.

## 2 Strategic and legislative considerations

This section outlines the strategic planning policies and legislative controls that apply specifically to land within paper subdivisions and would be considered as part of any proposal to rezone or develop these lands.

The following strategies and legislation have been reviewed and are discussed given their influence upon the current and potential use of these lands, and this is reflected in the high-level analysis of the paper subdivisions documented within this report:

- Changes to planning legislation including Schedule 7 of the Environmental Planning and Assessment Act 1979 and the publication of the NSW Government Planning for Paper Subdivisions Guidelines and associated documents including frequently asked questions (FAQ)
- NSW RFS Planning for Bushfire Protection – matters for planning proposals to rezone land
- Ministerial Directions – matters for planning proposals to rezone land
- Hunter Regional Plan 2036 – matters for planning proposals to rezone land
- MidCoast 2030: Shared Vision, Shared Responsibility
- Infrastructure and services guidelines

### 2.1 Planning for Paper Subdivisions Guidelines

The [Planning for Paper Subdivisions Guidelines](#) have been prepared by the Department of Planning & Environment to supplement the Environmental Planning & Assessment Act 1979 provisions relating to land in paper subdivisions. A copy of the guidelines and associated FAQ is provided as an annexure to this report.

The Guidelines in conjunction with the provisions of Schedule 7 of the EP&A Act, establishes a process to develop land in an identified paper subdivision. Under Schedule 7, the Minister for Planning and Public Spaces can issue of a Subdivision Order that can empower a nominated authority to manage the development and resubdivision of the land, but only if:

- the Minister is of the opinion that it is desirable to do so to promote and co-ordinate the orderly and economic use and development of the land affected by the order, and
- the land has been subdivided and is held by more than one owner and the Minister is satisfied that the land is land for which no provision or inadequate provision has been made for subdivision works, and
- that land is subject to an environmental planning instrument, or a planning proposal, that will facilitate the proposed planning purpose and assess land as suitable for development, and
- the Minister has consulted with relevant authorities and the Council, and
- the Minister is satisfied that a development plan for that land has been prepared by the relevant authority in accordance with Schedule 7 and the Regulations, and
- the Minister has considered any provisions of the development plan that modify or disapply the provisions of Division 4 of Part 3 of the Land Acquisition (Just Terms Compensation) Act 1991, and
- at least 60% of the total number of owners of that land, and the owners of at least 60% of the total area of that land, have consented to the proposed development plan.

A development plan is an important and essential part of this process requiring the cooperation of landowners and potential financial commitment. A development plan is to contain the following matters:

- (a) a proposed plan of subdivision for the land,*
- (b) details of subdivision works to be undertaken for the land,*
- (c) details of the costs of the subdivision works and of the proposed means of funding those works,*
- (c1) details of the development plan costs,*
- (d) details of the proportion of the costs referred to in paragraphs (c) and (c1) to be borne by the owners of the land and of the manner in which the owners may meet those costs (including details of any proposed voluntary land trading scheme or voluntary contributions or, if voluntary measures are not agreed to by owners, of compulsory land acquisition or compulsory contributions),*
- (e) rules as to the form of compensation for land that is compulsorily acquired and how entitlement to compensation is to be calculated,*
- (f) rules as to the distribution of any surplus funds after the completion of subdivision works for the land,*
- (g) any other matters prescribed by the regulations.*

In locations where this has occurred since the Guidelines were introduced in 2014, it is noted that the paper subdivisions are generally near other existing urban lands, able to be integrated into existing services and infrastructure, and are located in areas where the demand for urban growth has been demonstrated. These areas generally are identified for urban expansion as part of an urban growth strategy.

Current examples of where Schedule 7 of the EP&A Act and the Guidelines are being used to realise a development outcome in NSW include:

- Riverstone Scheduled Lands - Landcom
- Paper Subdivisions, Shoalhaven City Council
- Wyee West Paper Subdivision, Lake Macquarie

It is important to note that, based on the existing examples of where the Guidelines are being used to transition land in a paper subdivision to urban land with infrastructure and services:

- the process of securing a rezoning, appointing a Relevant Authority, preparing a Development Plan, obtaining Ministerial approval and issuing the Subdivision Order, subdivision and development approval, finalising funding and distribution of returns may take a number of years;
- landowners may be required to enter into legal agreements to contribute financially to the preparation and implementation of a *Development Plan* and associated studies and investigations without a guarantee of an individual development outcome, this would include the costs of any ecological studies, traffic management plans, bushfire hazard assessments and the like required to prepare the *Development Plan*;
- the original paper subdivision plan usually requires significant changes to meet current legislation requirements for urban development including but not limited to infrastructure, services, bush fire asset protection, recreation areas, ecological offsets and water sensitive design;
- only some land owners will achieve a development outcome and these land owners are usually required to: compensate land owners who do not, contribute to construction costs for infrastructure and services, and fund development contributions

and any ecological off-set rehabilitation and management costs based on the agreements in place under the Development Plan.

## 2.2 NSW RFS Planning for Bushfire Protection

[Planning for Bush Fire Protection 2019](#) is considered best practice in the provision of bush fire protection standards and continues to evolve and provide improved protection for people and their properties in bush fire prone areas.

The [National Strategy for Disaster Resilience](#) (COAG 2011) emphasises the importance of the strategic planning system in contributing to the creation of safer and sustainable communities. The Strategy identifies risk-based land management and planning arrangements as a vital component in building disaster resilient communities.

Planning for Bush Fire Protection 2019 provides development standards for designing and building on bush fire prone land in New South Wales. Of relevance to the Rural Strategy, the document also provides clear standards and guidance for strategic land use planning to ensure that new development is not exposed to high bush fire risk:

### 2.3 Strategic planning

*Strategic planning is the preparation of planning instruments and policies and includes the making of Local Environmental Plans (LEPs), Development Control Plans (DCPs), housing strategies and other planning instruments that identify proposed uses and land zonings. This also includes any associated strategic proposals and studies.*

*The strategic planning phase of development is particularly important in contributing to the creation of safer and sustainable communities (COAG 2011). It is an effective way of achieving bush fire protection objectives in new developments.*

*Strategic bush fire planning and studies are needed to avoid high risk areas, ensure that zoning is appropriate to allow for adequate emergency access, egress, and water supplies, and to ensure that future compliance with this document is achievable.*

*The most important objective for strategic planning is to identify whether new development is appropriate subject to the identified bush fire risk on a landscape scale. An assessment of proposed land uses and potential for development to impact on existing infrastructure is also a key element of the strategic planning process in bush fire prone areas. Land use planning policies can be introduced to limit the number of people exposed to unacceptable risk.*

### 4.1 Strategic principles

*Local land use strategies and LEPs should consider and identify land affected by natural hazards and direct development away from inappropriate and constrained lands. In a bush fire context, strategic planning must ensure that future land uses are in appropriate locations to minimise the risk to life and property from bush fire attack.*

*Strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas as follows:*

- *the development area is exposed to a high bush fire risk and should be avoided;*
- *the development is likely to be difficult to evacuate during a bush fire due to its siting in the landscape, access limitations, fire history and/or size and scale;*
- *the development will adversely affect other bush fire protection strategies or place existing development at increased risk;*

- *the development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants; and*
- *the development has environmental constraints to the area which cannot be overcome<sup>1</sup>.*

For the purposes of the Rural Strategy, a strategic review of development potential across the rural landscape of the MidCoast and paper subdivisions, must therefore take into consideration:

- Bush fire landscape assessment – risk based on existing vegetation and topography
- Land use assessment – risk profile of potential urban development
- Access and egress – capacity of existing road networks to and within the location
- Emergency services – availability, accessibility and capacity within the location
- Infrastructure – availability and suitability of reticulated water systems
- Adjoining land – impact of new or additional development on bush fire management.

## 2.3 Other legislation and policy

Several other Acts and Regulations and policy initiatives are relevant and would need to be considered depending on the particular circumstances of a place and include:

- Biodiversity Conservation Act 2016 and requirements for offsets;
- NSW Department of Planning's new flood prone land package.

## 2.4 Ministerial Directions

In NSW Ministerial Directions issued under section 9.1 of the *Environmental Planning and Assessment Act 1979*, must be considered when preparing a new local environmental plan, proposing to rezone land, reduce a minimum lot size for subdivision, increase a height of building control or amend any other provision in an existing local environmental plan.

Most land in paper subdivisions is in a rural or environmental zone, and land owners are seeking to change to a residential zone in order to build individual dwellings on their property.

In this regard, even when land in a paper subdivision is already in an urban zone, the process of preparing a *Development Plan* could result in changes to the zone, land uses, lot sizes and density of development.

This would not only require the Relevant Authority to prepare appropriate on-site studies and reports for a development assessment process but may require amendments to an existing local environmental plan. If this is required, the following Ministerial Directions would need to be considered:

- **Direction 1.2 Rural Zones:** This direction aims to protect the agricultural production value of rural land, by only allowing rural land to be rezoned to a residential, business, industrial, village or tourist zone when the proposal is consistent with a local or regional strategy.

<sup>1</sup> [Planning for Bush Fire Protection 2019 \(nsw.gov.au\)](https://www.nsw.gov.au/planning/bush-fire-protection)

- **Direction 1.5 Rural Lands:** This direction works to ensure the proper management, development and protection of rural lands to promote the social, economic and environmental welfare of the State; minimise the potential for land fragmentation and land use conflict in rural areas, particularly between residential and other rural land uses, and support delivery of the NSW Right to Farm Policy.
- **Direction 2.1 Environment Protection Zones:** Aims to protect and conserve environmentally sensitive areas.
- **Direction 3.1 Residential Zones:** This direction requires consideration of: efficient use of existing infrastructure; variety and choice of housing; and impacts of residential development on environmental and natural resource lands.
- **Direction 5.10 - Implementation of Regional Plans:** Within the MidCoast, this direction gives legal effect to the Hunter Regional Plan 2036, requiring any amendments to planning controls to be consistent with its vision, land use strategy, goals, directions and actions.

Other Ministerial Directions may also apply to rezoning proposals on sites with identified environmental constraints:

- **Direction 2.2 Coastal Management:** This direction relates to the Coastal Management Act 2016 and State Environmental Planning Policy (Coastal Management) 2018.
- **Direction 4.3 Flood Prone Land:** This direction prohibits the rezoning of flood prone land from special use or purpose, rural or environmental to: residential, business, industrial, special use or purpose (recently amended).
- **Direction 4.4 Planning for Bushfire Protection:** This direction requires authorities to apply planning controls to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and encouraging sound management of bush fire prone areas.

## 2.5 Hunter Regional Plan 2036

The [Mid North Coast Regional Strategy 2006-2031](#) and subsequent [Hunter Regional Plan 2036](#) offer the following insights for rural housing and development:

- The NSW Government generally promotes a place-based approach to identify and facilitate the housing development needs relevant to a specific area. This generally directs Councils to prepare local strategies to identify and describe localities and current characteristics of areas within their jurisdiction.
- Outside of towns and villages, there is a strong emphasis on ensuring new housing does not result in the fragmentation of rural lands, particularly where lands have potential value for agricultural production or biodiversity conservation.

The MidCoast narrative in the also identified population and housing outcomes relevant to this paper as follows:

*The new MidCoast Council will have to consider the needs of diverse communities within a regional setting. It will have to capitalise on the opportunities provided by urban centres, rural areas and the natural environment to form a thriving economy based on food production, tourism, manufacturing and services that meet the needs of an ageing and growing population.*

### **Regional priorities**

*Provide housing, services and facilities, as well as accessible public spaces for an ageing population.*

### **Centres and employment**



*Regionally significant centres and employment land clusters:*

- *Strategic centres: Forster–Tuncurry, Taree*
- *Centres of local significance: Gloucester, Old Bar, Wingham, Tea Gardens–Hawks Nest, Harrington, Diamond Beach, Bulahdelah, Nambucca, Hallidays Point and Stroud.*

**Housing**

*Future housing and urban renewal opportunities:*

- *Deliver existing Urban Release Areas at Fig Trees on the Manning, Brimbin, Hallidays Point, Old Bar, Manning River Drive Business Park (employment), Tea Gardens and South Forster.*
- *Manage environmental values and residential growth in North Tuncurry.*
- *Investigate renewal and infill housing opportunities in Taree, Forster–Tuncurry, Old Bar and Tea Gardens–Hawks Nest that respond to changing demographics.<sup>2</sup>*

The narrative clearly implies that there is an expectation for residential development and housing to remain concentrated within the existing urban areas of the MidCoast through a program of urban consolidation and renewal. The NSW government also promotes a place-based approach to identify and facilitate the housing development needs relevant to a specific area which enables individual paper subdivisions to be considered on place planning principles.

The following directions and actions are particularly relevant to the consideration of land within paper subdivisions and clarification of the future conservation or development opportunities within these areas of the rural landscape of the MidCoast.

**Goal 1 – The Leading regional economy in Australia**

**Direction 13: Plan for greater land use compatibility**

*Managing the compatibility of land uses requires a whole-of-government response.*

*The NSW Government will continue to engage with communities, interest groups and industry around land use conflict to better understand all sides of the debate. This will assist with future policy-making and initiatives that balance the economic, social and environmental needs of the Hunter community.*

**Action 13.3** *Amend planning controls to deliver greater certainty of land use.*

**Goal 3 – Thriving communities**

**Direction 20: Revitalise existing communities**

*The region is home to diverse communities located throughout the Hunter’s urban areas, towns, villages and rural localities. These places have unique histories and a strong sense of identity. Concentrating development in existing areas will revitalise communities. It can reinforce and enhance the sense of community and belonging.*

**Action 20.1** *Accelerate urban revitalisation by directing social infrastructure where there is growth.*

**Goal 4 – Greater housing choice and jobs**

---

<sup>2</sup> <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/Hunter/Hunter-regional-plan/Local-government-narratives>



## **Direction 21: Create a compact settlement**

*Focusing development in locations with established services and infrastructure increases the appeal of these places for new residents. In locations with good access to public transport and services, it makes sense to identify new opportunities for redevelopment and renewal. Greater Newcastle, coastal areas including Nelson Bay and Forster-Tuncurry, and other towns across the region have potential for this type of development.*

**Action 21.4** *Create a well-planned, functional and compact settlement pattern that responds to settlement planning principles and does not encroach on sensitive land uses, including land subject to hazards, on drinking water catchments or on areas with high environmental values.*

**Action 21.7** *Promote new housing opportunities in urban areas to maximise the use of existing infrastructure.*

## **Direction 22: Promote housing diversity**

*There are also discrete sectors of the community that are seeking particular types of housing; for example, students, older people, short term visitors, visitors accessing health services and low income households. Better understanding of the needs of these groups and how they differ across the region will help inform strategic and infrastructure planning and delivery.*

**Action 22.5** *Include guidance in local land use strategies for expanding rural villages and rural-residential development so that such developments will:*

- *not impact on strategic or important agricultural land, energy, mineral or extractive resource viability or biodiversity values;*
- *not impact on drinking water catchments;*
- *not result in greater natural hazard risk;*
- *occur on land that is unlikely to be needed for urban development;*
- *contribute to the conservation of important biodiversity values or the establishment of important corridor linkages; and*
- *facilitate expansion of existing and new tourism development activities in agricultural or resource lands and related industries across the region.*

## **Direction 23: Grow centres and renewal corridors**

*The Plan identifies regionally significant centres known as strategic centres. These and other smaller local centres operate as part of a network. Each centre provides a different service, role and/or function in the region. Strategic centres will be the focus for population and/or economic growth over the next 20 years.*

*There are other locally significant centres with administrative and service roles that will support surrounding communities. The capacity of these local centres to accommodate additional housing will need to be investigated where plans are not already in place.*

**Action 23.1** *Concentrate growth in strategic centres, local centres and urban renewal corridors to support economic and population growth and a mix of uses.*  
*MidCoast LGA Strategic Centres - Forster-Tuncurry and Taree*

## **Direction 26: Deliver infrastructure to support growth and communities**

*Growth will be supported by plans that collect contributions towards the cost of enabling and supporting infrastructure. The delivery of infrastructure and services will be aligned with the preferred staging of development. Development that occurs outside of this sequencing will be required to pay a greater proportion of infrastructure costs. Greater collaboration between the NSW Government and councils on strategic planning and*

sequencing will enable all infrastructure providers to plan and deliver infrastructure that responds to demand.

**Action 26.1** Align land use and infrastructure planning to maximise the use and capacity of existing infrastructure and the efficiency of new infrastructure.

**Action 26.2** Enable the delivery of health facilities, education, emergency services, energy production and supply, water and waste water, waste disposal areas, cemeteries and crematoria, in partnership with infrastructure providers.

**Action 26.5** Ensure growth is serviced by enabling and supporting infrastructure.

## 2.6 MidCoast 2030: Shared Vision, Shared Responsibility

At the local-level additional policy considerations are set out in a range of documents that offer goals, directions and actions to complement, or provide more detail, than those provided in the Hunter Regional Plan 2036.<sup>3</sup>

MidCoast 2030 was the first Community Strategic Plan prepared for the new 10,000 square kilometre MidCoast local government area created in May 2016. Within this Plan we valued: our unique, diverse and culturally rich communities; a connected community; our environment; our thriving and growing economy; strong leadership and shared vision:

*We strive to be recognised as a place of unique environmental and cultural significance. Our strong community connection, coupled with our innovative development and growing economy, builds the quality of life we value.*

Critically, we also recognised that balancing development and conservation was important to maintain our lifestyle and that we provide information to our community so that they can better understand our land use planning decisions.

**Table 1. Goals and Actions from MidCoast 2030 relevant to Paper Subdivisions**

WE VALUE... our environment		
Where do we want to be?	How will we get there?	Who can help?
We balance the needs of our natural and built environments	<p>Ensure growth and new development complements our existing natural assets, cultural assets and heritage sites</p> <p>Optimise land use to meet our environmental, social, economic and development needs</p>	<p>MidCoast Council</p> <p>NSW and Federal Government</p> <p>State and volunteer emergency and rescue services</p> <p>Utility providers</p> <p>Transport providers</p>
How will we know we are on track?		
4. The community is satisfied with land use planning decisions		

WE VALUE... strong leadership & shared vision		
Where do we want to be?	How will we get there?	Who can help?

<sup>3</sup> [Plans and reports - MidCoast Council \(nsw.gov.au\)](https://www.nsw.gov.au/plans-and-reports/midcoast-council)

We make opportunities available for the community to inform decisions that shape our future	Provide clear, accessible, timely and relevant information to support and inform the community  Improve community understanding of how decisions are made for the local area	MidCoast Council NSW and Federal Government
How will we know we are on track?		
2. The community is satisfied that decisions are made in their best interest		

## 2.7 Infrastructure and services

A key consideration for paper subdivisions is the lack of existing infrastructure and services to most locations, and the potential cost of providing access, water, sewer, power and other infrastructure associated with urban forms of development. Noting that these costs are borne primarily by the land owner or developer, and only after funding costs associated with:

- preparing a Development Plan i.e. environmental studies, traffic management plans, bush fire hazard assessment reports and any associated costs;
- application fees for planning proposals to rezone land (if necessary);
- subdivision applications, any associated studies and registration;
- potential compensation for land owners without a development outcome; and
- development applications to build, and development contributions paid prior to construction.

Given these are largely unknown, Council have sought to provide some guidance on the infrastructure opportunities, constraints and costs associated with the development of land, with a focus on the additional challenges for land paper subdivisions.

### Roads

Crown Roads comprise land corridors set aside for legal access and were established during the settlement of NSW, they can also be referred to as 'paper roads' or 'road reserves'. When they were first established, they provided legal access routes to parish portions and allotments established in the subdivision of the Crown estate<sup>4</sup>.

There are a lot of 'paper roads' in the MidCoast, many associated with subdivision and land use in the 1800s and early 1900s by the Australian Agricultural Company. Crown Roads were also created as 'dunny cart' laneways in many towns and villages.

Crown Roads are the management responsibility of the NSW Department of Industry – Lands and Water and are primarily managed through both the [Roads Act 1993](#) and the [Crown Land Management Act 2016](#).

Crown Roads can also be transferred to another roads authority to manage if it is considered the most suitable option. This could occur when the intended use of a Crown road has changed and by transferring the road over to another responsible authority, such as a Council, the road can be maintained to a suitable standard thereby providing access to local communities and the public.

<sup>4</sup> NSW Department of Industry – Land and Water 2018(a)

The criteria for determining whether a Crown Road is suitable for transfer to Council or another roads authority are outlined in the Requirements section of Administration of Crown Roads Policy and each proposed transfer is considered on a case by case basis<sup>5</sup>.

Crown Roads may also be sold or closed. Roads may be sold in two ways. Firstly, the department administers Crown road sales in accordance with Section 152B of the Roads Act ('Road purchases'). Sale of a Crown road under this section is suitable when the purchaser of the road is an adjoining landholder.

Alternatively, when a person wants to purchase a Crown road does not own the adjoining land, the department may consider closing the road under Section 37 of the Roads Act before administering the sale of the land ('Road closure and purchase')<sup>6</sup>. The sale of a closed road would then be administered in accordance with the Crown Land Management Act 2016.

The NSW land registry guidelines also state that's roads in the Australian Agricultural Company's land grant (former Shires of Gloucester and Great Lakes) may only be closed if they have been dedicated to the public as public road by means of a notice in the Government Gazette or by prescription. Roads not dedicated as public roads remain in the name of the Company.

Title to these lands may only be obtained by the preparation of a Primary Application claiming the road by possession under the *Limitations Act 1969*. That is, a landowner who has proven that they have occupied certain land under Common Law may have enough evidence of ownership. The time period for such evidence ranges from 30 to 60 years.

It is noted that in some locations the Australian Agricultural Company has also sold 'road reserves' and these lands remain in separate, private ownership. This situation is known to have occurred in a portion of the North Arm Cove paper subdivision.

The costs associated with purchasing road reserves, pursuing occupation under Common Law, are unknown. In addition, the construction costs associated with providing upgrades to major collector roads, intersection improvements and construction of new local roads providing access to individual properties would need to be costed during the preparation of any Development Plan.

## Water & Sewer

In preparing this report, Council officers have sourced copies of the *NSW Reference Rates Manual Valuation of water supply, sewerage and stormwater assets (2013-2014)* and the *NSW Water Supply & Sewerage Construction Cost Indices (June 2020 Update - NSW Water Supply and Sewerage Construction Cost Indices)* and they are attached to this report for information.

For most paper subdivisions in the MidCoast, there are no water or sewer services available, therefore each location would require a full system design, with a range of options and cost estimates for each option.

Some high level requirements to be considered in developing each option would include, but not necessarily be limited to:

- new or expanded water reservoir and all new reticulation pipework;
- new water treatment plant, pumps and transfer mains

---

<sup>5</sup> NSW Department of Industry – Land and Water 2018(a)

<sup>6</sup> NSW Department of Industry – Land and Water 2018(a)

- new sewer treatment plant, reticulation, manholes and sewer pump stations (depending on the topography)

## **Telecommunications and Electricity**

Additional costs associated with the provision of power to new subdivisions and individual properties and telecommunications (if necessary), could not be sourced at the time of writing, but should be costed during the preparation of any Development Plan.

## **Community facilities and services**

New communities, particularly if remote from existing urban centres, need to have access to a range of community facilities and services provided by all tiers of government.

### 3 Paper Subdivisions and Clause 4.2A

A “paper subdivision” is a term used to describe land containing lots that only have recognition on paper and, in most cases, have no formed roads, drainage, reticulated water, sewer or electricity. Most paper subdivisions have been in existence for many years, some originating as long ago as the late 1800s or early 1900s.

Land in paper subdivisions may have a wide variety of owners, who have purchased the lots as an investment with the hope that one day they may be zoned to enable development to occur. Land may also be owned by companies or public authorities. The fragmented, diverse ownership is often one of the barriers to development.

While the subdivision pattern of many paper subdivisions may reflect an urban form of development, the land use zoning and lot sizes are often not compatible with current standards or requirements for urban development. In addition, there is usually limited or no infrastructure to enable urban development on this land.

Across the MidCoast the provisions of *Clause 4.2A Erection of dwelling houses on land in certain rural and environmental protection zones*, determine the use and occupation of land within paper subdivisions.

This clause is based on a Model Clause prepared by the Department of Planning, Industry and Environment and limits not only the potential subdivision of rural and environmental land, but the development potential of allotments that are less than the existing minimum lot size specified for rural and environmental zones.

The [Model Clause 4.2A](#) and explanatory information is provided below:

*This model clause has been drafted to reflect most dwelling house provisions in existing LEPs. The clause should be used by all councils that currently permit dwelling houses in rural and/or environment protection zones or intend to in the new comprehensive SI LEPs.*

*The model clause introduces a definition for “existing holding” for the purpose of this provision only. Where a council currently has a provision in an EPI that permits the erection of a dwelling house on an existing holding/parcel or like provisions, then the existing date that appears in the current planning controls must be used in the new SI LEP. The date cannot be changed. A council may also choose to sunset this provision within a specified time period.*

*One of the objectives is to enable the replacement of lawful dwelling houses, e.g. due to destruction (fire), or where the land no longer enjoys a dwelling entitlement due to changes to the planning provisions applying to the land.*

*If it is proposed to allow dual occupancies to be detached the following controls may be included in the clause:*

- the second dwelling should be located on the same parcel of land as the existing dwelling, or*
- if the second dwelling is not located on the same parcel as the existing dwelling the clause should require, by condition of consent, the lots to be consolidated.*

#### **Clause 4.2A Erection of dwelling houses on land in certain rural and environmental protection zones**

*(1) The objectives of this clause are as follows:*

- (a) to minimise unplanned rural residential development, and*
- (b) to enable the replacement of lawfully erected dwelling houses in rural and environmental protection zones.*

*(2) This clause applies to land in the following zones:*

- (a) Zone RU1 Primary Production,*
- (b) Zone RU2 Rural Landscape,*



- (c) Zone RU3 Forestry,
- (d) Zone RU4 Rural Small Holdings,
- (e) Zone RU6 Transition,
- (f) Zone E2 Environmental Conservation,
- (g) Zone E3 Environmental Management.
- (h) Zone E4 Environmental Living

**Drafting direction.** If any of the above rural or environmental protection zones are zones in the Plan but are excluded from the application of this clause, they should be omitted from subclause (2). Zones where dwellings are prohibited are not to be included (e.g. E1 National Parks and Nature Reserves).

(3) Development consent must not be granted for the erection of a dwelling house on a lot in a zone to which this clause applies, and on which no dwelling house has been erected, unless the lot is:

- (a) a lot that is at least the minimum lot size specified for that lot by the Lot Size Map, or
- (b) a lot created before this Plan commenced and on which the erection of a dwelling house was permissible immediately before that commencement, or
- (c) a lot resulting from a subdivision for which development consent (or equivalent) was granted before this Plan commenced and on which the erection of a dwelling house would have been permissible if the plan of subdivision had been registered before that commencement, or
- (d) an existing holding.

**Note.** A dwelling cannot be erected on a lot created under clause 9 of State Environmental Planning Policy (Rural Lands) 2008 or clause 4.2.

**Drafting direction.** If the intention is to permit secondary dwellings or dual occupancies as well as dwelling houses, then the specific types of dwellings for which the clause is to apply should be listed and the heading of the clause altered. Paragraph (d) should be included only if the council's current planning controls contain a provision for the erection of dwellings on an existing holding/parcel or a like provision in an existing EPI that relates to land ownership being held at a certain date. The Council may choose to sunset this provision within a specified time period.

(4) Land ceases to be an existing holding for the purposes of subclause (3)(d), if an application for development consent referred to in that subclause is not made in relation to that land before [insert date]

**Drafting direction.** The intention of this subclause is to provide a sunset on when applications in relating to existing holdings may be made so that dwellings can no longer be erected on existing holdings after the date specified in this subclause. (This subclause may be omitted if a sunset provision is not required and if so, the following subclauses should be renumbered.)

(5) Despite any other provision of this clause, development consent may be granted for the erection of a dwelling house on land in a zone to which this clause applies if:

- (a) there is a lawfully erected dwelling house on the land and the dwelling house to be erected is intended only to replace the existing dwelling house, or
- (b) the land would have been a lot or a holding referred to in subclause (3) had it not been affected by:
  - (i) a minor realignment of its boundaries that did not create an additional lot, or
  - (ii) a subdivision creating or widening a public road, public reserve or for another public purpose, or
  - (iii) a consolidation with adjoining public road, a public reserve or for another public purpose.

**Drafting direction.** If subclause (3) (d) is not adopted, "or a holding" should be removed from subclause (5) (b).



(6) In this clause: existing holding means all adjoining land, even if separated by a road or railway, held in the same ownership:

(a) on [\[insert date\]](#), and

(b) at the time of lodging a development application for the erection of a dwelling house under this clause and includes any other land adjoining that land acquired by the owner since [\[insert date\]](#).

**Note.** The owner in whose ownership all the land is at the time the application is lodged need not be the same person as the owner in whose ownership all the land was on the stated date.

**Drafting directions.** If subclause (3) (d) is not adopted, subclause (6) is not required. If subclause (6) is required, the date to be inserted in paragraph (a) is the date that currently appears in the current planning controls applying to the land. It is optional for the Council to include or exclude the words below subclause (6) (b). A paragraph (c) may be included in subclause (6) to limit the definition of existing holdings to a specific part of the LGA.<sup>7</sup>

The Greater Taree, Great Lakes and Gloucester LEP's all contain a variation of this clause and additional, related restrictions on other forms of residential, tourist and visitor accommodation on land without a dwelling entitlement.

One of the key challenges associated with replacing the three existing local environmental plans with one clear and consistent MidCoast LEP is to address the inconsistencies associated with existing holdings/dwelling entitlements and the resolution of long-standing issues associated with paper subdivisions. In this regard, it is noted that the plans specify different dates, related to when dwelling entitlement controls first appeared:

Gloucester LEP 2010	Great Lakes LEP 2014	Greater Taree LEP 2010
17 October 1969	15 May 1964	2 June 1967

A recent proposed amendment to the Junee local environmental plan removed the clause relating to dwelling entitlements by introducing a sunset provision. The proposal was supported by evidence that very few applications were submitted each year for dwelling entitlement searches. Within the proposal it was stated:

*The average number of requests per year is 3.7 requests regarding the existing holding status of land.*

*Potentially, multiple requests are submitted regarding the same land, when particular parcels are offered for sale. From these requests, one or two development applications are lodged per year trying to take advantage of the existing holding provisions in Clause 4.2A.*

*Due to the small number of applications and requests for status of existing holdings, and the intended strategic direction and protection for rural lands, it has been decided to completely remove all reference to existing holdings in Clause 4.2A. Insertion of 'sunset clause' for existing holdings - giving a period of time prior to the expiry of the existing holding provisions - will be included for a period of 12 months after the making of the plan.*

<sup>8</sup>

<sup>7</sup> 4.2A Erection of dwelling houses in rural and enviro zones FINAL WEB tds ([nsw.gov.au](https://www.nsw.gov.au))

<sup>8</sup> Removal of Existing Holdings Provisions from Clause 4.2A of the Junee LEP 2012 | Planning Portal - Department of Planning and Environment ([nsw.gov.au](https://www.nsw.gov.au))

Similar research was undertaken within the MidCoast local government area during preparation of this report to determine if this was also a reasonable option in this location.

Noting that the data has been sourced from four separate property information systems, the information in **Table 2** below, gives a clear indication of the dwelling entitlement search trends across the MidCoast since merger in May 2016.

The data has been gathered across the former Gloucester, Great Lakes and Greater Taree local government areas and the new MidCoast local government area. A single property and information system for the MidCoast was established in December 2020 and data for the 2020-21 financial year is representative up to April 2021 only.

**Table 2. Dwelling entitlement search applications in the MidCoast LGA 2016-2021**

Financial Year	Gloucester	Great Lakes	Greater Taree	MidCoast	Total/Year
2020-21	4	27*	53*	38	122
2019-20	12	33	58		103
2018-19	13	39	54		106
2017-18	3	44	68		115
2016-17	9	65	65		139
<b>Average number of dwelling entitlement searches per financial year</b>					<b>117</b>

*\*The above figures are based on receipt of Dwelling Entitlement Applications only. They do not include searches performed as part of a development application assessment i.e. a search may also be required if the lot size is less than the minimum development standard, and the application has been lodged without evidence of a prior dwelling entitlement search.*

The consistent number of applications indicate that the dwelling entitlement searches may not only be for land within paper subdivisions, but on other, under-sized rural allotments that also have limited development potential but are not readily identifiable across the rural landscape.

As a result, development applications for dwellings on individual under-sized rural allotments may also be lodged with a request to vary the minimum lot size requirement, using the provisions of Clause 4.6 of the local environmental plan.

#### **4.6 Exceptions to development standards [compulsory]**

(1) *The objectives of this clause are as follows—*

(a) *to provide an appropriate degree of flexibility in applying certain development standards to particular development,*

(b) *to achieve better outcomes for and from development by allowing flexibility in particular circumstances.*

(2) *Development consent may, subject to this clause, be granted for development even though the development would contravene a development standard imposed by this or any other environmental planning instrument. However, this clause does not apply to a development standard that is expressly excluded from the operation of this clause.*

(3) *Development consent must not be granted for development that contravenes a development standard unless the consent authority has considered a written request from the applicant that seeks to justify the contravention of the development standard by demonstrating—*

- (a) *that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, and*
  - (b) *that there are sufficient environmental planning grounds to justify contravening the development standard.*
- (4) *Development consent must not be granted for development that contravenes a development standard unless—*
  - (a) *the consent authority is satisfied that—*
    - (i) *the applicant’s written request has adequately addressed the matters required to be demonstrated by subclause (3), and*
    - (ii) *the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out, and*
  - (b) *the concurrence of the Planning Secretary has been obtained.*
- (5) *In deciding whether to grant concurrence, the Planning Secretary must consider—*
  - (a) *whether contravention of the development standard raises any matter of significance for State or regional environmental planning, and*
  - (b) *the public benefit of maintaining the development standard, and*
  - (c) *any other matters required to be taken into consideration by the Planning Secretary before granting concurrence.*
- (6) *Development consent must not be granted under this clause for a subdivision of land in Zone RU1 Primary Production, Zone RU2 Rural Landscape, Zone RU3 Forestry, Zone RU4 Primary Production Small Lots, Zone RU6 Transition, Zone R5 Large Lot Residential, Zone E2 Environmental Conservation, Zone E3 Environmental Management or Zone E4 Environmental Living if—*
  - (a) *the subdivision will result in 2 or more lots of less than the minimum area specified for such lots by a development standard, or*
  - (b) *the subdivision will result in at least one lot that is less than 90% of the minimum area specified for such a lot by a development standard.*
- (7) *After determining a development application made pursuant to this clause, the consent authority must keep a record of its assessment of the factors required to be addressed in the applicant’s written request referred to in subclause (3).*
- (8) *This clause does not allow development consent to be granted for development that would contravene any of the following—*
  - (a) *a development standard for complying development,*
  - (b) *a development standard that arises, under the regulations under the Act, in connection with a commitment set out in a BASIX certificate for a building to which [State Environmental Planning Policy \(Building Sustainability Index: BASIX\) 2004](#) applies or for the land on which such a building is situated,*
  - (c) *clause 5.4.*

*Direction— Additional exclusions may be added.*

The data on the number of development applications reliant upon a Clause 4.6 variation to the minimum lot size development standard, is of significantly less consequence, with less than 10 recorded per year based on available records.

**Table 3. Development Applications reliant upon a Clause 4.6 variation to lot size in MidCoast<sup>9</sup>**

2018	2019	2020	2021
7	2	1	1

*Note: the data on Clause 4.6 variations is recorded by calendar year, based on the date of approval of the development application, and the 2021 data is correct at the time of writing.*

The significant number of Clause 4.2A Dwelling Entitlement Searches and small number of development applications reliant upon Clause 4.6 variations indicates that introducing a 'sunset' provision would be unreasonable at this time.

Instead, Council should provide clarity on:

- the location and extent of the known paper subdivisions, and where possible, information on the anticipated future conservation or development outcomes for these lands; and
- additional criteria for assessment of development applications on under-sized allotments across the rural landscape that are otherwise reliant upon the provisions of Clause 4.6.

It is noted that lodgement of a development application on land that does have a dwelling entitlement under Clause 4.2A or is based on a Clause 4.6 variation to the minimum lot size standard, does not guarantee approval to build. Development applications that have been refused are not recorded on the Clause 4.6 Register.

In paper subdivisions and across the rural landscape significant site constraints can preclude development, including but not limited to a lack of legal and constructed access, insufficient land area to build and provide on-site sewage disposal, bushfire risks and evacuation strategies, flooding and other environmental constraints.

---

<sup>9</sup> [Development Standards Variations Register - MidCoast Council \(nsw.gov.au\)](#)

## 4 Options for Owners of land in Paper Subdivisions

This analysis report aims to provide additional guidance and information to land owners so that they can make an informed decision about the development potential of their land if it is located within a paper subdivision.

Therefore, the purpose of the recommended planning framework and locational analysis is to:

1. provide a transparent and consistent analysis of the existing known constraints affecting development potential of land within identified paper subdivisions;
2. provide high-level recommendations on the future conservation or development opportunities for these areas based on this preliminary analysis; and
3. provide clear and consistent information on the options available to land owners, based on this analysis.

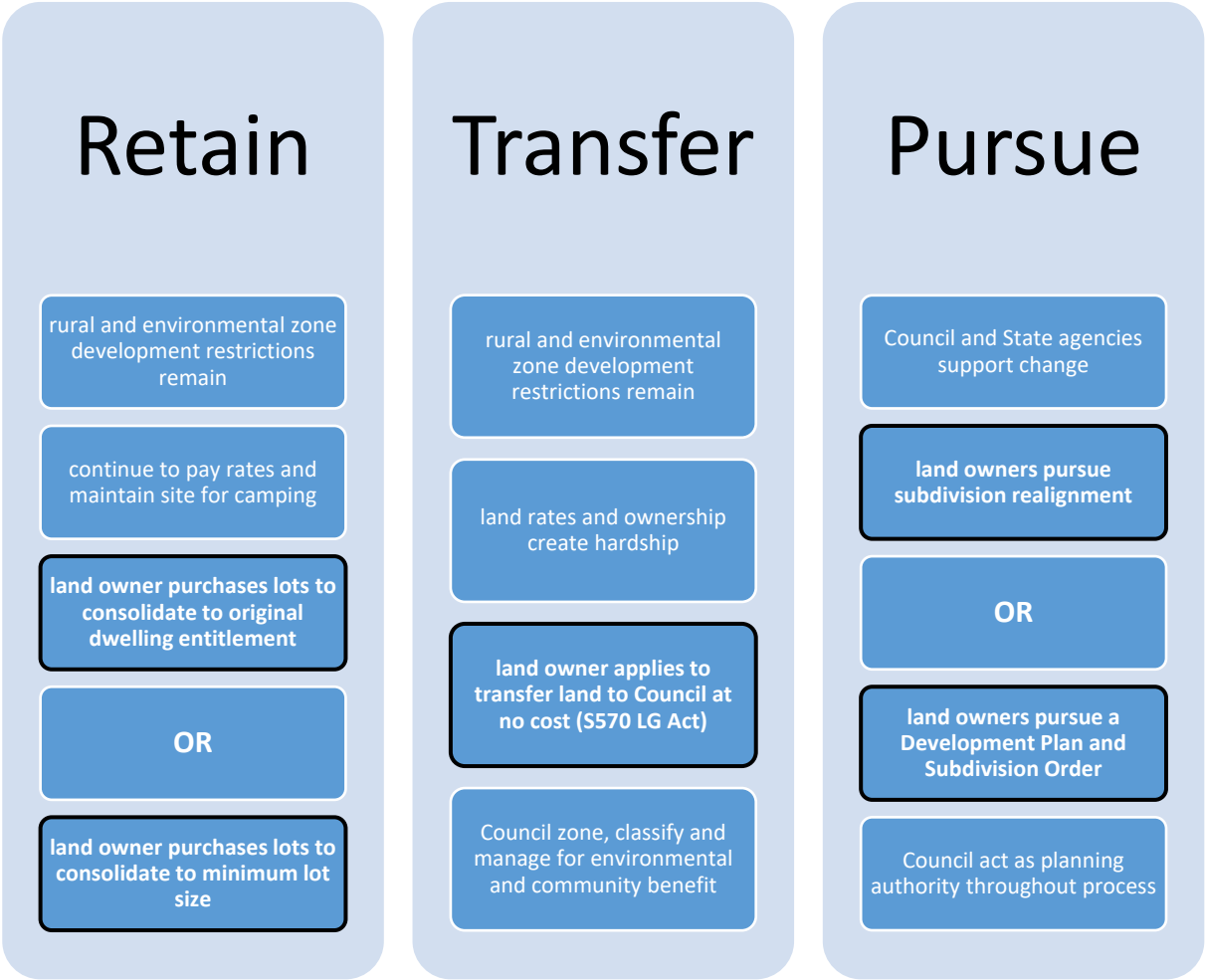
In order to provide consistent information and clear potential development or conservation outcomes across the identified paper subdivisions, a high-level desktop analysis has been undertaken and is contained in Section 5.

This has been undertaken in good faith by Council as a first step to provide a consistent approach to the identification of constraints and opportunities that may affect the development potential of land within a paper subdivision. This analysis has been undertaken irrespective of any known or existing dwelling entitlements i.e. in some locations the dwelling entitlement provisions of Clause 4.2A may already be extinguished, by existing development or the transfer of individual allotments Council.

The options discussed below, and the recommendations in Section 5 are based on the information available at the time of writing and should not be an exhaustive identification of potential constraints or an exhaustive identification of locations where paper subdivisions exist in the MidCoast. A place based approach is proposed taking into consideration the matters addressed in Section 5 and any other considerations relevant to a particular place.

Within the parameters of existing legislation and restrictions to development in paper subdivisions it is noted that three primary options are available to land owners, as summarised in Figure 2 below.

Figure 2. Three options available to owners of land in a paper subdivision



## 4.1 Option 1 Retain – land owner purchases to consolidate

Under this scenario, landowners can continue to use their land as a [temporary camping site](#) and are responsible for the ongoing payment of rates and management of the site while they aim to consolidate.

There are two consolidation options available to land owners to establish the right to apply to build on land within a paper subdivision:

- The land owner can pursue the purchase of allotments until the configuration matches an original “existing holding” as at the date in Clause 4.2A; or
- The land owner can purchase adjoining allotments until the minimum lot size of generally 40ha or 100ha, is achieved.

It should be noted that the consolidation of lots to achieve either of these outcomes still does not guarantee development consent for a dwelling if the site is not suitable for development after a consideration of all matters required to be taken into consideration in determining a development application under Section 4.15 of the EP&A Act.

Examples are available in existing local environmental plans as to how both individual lots and lots within paper subdivisions can be addressed through consolidation requirements, supplementary to Clause 4.2A and Clause 4.6 objectives and criteria.

### ***Pittwater Local Environmental Plan 2014***

#### ***7.9 Residual lots***

*(1) The objective of this clause is to ensure undersized and constrained lots are not developed in isolation.*

*(2) This clause applies to land at—*

- (a) 159A McCarrs Creek Road, Church Point, being Lot 17, DP 243387, and*
- (b) 171A McCarrs Creek Road, Church Point, being Lot 1, DP 114169, and*
- (c) 183 McCarrs Creek Road, Church Point, being Lot 102, DP 839311.*

*(3) Development consent must not be granted for development on land to which this clause applies, unless—*

- (a) the lot is, or has been, consolidated with one or more adjoining lots to form a registered Torrens title lot, and*
- (b) the size of any lot resulting from such consolidation is not less than the minimum size shown on the [Lot Size Map](#) in relation to that land.*

### ***Blue Mountains Local Environmental Plan 2015***

#### ***4.1G Lot consolidation in certain industrial and environment protection zones***

*(1) The objectives of this clause are as follows—*

- (a) to require the consolidation of certain lots on environmentally sensitive land,*
- (b) to manage premature subdivisions on the urban and bushland interface,*
- (c) to protect and manage areas of high ecological or scenic landscape value by preventing development on parcels of an inadequate size that may compromise those values.*



(2) This clause applies to land shown edged blue on the [Lot Size Map](#) that is in Zone IN1 General Industrial, Zone E3 Environmental Management or Zone E4 Environmental Living.

(2A) Development consent must not be granted to development on land to which this clause applies that is in Zone IN1 General Industrial unless the land (including drainage reserves and unformed roads adjoining any lots) has been, or will be consolidated to create a lot that has an area of land that is at least the minimum lot size shown for the land in Zone IN1 General Industrial on the [Lot Size Map](#).

(3) Development consent must not be granted to development on land to which this clause applies that is in Zone E3 Environmental Management unless the land (including drainage reserves and unformed roads adjoining any lots) has been, or will be consolidated to create a lot that has an area of land that is at least the minimum lot size shown for the land in Zone E3 Environmental Management on the [Lot Size Map](#).

(4) Development consent must not be granted for the erection of a dwelling house on land to which this clause applies that is in Zone E4 Environmental Living unless the land has been, or will be consolidated to create a lot that has an area of land that is at least the minimum lot size shown for the land in Zone E4 Environmental Living on the [Lot Size Map](#).

(4A) If a lot contains land in 2 or more zones, including land in Zone E2 Environmental Conservation, the area of land that is in Zone E2 Environmental Conservation is to be included in calculating the lot size for the purposes of this clause.

(5) Development consent must not be granted under subclause (3) or (4) unless—

(a) no dwelling house has been erected on the land, or

(b) if a development application has been made for development for the purpose of a dwelling house on the land—the application has been refused or it was withdrawn before it was determined, or

(c) if development consent has been granted in relation to any such application—the consent has been surrendered or it has lapsed.

(6) Despite subclauses (2A)–(5), development consent may be granted for the erection of a dwelling house on land to which this clause applies if there is a lawfully erected dwelling house on the land and the dwelling house to be erected is intended only to replace the existing dwelling house.

(7) Despite subclauses (2A)–(6), development consent may be granted to the subdivision of land to which this clause applies if the subdivision—

(a) is a realignment of boundaries that does not create an additional lot, or

(b) is for the purpose of creating or widening a public road or public reserve or for another public purpose.

## 4.2 Option 2 Transfer –transfer to Council on hardship grounds

Land that is in paper subdivisions or undersized that does not have a dwelling entitlement cannot be developed for residential or other urban purposes.

While many land owners believe that this creates an obligation on Council to either rezone the land or undertake some buy-back or compensation scheme, this is not the case.

In some instances land owners stop paying rates to Council and this anecdotally may be in protest for the lack of action taken to rezone, develop or compensate for costs incurred to date. In turn this creates a situation where Council must take action to recoup these costs.

As a result, it is not uncommon for owners to request that Council accept the transfer of their land as payment for rates, charges or accrued interest to remove the ongoing financial burden and liability of these properties.

Section 570 of the Local Government Act, 1993 and Clause 129 of the Local Government (General) Regulation, 2005 provides this mechanism:

*The former Great Lakes Council area had a large number of these lots which were found in the North Arm Cove, Pindimar, Bundabah, Carrington, The Branch and Hamilton localities.*

*Non-urban lands in North Arm Cove are generally heavily vegetated areas with little or no constructed infrastructure or services to support development. Many of the roads were not dedicated as public roads at the time the subdivision was registered, and they remain in private ownership, outside of Council's care and control.*

*Council has previously considered future settlement opportunities in these areas during the preparation of the Tea Gardens/Hawks Nest Conservation and Development Strategy in 2003 and the State Government's Mid-North Coast Regional Strategy in 2009. Neither of these documents identified areas of non-urban land as being suitable for future urban growth. As a result of these strategies Council has no plans for rezoning such lands in the foreseeable future.*

*The State Government has also concluded that all future urban growth in the south-eastern part of the Council area shall be concentrated around Tea Gardens/Hawks Nest in order to make use of the existing developable land, services and infrastructure.*

*Despite these restrictions on the development potential of these lots the Local Government Act requires that Council must levy rates on all land irrespective of whether it can be built on. Furthermore, the land does not fall within the various categories of land that are exempt from rates and charges under the Act.*

*This has led to a situation whereby ratepayers after many years of ownership (in many cases) and with no reasonable expectation of being able to build on their land in the future and limited opportunities to sell the land, approach Council seeking to transfer the land to Council in payment of rates, charges and accrued interest.*

*As mentioned above Council generally receives around 10-15 applications per year. These applications are reported to Council for consideration in the Closed part of the meeting. This is because the business or report relates to a matter that concerns the personal hardship of a resident or ratepayer.*

*The Act has a general presumption that these matters will be considered in the Closed section of the meeting (Section 10A (2) (b)). Should Council decide to accept the application*

*the details are referred to Council's Solicitors who act for both Council and the ratepayer. The legal fees usually amount to approximately \$1,000 and the process takes around 8 weeks to complete.*

*Council does budget for the legal fees associated with these transfers and for the rates, charges and accrued interest that is to be paid at settlement as well as for the future rates that will be levied on the land. As part of the resolution accepting the transfer Council generally classifies the land as 'operational' land.*

*Council will be required to pay existing outstanding rates and future rates as they become due. Council has on-going funds to meet payment of rates. Council has previously met its own costs in such transfers as well as the reasonable costs of the current owner.<sup>10</sup>*

While much of this information remains relevant, it is noted that:

- while the area of the local government area has increased (Great Lakes compared to MidCoast), the number of paper subdivisions and allotments has not significantly increased. This is due to the significant number of allotments at North Arm Cove and surrounding areas in the former Great Lakes LGA; and
- the costs of transferring the land has increased to approximately \$1500 per allotment, at the time of writing; and
- Council can classify lands to community or operational purposes but will not on-sell this land; and
- in some locations, these areas may be suitable conservation or stewardship sites, which may provide environmental or financial off-sets to the ongoing costs of transfer and management.

The provisions of the Local Government Act and Regulation will continue to be relevant to the ongoing ownership and management of land within paper subdivisions across the MidCoast and should be considered as an opportunity to resolve these issues in the future.

---

<sup>10</sup> [Meeting Agendas and Minutes - MidCoast Council \(nsw.gov.au\)](#)

## 4.3 Option 3 Pursue – satisfy or change development restrictions

Alternatively, land owners must seek to change the existing development restrictions on the land within the paper subdivision. In order to consider the viability of this as an option Council has commenced consideration of the key issues that would determine a development or conservation outcome for land within paper subdivisions.

To this end, this report commences but does not resolve, consideration of environmental constraints, infrastructure and service limitations, Council policy requirements and State assessment matters.

These criteria provide a preliminary recommendation that development options could only be considered for certain land within paper subdivisions where:

- Legal and constructed public road access is available to each potential allotment
- Land within the paper subdivision is capable of being developed in accordance with the Planning for Bushfire Protection Guidelines 2019 (or as amended)
- Preliminary environmental constraint assessment demonstrates that potential allotments are not affected by:
  - known environmentally sensitive vegetation (Cl.3.3 of SI LEP) such as wetlands, endangered ecological communities (EEC), threatened species, commonwealth protected flora or fauna;
  - steep land of 18% (32 degrees), consistent with rural land sharing exclusions;
  - identified flooding or coastal hazards, including sea level rise
- Potential allotments:
  - have access to reticulated water and sewer services; or
  - are classified as Low Hazard within the draft MidCoast On-Site Sewage Management Development Assessment Framework Hazard Classification mapping and have a minimum lot size of 1.5ha.

Within the MidCoast, based on the high-level analysis undertaken and documented in the appendix of this report, this option has two potential pathways, to satisfy the recommended zone and minimum lot size provisions or pursue a Subdivision Order using the Planning for Paper Subdivision Guidelines.

## Option 3A – Satisfy existing zone and development standards

Where the number of land owners is low, it may be possible to pursue a subdivision and development application process, utilising the recommended zone and minimum lot size provisions to reconfigure existing subdivision patterns.

An existing example of how the development potential of land within a paper subdivision may be reflected in a local environmental plan is available in the Lake Macquarie LEP, as it relates to land at South Buttaba Hills:

### **7.13 Development on certain land at Boolaroo, Buttaba and North Wallarah Peninsula**

*(1) The objectives of this clause are as follows—*

*(a) to ensure that the redevelopment of the former Pasminco Cockle Creek Smelter site, the former Incitec Pivot Fertilizer site at Boolaroo and the South Buttaba Hills*

*paper subdivision site is developed in accordance with sound planning principles that recognise the site constraints and the requirement for integration with adjoining urban areas,*

*(b) to ensure that North Wallarah Peninsula is developed in accordance with sound planning principles and the development takes into account the environmentally sensitive area.*

*(2) This clause applies to the following land—*

*(a) land identified as “Former Pasminco and Incitec sites” on the [Key Sites Map](#), being the former Pasminco Cockle Creek Smelter site and the former Incitec Pivot Fertilizer site, Boolaroo,*

*(b) land identified as “Buttaba Hills” on the [Key Sites Map](#), being the South Buttaba Hills paper subdivision site,*

*(c) land identified as “North Wallarah” on the [Key Sites Map](#).*

*(3) Development consent must not be granted for development on land to which this clause applies unless a development control plan that provides for the matters specified in subclause (4) has been prepared for the land.*

*(4) The development control plan must provide for all of the following—*

*(a) a staging plan for the timely and efficient release of urban land, making provision for necessary infrastructure and sequencing,*

*(b) an overall transport movement hierarchy showing the major circulation routes and connections to achieve a simple and safe movement system for private vehicles, public transport, pedestrians and cyclists,*

*(c) an overall landscaping strategy for the protection and enhancement of riparian areas and remnant vegetation, including visually prominent locations, and detailed landscaping requirements for both the public and private domain,*

*(d) a network of active and passive recreation areas,*

*(e) stormwater and water quality management controls,*

*(f) amelioration of natural and environmental hazards, including bush fire, flooding and site contamination and, in relation to natural hazards, the safe occupation of, and the evacuation from, any land so affected,*

*(g) detailed urban design controls for significant development sites,*

*(h) measures to encourage higher density living around transport, open space and service nodes,*

*(i) measures to accommodate and control appropriate neighbourhood commercial and retail uses,*

*(j) suitably located public facilities and services, including provision for appropriate traffic management facilities and parking.*

*(5) Subclause (3) does not apply to development for any of the following purposes—*

*(a) a subdivision for the purpose of a realignment of boundaries that does not create additional lots,*

*(b) a subdivision of land if any of the lots proposed to be created is to be reserved or dedicated for public open space, public roads or any other public or environment protection purpose,*

*(c) a subdivision of land in a zone in which the erection of structures is prohibited,*



*(d) development on land that is of a minor nature only, if the consent authority is of the opinion that the carrying out of the development would be consistent with the objectives of the zone in which the land is situated.*

*(6) In addition to subclause (3), development consent must not be granted to development on land referred to in subclause (2) (a) unless the consent authority is satisfied that—*

*(a) provision has been, or will be, made for vehicle access between Munibung Road, Cardiff and T C Frith Avenue, Boolaroo, and*

*(b) there are no significant land use conflicts between the proposed development and the remediation of the remainder of the site.<sup>11</sup>*

Noting that the matters in the local clause must be addressed, in addition to the land zone and minimum lot size provisions, which are also identified within the LEP:

**Figure 3. Lakes Macquarie LEP 2014 Key Site - South Buttaba Hills**



<sup>11</sup> [Lake Macquarie Local Environmental Plan 2014 - NSW Legislation](#)

**Lake Macquarie Local Environmental Plan 2014**

**Land Zoning Map - Sheet LZN\_010A**

**Zone**

- N1** Neighbourhood Centre
- L2** Local Centre
- C3** Commercial Core
- M4** Mixed Use
- B7** Business Park
- NR** National Parks and Nature Reserves
- EC** Environmental Conservation
- EM** Environmental Management
- GI** General Industrial
- LI** Light Industrial
- WW** Working Waterfront
- GR** General Residential
- LD** Low Density Residential
- MD** Medium Density Residential
- PR** Public Recreation
- PIR** Private Recreation
- RL** Rural Landscape
- F** Forestry
- PPSL** Primary Production Small Lots
- T** Transition
- SA** Special Activities
- I** Infrastructure
- SP** Tourist
- NW** Natural Waterways
- DM** Deferred Matter

**Calendar**

- ☐ Calendar 13/6/2014 © Land and Property Information (LPI)

**Inset Map**

Inset map showing the location of Lake Macquarie within the New South Wales state boundary.

**Scale**

Scale bar: 0 to 1000m

**North Arrow**

North arrow pointing upwards.

**Footnote**

Prepared: 10/06/2014  
 New South Wales: Sydney, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2

**Lake Macquarie Local Environmental Plan 2014**

**Lot Size Map - Sheet LSZ\_010A**

**Minimum Lot Size (sq m)**

LA	350
LB	750
LC	900
LD	1250
LE	1500
LF	4000
LG	10000 (1 ha)
LH	20000 (2 ha)
LI	300000 (30 ha)
LJ	400000 (40 ha)
LK	1000000 (100 ha)
AL	2000000 (200 ha)

**Cadastral**

□ Cadastral 1:50000 (© Land and Property Information, S.P.)

Scale: 1:25,000 @ A3

Map Information: Version: 4855 Date: 1/12/2014 (S, D, J, M, A, M, J, J, A, S, O, N, D)



## Option 3B – Change zone and standards by Subdivision Order

In pursuing Option 3B, additional consideration must also be given to the potential challenges associated with lot configurations and ownership patterns as these constraints may significantly impact on the ability of landowners to achieve the necessary agreements and funding arrangements required to commence and pursue the requirements of the State guidelines.

In this regard, the guidelines established a process that enables the Minister for Planning to make a Subdivision Order to appoint a Relevant Authority and provide that Authority with the powers and functions to implement a Development Plan for the benefit of the landowners. While there is no fee for seeking a Subdivision Order, there will be costs associated with preparing the required Development Plan.

Land owners would be responsible for the costs associated with on-site investigations and reports required to inform preparation of a conceptual Development Plan that complies with current legislation and requirements, and the plan may not provide a development outcome for all land owners.

Noting this, under the provisions in the Act, the Minister may only make a Subdivision Order if at least 60 percent of the landowners, and the owners of at least 60 per cent of the land area, have given their consent to the proposed Development Plan.

Consent to a Development Plan must be obtained through a postal ballot. The proposed regulation provides that the ballot may be conducted by the Relevant Authority or by another body with appropriate expertise, such as the Australian Electoral Commission, on behalf of the Authority. It also provides further detail about the procedure for holding the ballot.

Landowners seeking to use this process are therefore encouraged to hold early discussions with prospective Subdivision Authorities to ensure relevant costs are identified as early as possible, a funding mechanism is established, and a suitable Relevant Authority is available to progress the project. This will reduce the likelihood of incurring costs where the project is unlikely to gain enough land owner support for a Development Plan or not be suitable for a Subdivision Order.

Once a Subdivision Order is issued, the Relevant Authority would then need to work with the landowners to facilitate the development of the land in accordance with the Development Plan. This is likely to involve a range of development activities such as rezoning, obtaining development consents and subdivision works which must also be funded.

Schedule 7 of the Environmental Planning & Assessment Act 1979 states:

***development plan costs*** means the following—

- (a) *the costs of obtaining or preparing any reports,*
- (b) *the amount of any levies, fees or other charges applicable to the proposed subdivision or subdivision works,*
- (c) *administrative costs of the relevant authority relating to the development plan,*
- (d) *any other costs prescribed by the regulations for the purposes of this definition.*

***subdivision works*** means works for the following purposes—

- (a) *roads,*
- (b) *water supply, sewerage services and drainage,*
- (c) *telecommunications,*

- (d) electricity supply,
- (e) any other purpose prescribed by the regulations for the purposes of this definition.

**(2) The Minister may make a subdivision order only if—**

- (a) the Minister is of the opinion that it is desirable to do so to promote and co-ordinate the orderly and economic use and development of the land affected by the order, and
- (b) the land has been subdivided and is held by more than one owner and the Minister is satisfied that the land is land for which no provision or inadequate provision has been made for subdivision works, and
- (c) that land is subject to an environmental planning instrument, or a planning proposal, that will facilitate the proposed planning purpose, and
- (d) the Minister has consulted with the proposed relevant authority, any other Minister responsible for that authority and the council of the area in which that land is situated, and
- (e) the Minister is satisfied that a development plan for that land has been prepared by the relevant authority in accordance with this Schedule, and
- (f) the Minister has considered any provisions of the development plan that modify or disapply the provisions of Division 4 of Part 3 of the [Land Acquisition \(Just Terms Compensation\) Act 1991](#), and
- (g) at least 60% of the total number of owners of that land, and the owners of at least 60% of the total area of that land, have consented to the proposed development plan.

**(2) A development plan is to contain the following matters—**

- (a) a proposed plan of subdivision for the land,
- (b) details of subdivision works to be undertaken for the land,
- (c) details of the costs of the subdivision works and of the proposed means of funding those works,
- (c1) details of the development plan costs,
- (d) details of the proportion of the costs referred to in paragraphs (c) and (c1) to be borne by the owners of the land and of the manner in which the owners may meet those costs (including details of any proposed voluntary land trading scheme or voluntary contributions or, if voluntary measures are not agreed to by owners, of compulsory land acquisition or compulsory contributions),
- (e) rules as to the form of compensation for land that is compulsorily acquired and how entitlement to compensation is to be calculated,
- (f) rules as to the distribution of any surplus funds after the completion of subdivision works for the land,
- (g) any other matters prescribed by the regulations.<sup>12</sup>

<sup>12</sup> [Environmental Planning and Assessment Act 1979 No 203 - NSW Legislation](#)

Based on the Lake Macquarie examples following this process in the MidCoast could involve the following stages:

Stage	Key process available in MidCoast local government area
Investigation	Council staff investigate options for allowing development of the paper subdivision ( <b>for example this Analysis Report for the nominated paper subdivisions discussed in Section 5</b> )
Options	Council consults with landowners regarding options ( <b>Rural Strategy exhibition</b> ) <ol style="list-style-type: none"> <li>1. No change, keep land for temporary camping</li> <li>2. No change, transfer land in lieu of outstanding rates and charges</li> <li>3. Potential development (use of Paper Subdivisions Legislation).</li> </ol>
Committee	Landowners support recommended option and establish committee to progress. Committee confirms potential <i>Relevant Authority</i> and funding is available to prepare <i>Development Plan</i> and associated reports
Report	<b>Report to elected Council. Resolution to support potential development outcome, otherwise end here.</b>
Resolution	Minister advised of Council resolution and committee request to appoint a <i>Relevant Authority</i> (in accordance with Paper Subdivisions Legislation).
Plan	<i>Development Plan</i> and funding model prepared by <i>Relevant Authority</i>
Ballot	Formal Landowner Ballot to determine support for <i>Development Plan</i> and funding model (in accordance with Paper Subdivisions Legislation).
Determination	<b>60% of landowners and 60% land area in favour of Plan, otherwise end here.</b>
Minister	Apply to the Minister for Planning for a Subdivision Order
Order	<b>Minister for Planning issues Subdivision Order and appoints Relevant Authority, otherwise end here.</b>
Agreement	Landowners enter into a Voluntary Contributions Agreement, or have their land acquired by Relevant Authority
Application	Development application for subdivision prepared in accordance with <i>Development Plan</i> assessed and approved
Approval	<b>Subdivision approval issued, otherwise end here.</b>
Infrastructure	Subdivision works carried out in accordance with <i>Development Plan</i> .
Development	Land traded to (or acquired by) Relevant Authority, sold and surplus returned to original landowner.  All residential zoned lots available for development subject to relevant approvals

## 5 Paper Subdivision Analysis by location

As stated in the introduction of this report, Council has prepared the following information in good faith, for owners of land within paper subdivisions in order to:

1. provide a transparent and consistent analysis of the evidence-based constraints that apply to identified paper subdivisions;
2. provide high-level recommendations on the future conservation or development opportunities for these areas; and
3. provide clear and consistent information on the options available to land owners, based on this analysis and the State planning framework that applies.

To this end, this report commences but does not resolve, consideration of environmental constraints, infrastructure and service limitations, Council policy requirements and State assessment matters. The criteria that have been identified previously in this report and documented in this analysis, provide a high-level analysis only, based on key development principles that would be considered in both planning proposals to rezone land and development applications:

- Legal and constructed public road access is available to each potential allotment
- Land within the paper subdivision is capable of being developed in accordance with the Planning for Bushfire Protection Guidelines 2019 (or as amended)
- Preliminary environmental constraint assessment demonstrates that potential allotments are not affected by:
  - known environmentally sensitive vegetation (Cl.3.3 of SI LEP) such as wetlands, endangered ecological communities (EEC), threatened species, commonwealth protected flora or fauna;
  - steep land of 18% (32 degrees), consistent with rural land sharing exclusions;
  - identified flooding or coastal hazards, including sea level rise
- Potential allotments:
  - have access reticulated water and sewer services; or
  - classified as Low Hazard within the draft MidCoast On-Site Sewage Management Development Assessment Framework Hazard Classification mapping.

Additional consideration is also given to identifying the extent of each paper subdivision, lot configurations and ownership patterns. These factors are unique to each location and may also significantly impact on the ability of landowners to achieve the agreements and funding arrangements required to pursue a development outcome using the State guidelines.

**Note:** Paper subdivisions that are in public ownership (Council, Crown or another department of the NSW Government), within or identified as suitable for an environmental zone, are not discussed within this analysis.

**Note:** The Real Property Act, 1862 established a system whereby owners could convert land granted prior to 1863 to Real Property Act title, this was done by what is called a **Primary Application**.

## 5.1 Rural Strategy Land Use Zone Principles

The application of these zones is guided by the recommendations of the Rural Strategy, in conjunction with the Urban Zoning In program zone review and strategy documents.

### Rural Zone selection guide

#### RU2 Rural Landscape

Land with broad ecological scientific, cultural or aesthetic qualities that is also generally compatible with commercial primary production, including extensive agriculture, intensive livestock and intensive plant agriculture, aquaculture and forestry. May include waterways outside of the coastal/tidal zone. Where this zoning applies, land will generally be considered unsuitable for urban development and rural residential uses.

#### RU5 Village

Land that may accommodate a broad variety of residential, retail, civic, business, tourist, light industrial and other compatible uses that serve the day-to-day needs of people within the village and surrounding rural areas. It is expected this will be the most appropriate zone for most rural centres in the MidCoast, where there is a recognisable development pattern with community services and facilities.

Depending on local circumstances, additional LEP or DCP controls may be required to encourage non-residential uses to cluster together to improve accessibility and economies of scale for services and infrastructure.

### Rural Living Zone selection guide

#### R5 Large Lot Residential

A limited range of residential accommodation will be permitted in this zone consistent with the zone objectives - single dwelling houses and secondary dwellings to reflect limited subdivision potential within these estates.

Minimum lot sizes (for subdivision) for new or amended areas will be 4,000sqm where reticulated sewerage system is available. 1.5Ha where not available.

## Environmental Zone selection guide

### E2 Environmental Conservation

Land outside the national parks and nature reserve system that:

- Is protected by a conservation mechanism e.g. bio-certification agreements, property vegetation plans, stewardship agreement, native vegetation set-aside area, court rehabilitation requirement;
- Has highly significant ecological, scientific, cultural or aesthetic features confirmed through supplementary evidence e.g. site-based evaluations, state mapping of sensitive vegetation;
- Is in public ownership and identified as an environmentally sensitive area under Clause 3.3. of the Local Environmental Plan;
- Relies on environmental conservation efforts that are generally incompatible with most other types of land use/development.

Where this zoning applies, land will be generally unsuitable for most kinds of commercial primary production, extractive industries or residential development.

### E3 Environmental Management

Land outside the national parks and nature reserve system that:

- has special ecological, scientific, cultural or aesthetic features including features not associated with native vegetation confirmed through supplementary evidence e.g. site-based evaluations;
- is in public ownership and in a buffer to an identified environmentally sensitive area under Clause 3.3. of the Local Environmental Plan; steep land 18 degrees (32%) and above; heavily vegetated, un-serviced and not required for another public purpose;
- affected by hazardous environmental features or processes;
- aquifer catchments and other identified natural resource areas associated with critical state, regional and local infrastructure;
- Relies on environmental management efforts that are generally incompatible with most other types of land use/development.

May also be applied to provide a transition between areas of high conservation value (consistent with E1 and E2 zonings) and other land uses. Where this zoning applies, land is generally unsuitable for development beyond low-scale and low-impact activities.

### E4 Environmental Living

Identifies land with special ecological scientific, cultural or aesthetic qualities that are generally compatible with limited or low impact residential development; and visitor accommodation and extensive agricultural uses that are compatible with the environmental sensitivity of the site and surrounding environment.

May be applied where the land is affected by buffers to and/or is adjoining environmentally sensitive areas identified in Clause 3.3 of the Local Environmental Plan; where the primary purpose of the land may be preserving, maintaining or restoring natural attributes of the land.

Additional LEP or DCP controls will likely be required to ensure development does not have an adverse effect on the environmental qualities of the land.



## Bundabah

Paper Subdivision summary	
Deposited Plan Numbers	10915
Number of lots	75
Area	10 hectares
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares

### Bundabah - Paper Subdivision Extent



### Description and Context

The Bundabah paper subdivision in the RU2 Rural Landscape zone, is located to the east of the existing Bundabah RU5 Village zoned area. Second Avenue represents the boundary between the paper subdivision and RU5 Village zoned land.

The paper subdivision section of Bundabah is of a uniform grid pattern subdivision with allotments ranging from 670 square metres to 1,214 square metres. The paper subdivision area of Bundabah is generally heavily vegetated with no steep land.

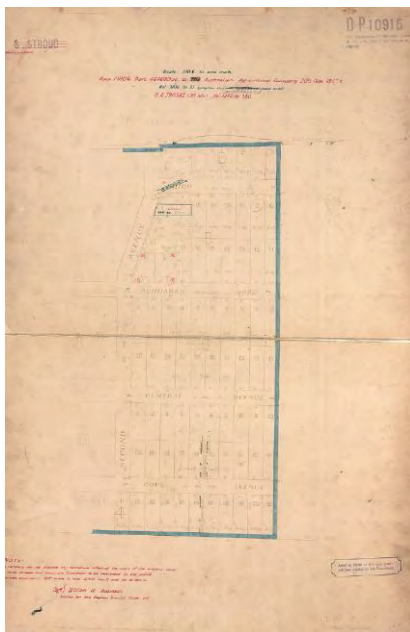
Bundabah is located approximately 26 kilometres north of Karuah and 16km from Tea Gardens. Vehicle access to Bundabah is provided from The Pacific Highway Tea Gardens interchange, via Myall Way, Pindimar Road and Bundabah Road.



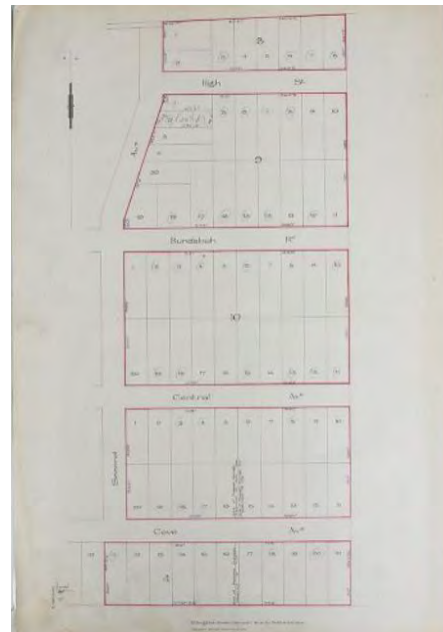
## Bundabah - Historic mapping



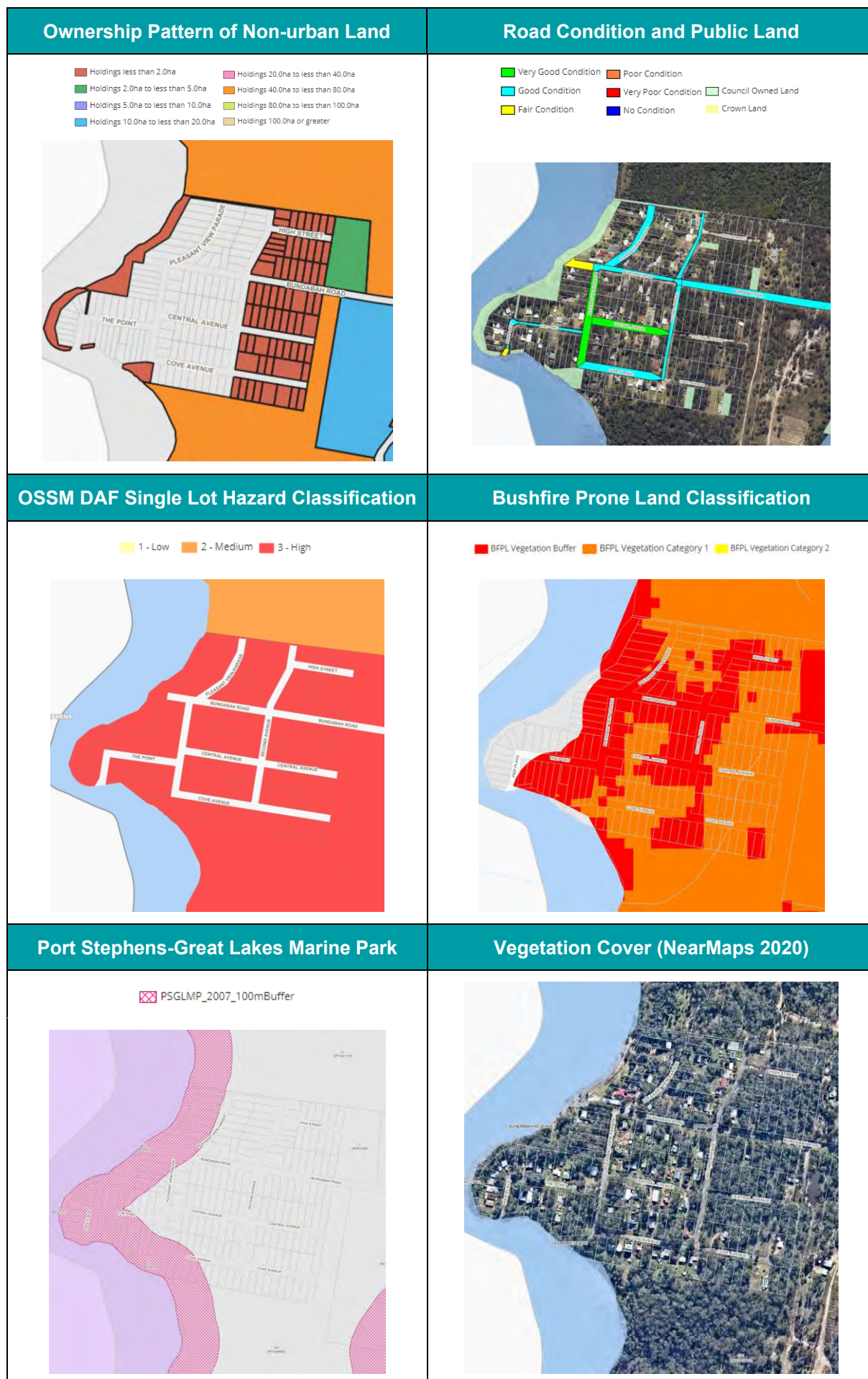
*Primary Application 21806 "A" within Application 18610, being part of the 464,640 acre grant to the Australian Agricultural Company in 1847*



*Deposited Plan 10915  
Date of Survey: 19 November 1920*



*Certificate of Title 22 July 1922  
Port Stephens Bundabah Estate Limited -  
Sections 4, 8, 9, 10 and 11*



## Infrastructure

The paper subdivision section of Bundabah is accessed via Bundabah Road and Second Avenue. The remaining roads are not maintained by Council. High Street and Central Avenue are unformed providing limited access to allotments. Cove Avenue has been constructed privately with an asphalt seal as part of a development consent for a wholesale plant nursery in 2003.

Bundabah has no reticulated water or sewerage services.

## Tenure and subdivision holding pattern

The paper subdivision extent of Bundabah has a very high degree of holding fragmentation with the existing 75 lots being held currently in 67 holdings at the time of writing, including four in Council ownership. The total area of the paper subdivision is approximately 10 hectares and all private property holdings are less than 2 hectares.

## Constraints analysis

LOW	MEDIUM	HIGH
flooding or coastal hazards	Legal and constructed public road access	Planning for Bushfire Protection
steep land of 18% (32 degrees)	Configuration and ownership	reticulated water and sewer services
	Environmentally sensitive vegetation	OSSM DAF mapping

## Recommendation

The paper subdivision of Bundabah has **medium constraints**. It has vegetation cover, high bushfire risks associated with isolation and evacuation, and allotments would have to achieve high levels of management of on-site sewerage disposal given proximity to the Port Stephens-Great Lakes Marine Park.

However, there is a relatively **high number of land owners** which may limit any potential development outcome. It is therefore recommended that:

- the paper subdivision extent of Bundabah be identified in the local environmental plan with a local clause requiring consideration of key criteria as part of any proposal to consolidate allotments or progress a Development Plan and Subdivision Order.
- the land is to be included in an E4 Environmental Living Zone and be allocated a minimum lot size of 10 hectares at this time, to reflect the environmental constraints and management requirements.



# Carrington

Paper Subdivision summary	
Deposited Plan Numbers	95448
Number of lots	65
Area	90 hectares
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares

## Carrington – Paper Subdivision extent



## Description and Context

The Carrington paper subdivision in the RU2 Rural Landscape Zone, is located to the east of the existing Carrington RU5 Village zoned area. The land is located on the northern side of Port Stephens and follows a conventional grid pattern subdivision, with lot sizes ranging between 2,000 square metres and 2 hectares. Land within the paper subdivision is heavily vegetated being the location of wetlands and waterways that form part of the Port Stephens estuary.

Carrington is accessed via Carrington Road, through the adjoining paper subdivision of North Arm Cove, directly from Gooreengi Road, located adjacent to the Pacific Highway.

Carrington, adjacent to Tahlee, the first headquarters of the AA Company in 1826, is described as one of the first planned community towns in Australia. The original Carrington village initially had a 26 man military barracks made of brick, a row of 11 substantial cottages, a surgery, a

permanent shearing shed, a butcher shop, offices, workshops, a brick kiln, a timber yard, a jail and two wharves.<sup>13</sup>

## Carrington - Historic mapping



Plan of Carrington, Port Stephens – Circa 1830

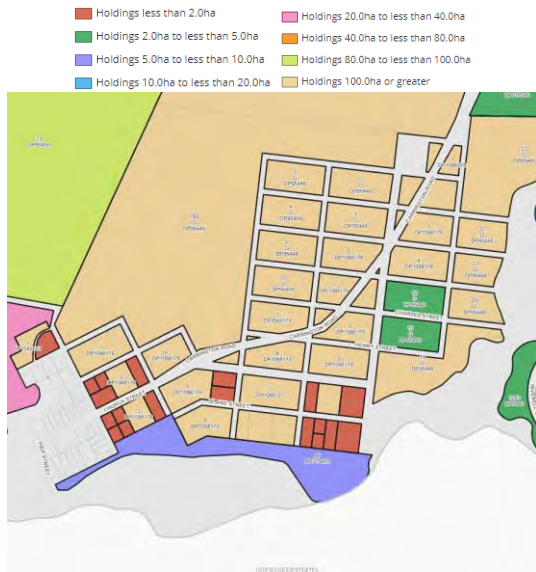


DP 95448 – Sheets 1 & 2 of Map dated June 1903

<sup>13</sup> Scanlon 2008 - Tahlee Bible College | NSW Environment, Energy and Science



### Ownership Pattern of Non-urban Land



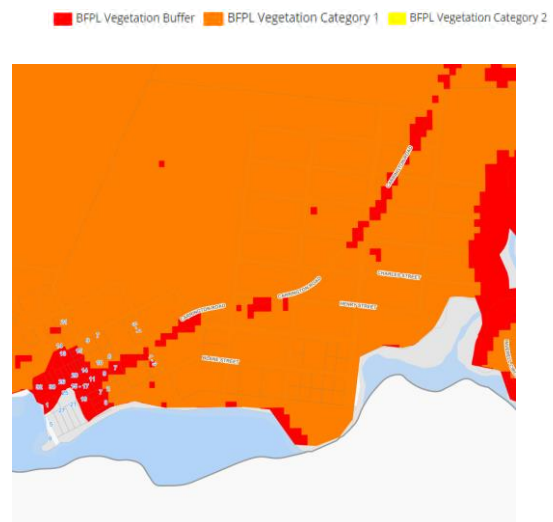
### Road Condition and Public Land



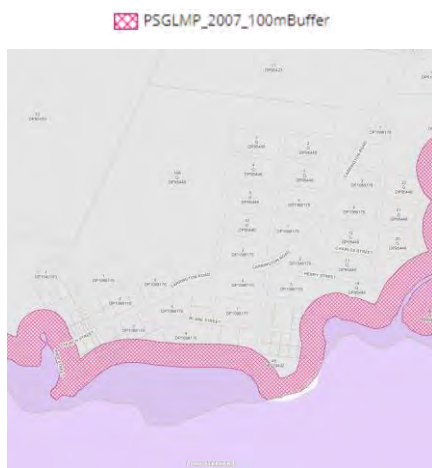
### OSSM DAF Single Lot Hazard Classification



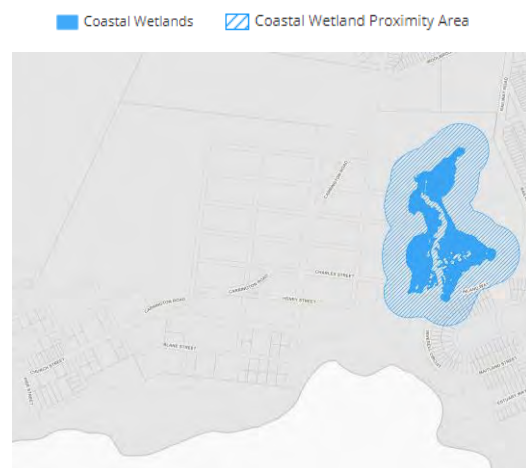
### Bushfire Prone Land Classification



### Port Stephens-Great Lakes Marine Park



### Coastal Management SEPP - Wetlands



## Infrastructure

The paper subdivision section of Carrington is dissected by Carrington Road, which provides access to the existing village and Tahlee. This is the only road that is constructed and maintained by Council.

Carrington has no reticulated water or sewerage services.

## Tenure and subdivision holding pattern

Most of the land within the Carrington paper subdivision and surrounding area is in the same ownership, with less than 20 separate land owners owning the smaller lots near the village, in holdings generally less than 2 hectares.

## Constraints analysis

LOW	MEDIUM	HIGH
Configuration and ownership	Environmentally sensitive vegetation	Legal and constructed public road access
flooding or coastal hazards		Planning for Bushfire Protection
steep land of 18% (32 degrees)		reticulated water and sewer services
		OSSM DAF mapping

## Recommendations

The paper subdivision of Carrington is **highly constrained**. Environmental constraints related to the significant vegetation cover, proximity to coastal wetlands and the Port Stephens-Great Lakes Marine Park. These constraints exacerbate the challenges of providing on-site sewerage management and existing bushfire risks associated with isolation and evacuation.

However, there is a very **small number of land owners** and potential for the primary land owner to pursue a development outcome in this location. It is therefore recommended that:

- the paper subdivision extent of Carrington be identified in the local environmental plan with a local clause requiring consideration of key criteria as part of any proposal to consolidate allotments or progress a Development Plan and Subdivision Order.
- the land is to be included in an E3 Environmental Management Zone and retain a minimum lot size of 10 hectares at this time, to reflect the environmental constraints and management requirements.



## Coolongolook

Paper Subdivision summary	
Deposited Plan Numbers	758278
Number of lots	56
Area	55 hectares
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares

### Coolongolook – Defined Paper Subdivision Extent



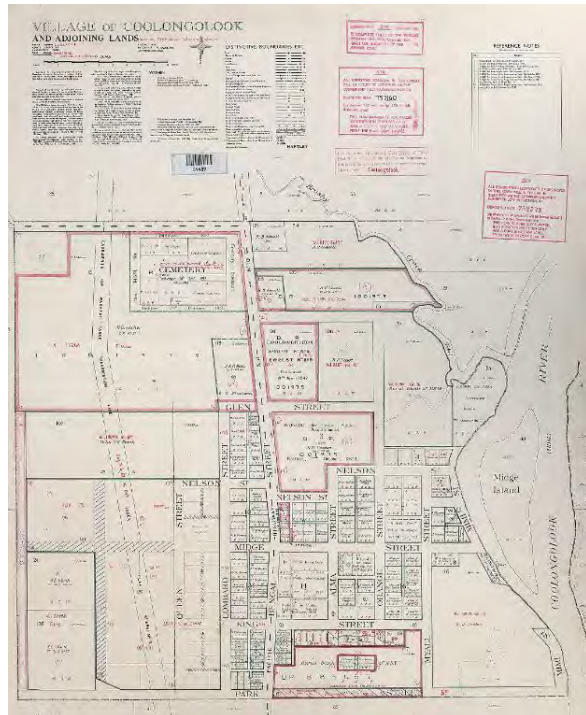
### Description and Context

The Coolongolook paper subdivision in the RU2 Rural Landscape Zone is located between the Coolongolook River and the RU5 Village zoned section of Coolongolook. The paper subdivision has a standard grid layout with lot sizes from 2,000 square metres to large lots reserved for public purposes.

## Coolongolook - Historic mapping



*Coolongolook (Sheet 1 & 2)*  
*Date of Map: 21 December 1891*



*DP 758278*  
*Date of Map: 7 August 1968*

### Infrastructure

The paper subdivision sections of Coolongolook, where there are a limited number of dwellings, are primarily accessed via Midge and Mill Street. All other roads are Crown roads that are not constructed, are unformed or not maintained by Council.

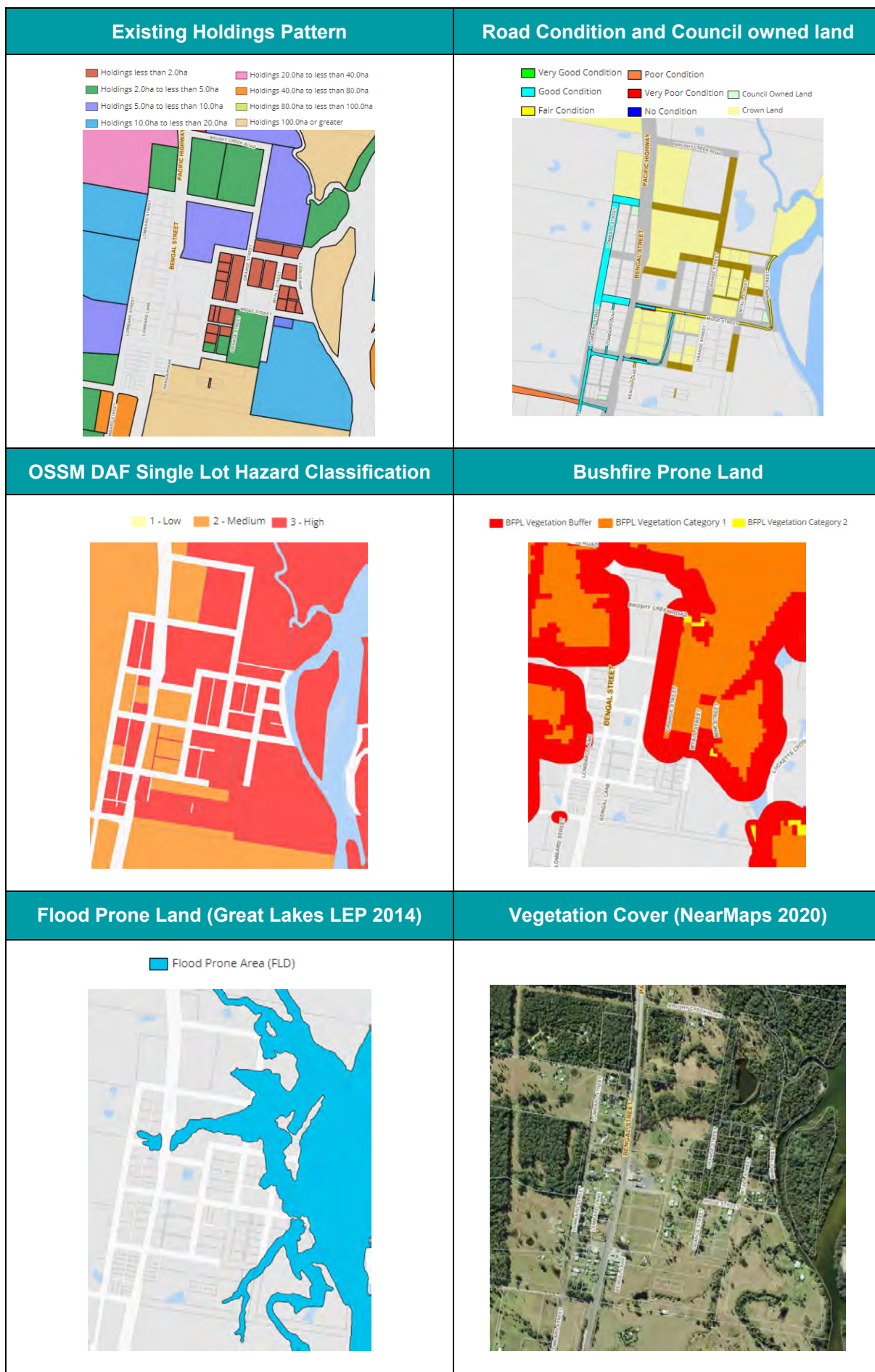
Coolongolook does not have reticulated water or sewerage services.

### Tenure and subdivision holding pattern

There is reasonable fragmentation of ownership within the Coolongolook paper subdivision, however, the limited area of the paper subdivision and large number of allotments in Crown ownership mean there are only a small number of land owners.

Overall, there are 18 lots in public ownership. While many holdings do not exceed 2 hectares, there are larger holdings in the vicinity, and these are generally owned by the Crown.





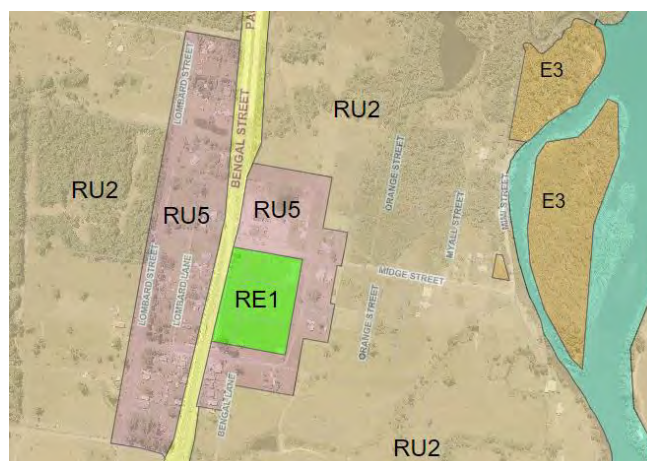
## Constraints analysis

LOW	MEDIUM	HIGH
Configuration and ownership	flooding or coastal hazards	Legal and constructed public road access
steep land of 18% (32 degrees)	Planning for Bushfire Protection	reticulated water and sewer services
Environmentally sensitive vegetation		OSSM DAF mapping

## Recommendations

The paper subdivision of Coolongolook is **moderately constrained** in some areas and **highly constrained** in others, closer to the river. Environmental constraints exacerbate the challenges of providing on-site sewerage management and existing bushfire risks.

However, there are a very **small number of land owners** and potential to pursue a development outcome in the less constrained areas of this paper subdivision.



It is therefore recommended that remaining land within the paper subdivision be clearly identified so that the land in Crown and Council ownership be identified in an appropriate environmental zone, while:

- existing parcels with dwellings adjoining the RU5 Village zone, may be identified as a suitable extension to this zone, as indicated above;
- remaining land is included in an E4 Environmental Living Zone and minimum lot size of 10 hectares, to reflect the environmental constraints and management requirements; and
- be identified in the local environmental plan and a local clause prepared, requiring consolidation and consideration of key criteria ensure future allotments provide developable and on-site disposal areas outside of the flood planning area.

It is noted that within this location, the extent of flood-free land within this paper subdivision may make the area suitable for a higher level of development, with the application of an R5 Large Lot Residential zone and minimum lot size of 1.5hectares.

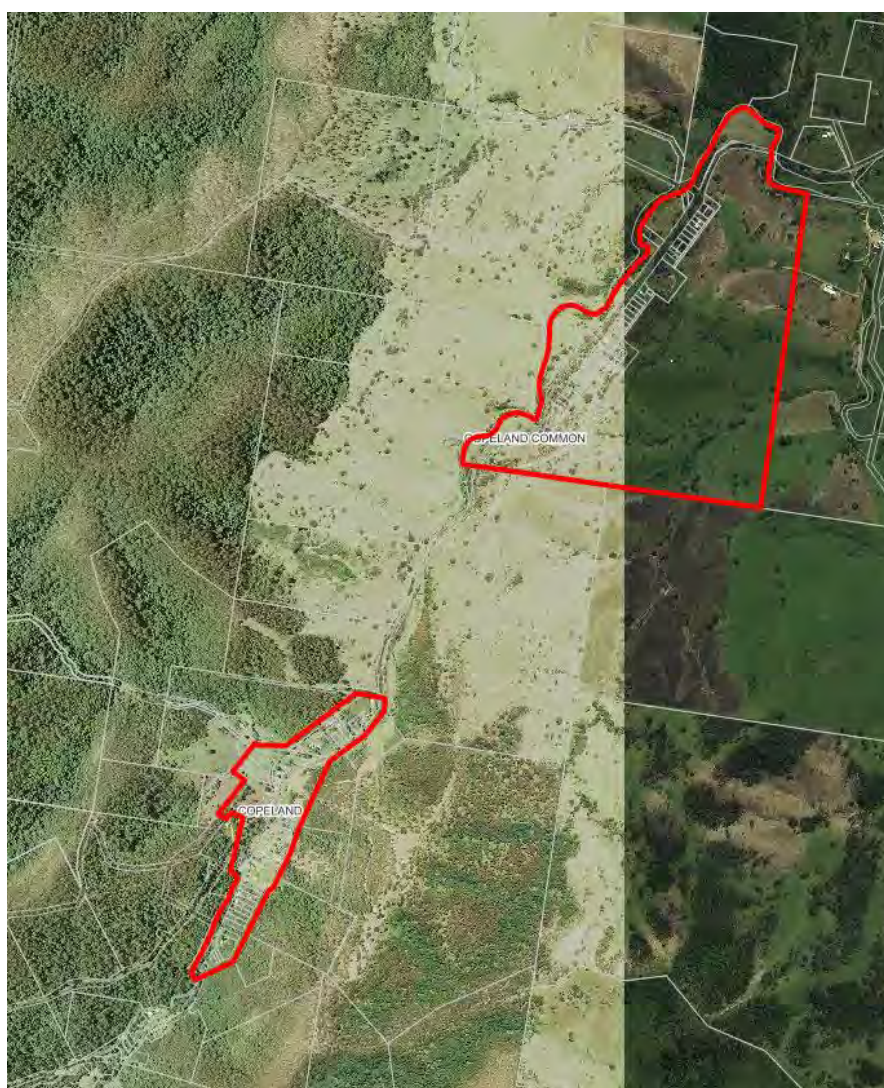
However, planning provisions prohibit the rezoning of flood prone land to a residential zone



## Copeland and Copeland Common

Paper Subdivision summary	
Deposited Plan Numbers	753147 and 753167
Number of lots	80
Area	52 hectares
Land Use Zone	RU1 Primary Production (GSC LEP 2010)
Minimum Lot Size for Dwelling Entitlement	100 hectares

### Copeland - Defined Paper Subdivision Extent

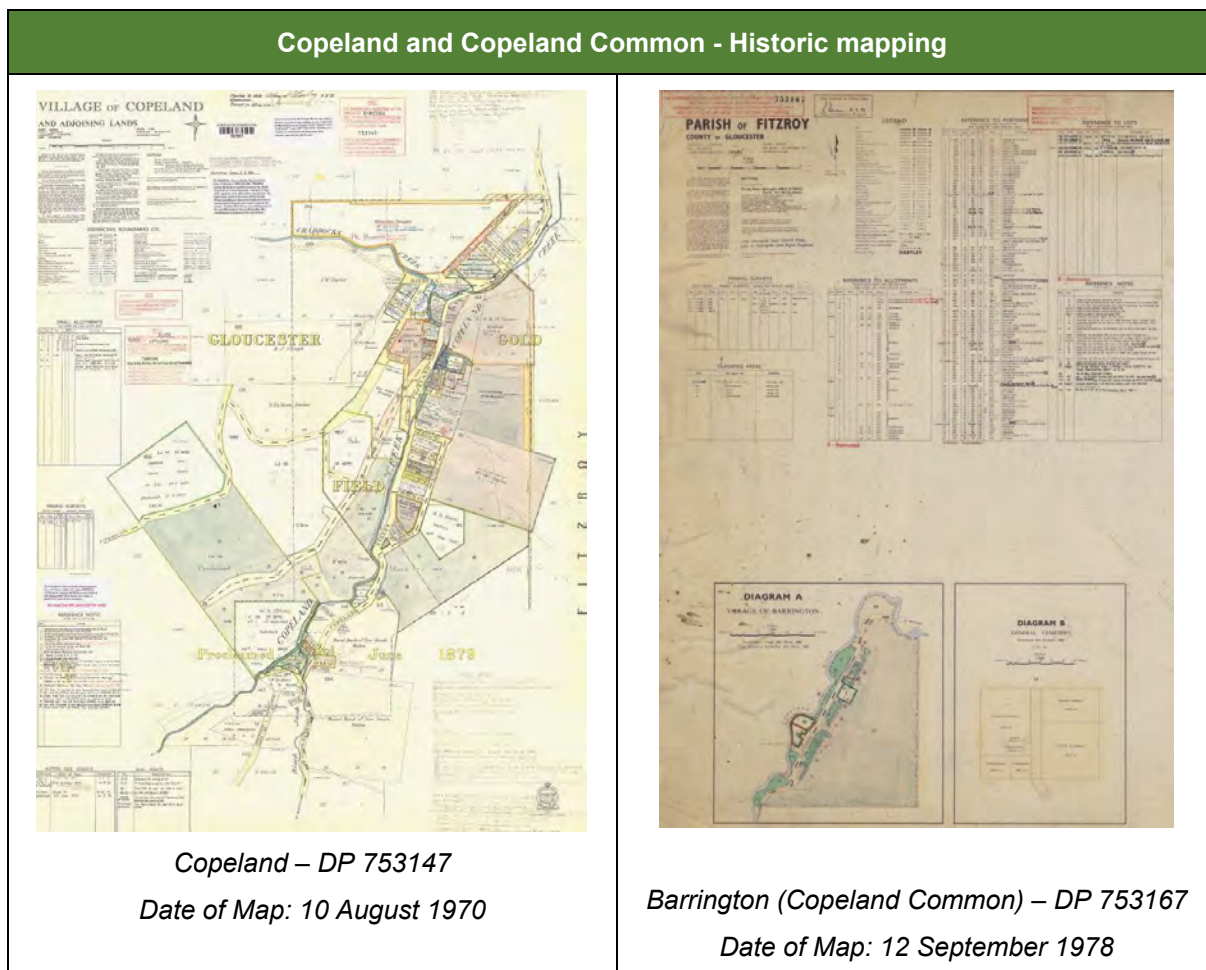


### Description and Context

The Copeland paper subdivision, in the RU1 Primary Production zone, is approximately 20 kilometres west of Gloucester on Scone Road. Copeland consists of two sections, Copeland in the south and Copeland Common to the north. These areas have an unconventional subdivision layout characteristic of its historic growth and decline as a gold mining town.

Gold was first discovered in Back Creek (now named Copeland Creek) by a party of cedar getters in 1874 leading to a gold rush soon after. In 1878, surveyors had laid out a new town named after the Secretary of Mines Henry Copeland. During 1880-1890 Copeland was a thriving community with a population of over 1,200 people with shops, hotels, school and post office. Like many gold rush towns, at the end of the 1890's the gold rush resulted in a decline and most buildings were demolished.

The lot sizes in Copeland range from 2,000 square metres to 2 hectares.



Most land parcels within Copeland Common are in Council's care, control and ownership. Copeland Common will therefore not be considered any further as these lands will be rezoned to an appropriate environmental zone.

## Infrastructure

The paper subdivision sections of Copeland are primarily accessed via Copeland Road and Scone Road. All other roads are Crown roads and are for the most part unconstructed and unformed.

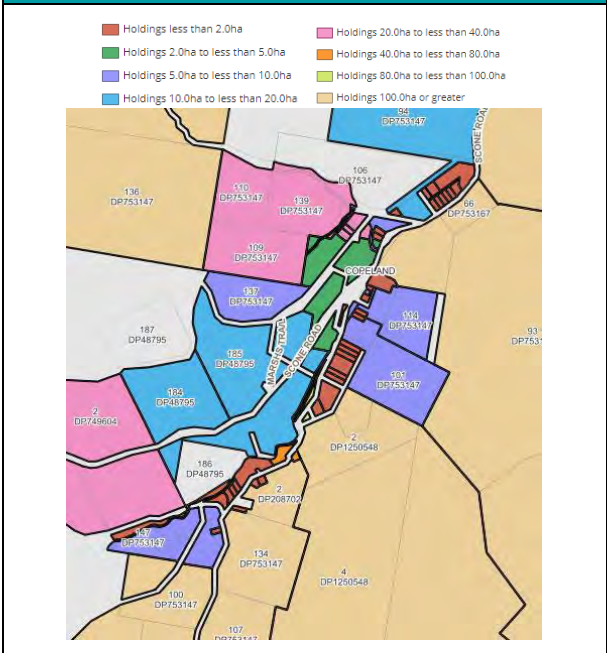
Neither Copeland or Copeland Common have reticulated water or sewerage services.

## Tenure and subdivision holding pattern

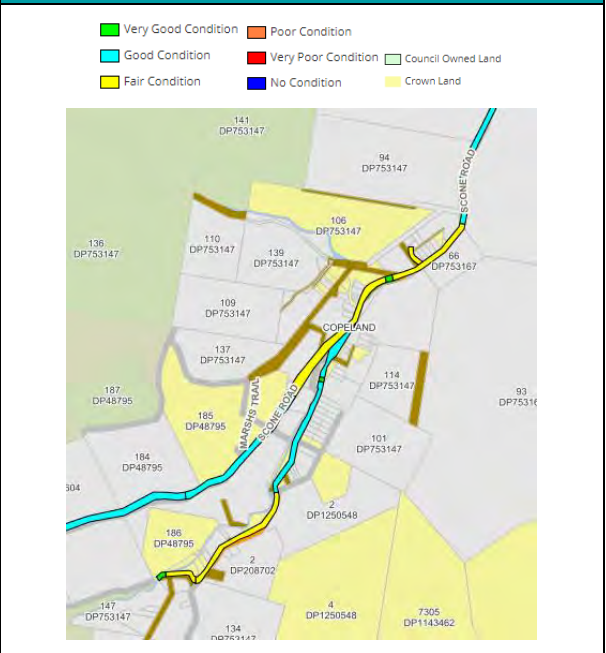
Most parcels in the paper subdivision of are in private ownership, many have existing dwellings and an area of less than 2 hectares.



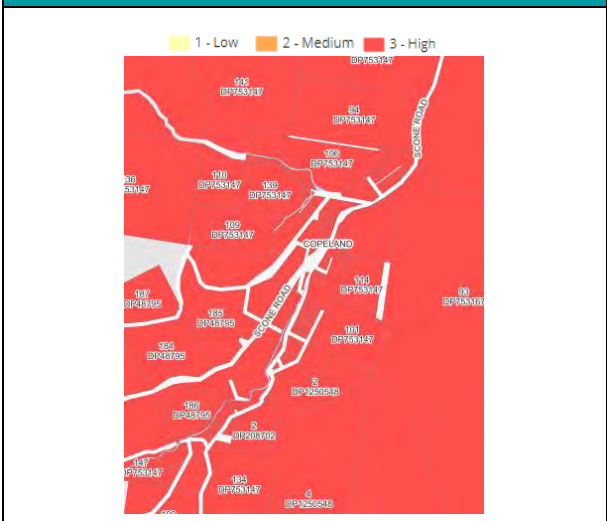
### Ownership Pattern of Non-urban Land



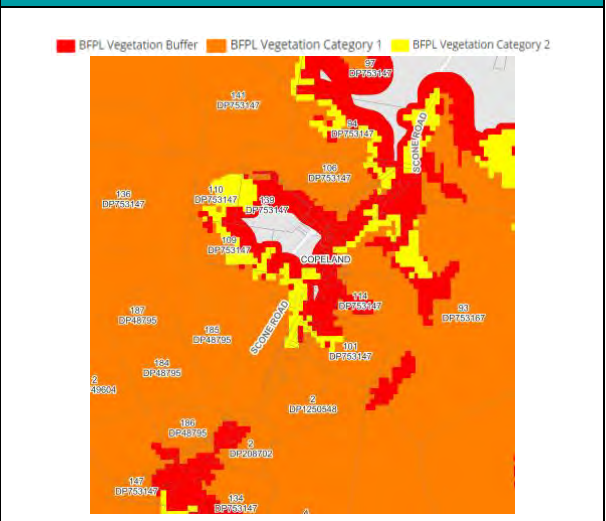
## Road Condition and Public Land



### OSSM DAF Single Lot Hazard Classification



## Bushfire Prone Land



**Steep Land – >18% (32 degrees)**



Vegetation Cover	
------------------	--



## Constraints analysis

LOW	MEDIUM	HIGH
flooding or coastal hazards	Environmentally sensitive vegetation	Legal and constructed public road access
		Configuration and ownership
		steep land of 18% (32 degrees)
		Planning for Bushfire Protection
		reticulated water and sewer services
		OSSM DAF mapping

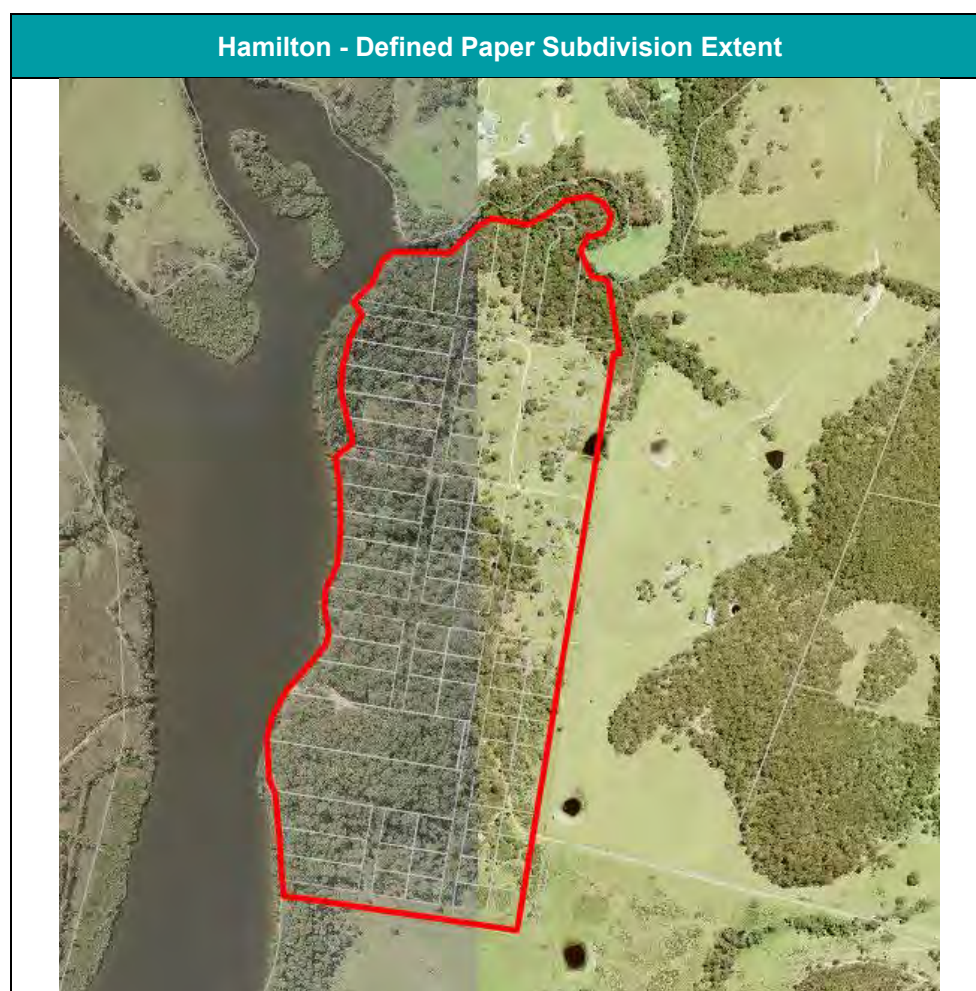
## Recommendations

The paper subdivision extent of Copeland has a **high level** of constraints. Large parts of the paper subdivision area are subject to high bushfire risk and are heavily vegetated on steep lands. There are significant restrictions to land application areas suitable for on-site sewerage management.

Given the historic pattern of development and existing dwellings in Copeland, rezoning and resolution of the paper subdivision is considered unnecessary. It will remain in the appropriate rural zone and will not be subject to any additional local provisions or clauses that would allow for additional development in this relatively isolated location.

## Hamilton

Paper Subdivision summary	
Deposited Plan Numbers	118006
Number of lots	97
Area	39 hectares
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares



### Description and Context

The Hamilton paper subdivision is located on the eastern side of the Karuah River, opposite to Allworth. This historic grid pattern subdivision is characterised by lots ranging in size between 2,000 and 4,500 square metres, with a limited number of larger properties.

The area is predominantly in the RU2 Rural Landscape Zone, with some allotments already transferred to Council having been included in an E3 Environmental Management zone.

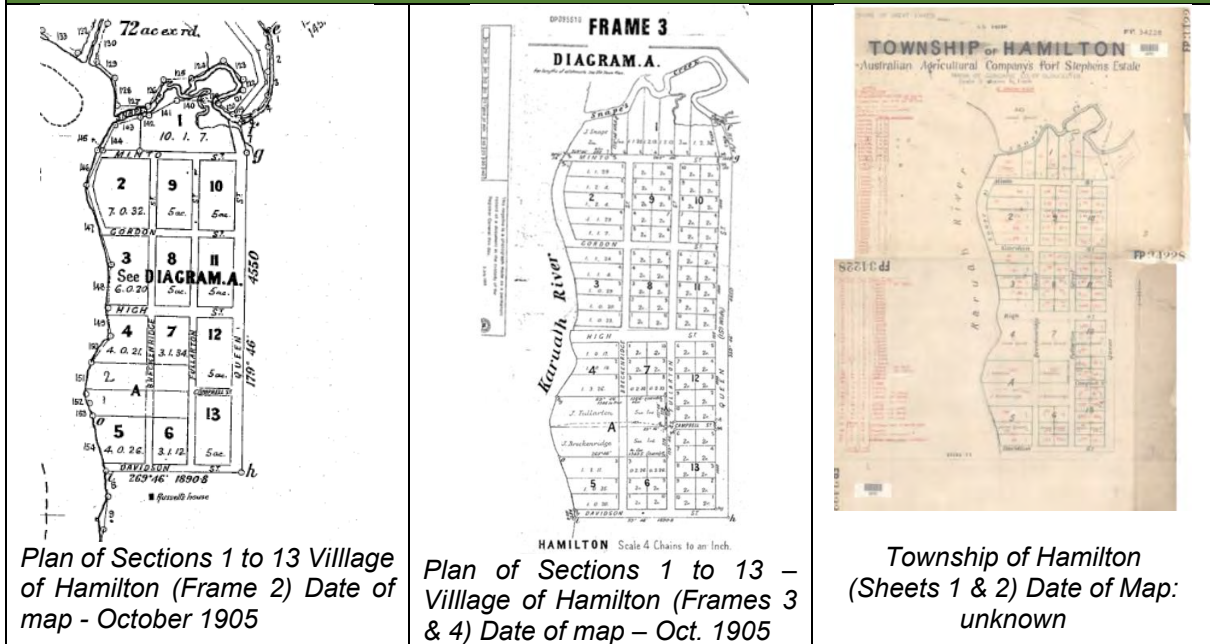
### Infrastructure

The area has very limited access via Warraba Road or River Road, off The Branch Lane.

Hamilton does not have reticulated water or sewerage services.



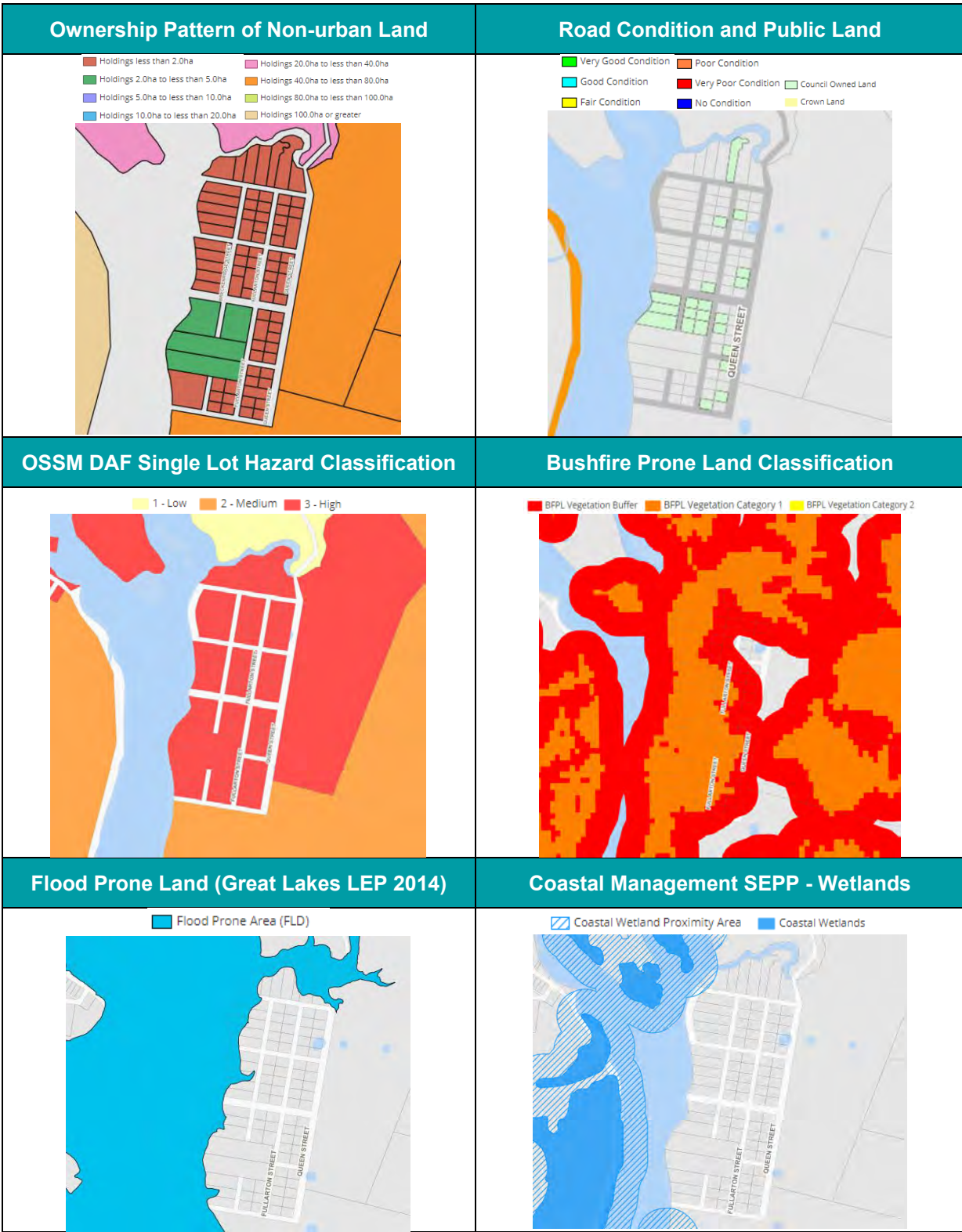
## Hamilton - Historic Mapping



### Tenure and subdivision holding pattern

The paper subdivision extent of Hamilton has experienced minimal consolidation and has very high fragmentation of holdings with the majority of lots being held in separate ownership, many of the properties have an area of less than two hectares.

Given the isolation and environmental constraints approximately twenty lots have already been transferred to Council and some are already in an appropriate environmental zone, reflected these constraints.



**Constraints analysis:**

LOW	MEDIUM	HIGH
flooding or coastal hazards	Environmentally sensitive vegetation	Legal and constructed public road access
steep land of 18% (32 degrees)		Configuration and ownership
		Planning for Bushfire Protection
		reticulated water and sewer services
		OSSM DAF mapping

**Recommendations**

The paper subdivision extent of Hamilton is ***highly constrained***, and there is a ***high number of land owners***, it is unsuitable for development given its isolation, lack of constructed public access, heavily vegetated sites with high bushfire and on-site sewerage management classifications.

It is recommended that the Hamilton paper subdivision be included in the E3 Environmental Management zone and retain the minimum lot size of 40 hectares, in recognition of its significant constraints.



## Krambach

Paper Subdivision summary	
Deposited Plan Numbers	753182
Number of lots	125
Area	60 hectares
Land Use Zone	RU1 Primary Production (GT LEP 2010)
Minimum Lot Size for Dwelling Entitlement	40 hectares

### Krambach – Defined Paper Subdivision Extent



### Description and Context

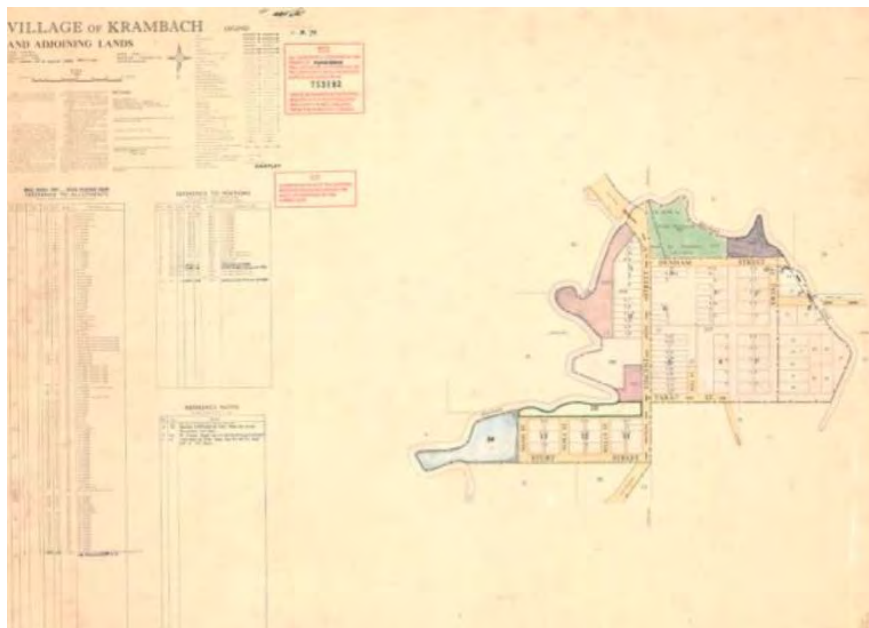
The Krambach paper subdivision in the RU1 Primary Production Zone is separate from the RU5 Village zoned section of Krambach to the west. The Krambach paper subdivision has a conventional grid pattern with most parcels having a lot size between 1,000 and 2,000 square metres.

The paper subdivision area is mostly cleared of vegetation and a relatively flat topography that is potentially affected by flooding from the adjoining waterway. The land is primarily used for farming purposes although a number of dwellings exist on lots with direct access to The Bucketts Way East.

## Krambach - Historic mapping



*Village of Krambach Date of Map: 16 July 1891*



*DP753182 Date of Map: 11 August 1972*

## Infrastructure

The paper subdivision of Krambach is located on either side of The Bucketts Way East, to the north of the Krambach RU5 Village zone. Tara Street and King Creek Road also provide limited access. All other roads are unconstructed and unformed Crown roads.

Krambach does not have reticulated sewerage services. Reticulated water is connected to several lots with frontages to The Bucketts Way East.



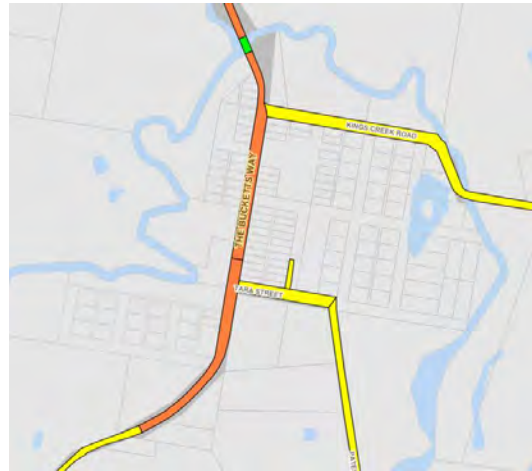
## Ownership Pattern of Non-urban Land

- Holdings less than 2.0ha
- Holdings 2.0ha to less than 5.0ha
- Holdings 5.0ha to less than 10.0ha
- Holdings 10.0ha to less than 20.0ha
- Holdings 20.0ha to less than 40.0ha
- Holdings 40.0ha to less than 80.0ha
- Holdings 80.0ha to less than 100.0ha
- Holdings 100.0ha or greater



## Road Condition and Public Land

- Very Good Condition
- Good Condition
- Fair Condition
- Poor Condition
- Very Poor Condition
- No Condition
- Council Owned Land
- Crown Land



## OSSM DAF Single Lot Hazard Classification

- 1 - Low
- 2 - Medium
- 3 - High



## Bushfire Prone Land Classification

- BFPL Vegetation Buffer
- BFPL Vegetation Category 1
- BFPL Vegetation Category 2



## Vegetation cover (NearMaps 2020)



## Tenure and subdivision holding pattern

There is minimal fragmentation of holdings within the existing paper subdivision. There are less than ten owners of the land, with some parcels of less than 2 hectares being occupied by individual owners and the majority being in one freehold title.

LOW	MEDIUM	HIGH
Configuration and ownership	Legal and constructed public road access	
Environmentally sensitive vegetation	Planning for Bushfire Protection	
steep land of 18% (32 degrees)	flooding or coastal hazards	
	reticulated water and sewer services	
	OSSM DAF mapping	

## Recommendations

The paper subdivision extent of Krambach has **moderate** constraints and **small number of land owners**. Whilst part of the paper subdivision area is subject to bushfire risk, the extend of flood prone land is unknown.

It is recommended that:

- The paper subdivision extent of Krambach be identified in the local environmental plan with appropriate local clause requirements for master planning and consolidation in a manner consistent with the E4 Environmental Living zone,
- with a minimum lot size of 10 hectares for any future subdivision, recognising environmental constraints are to be identified and addressed to ensure developable areas and on-site sewage management areas are located outside of any flood prone land.

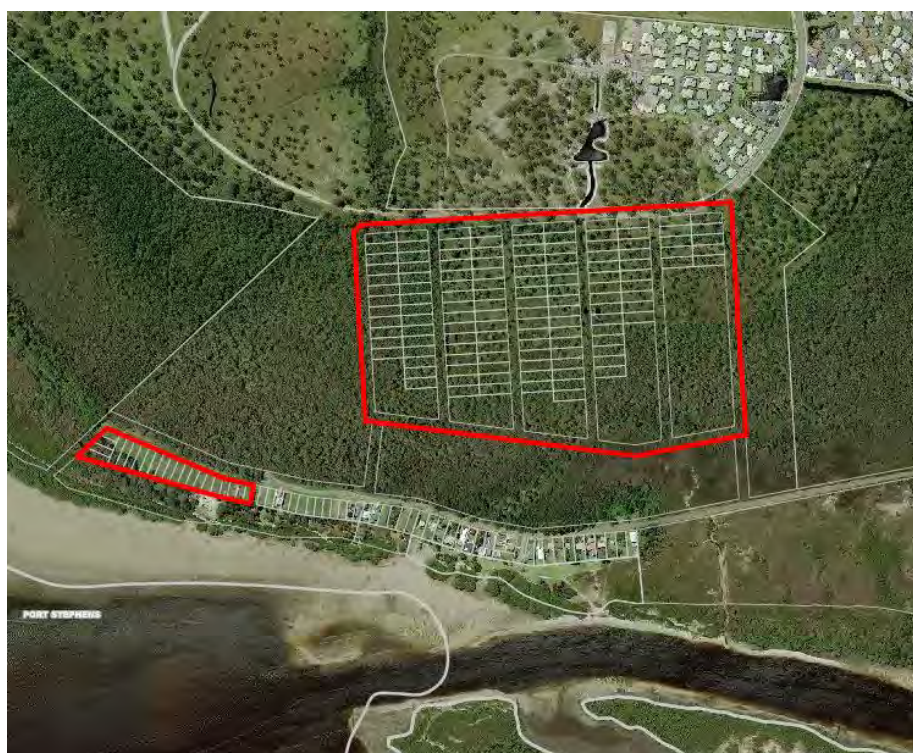
It is noted that within this location, with confirmation of the extent of flood-free land within this paper subdivision may make the area suitable for a higher level of development, with the application of an R5 Large Lot Residential zone and minimum lot size of 1.5hectares.

However, planning provisions prohibit the rezoning of flood prone land to a residential zone.

## Limekilns, Tea Gardens

Paper Subdivision summary	
Deposited Plan Numbers	753182
Number of lots	130
Area	35 hectares
Land Use Zone	RU2 Rural Landscape and E2 Environmental Conservation (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares

### Limekilns – Defined Paper Subdivision Extent



### Description and Context

The Limekilns paper subdivision, in the RU2 Rural Landscape and E2 Environmental Conservation Zones, is located to the west of Tea Gardens on the northern side of Port Stephens. Limekilns is predominately a grid pattern subdivision with lot sizes from 1,200 square metres.

The majority of lots within the paper subdivision are identified as coastal wetlands and are already in the E2 Environmental Conservation zone, reflecting a high level of environmental constraint.

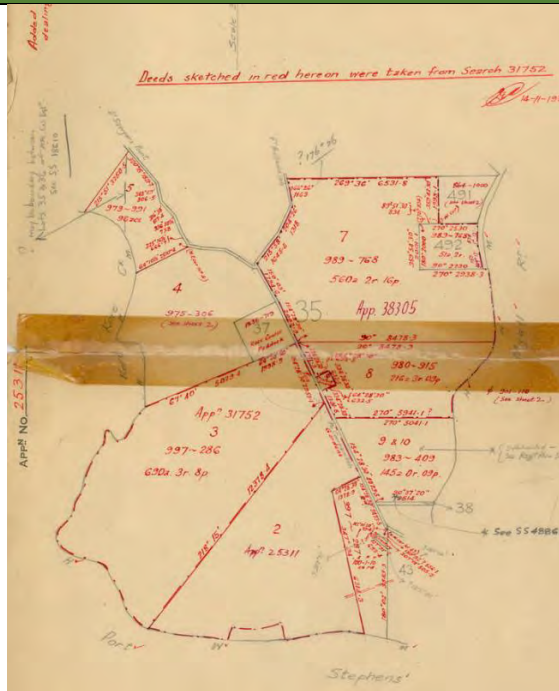
### Infrastructure

The paper subdivision sections of Limekilns are not accessed by publicly constructed roads.

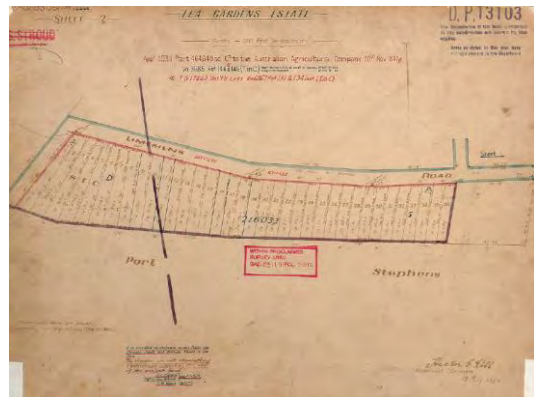
The reticulated water and sewerage services in this location do not extend to the paper subdivision sections.



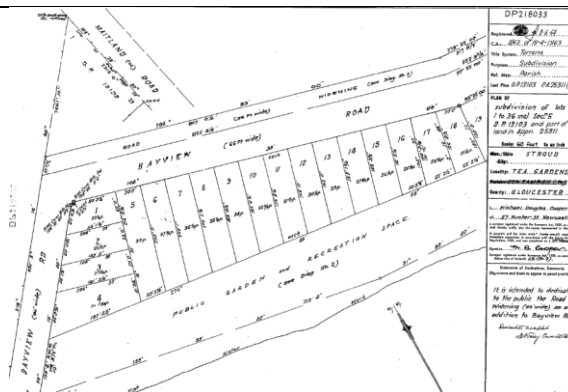
## Limekilns - Historic mapping



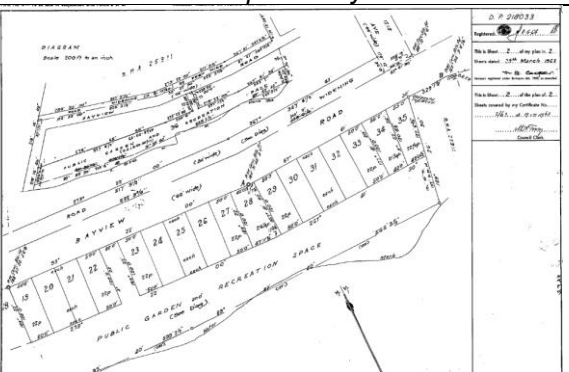
Primary Application 25311, being part of the 464,640 acre grant to the Australian Agricultural Company in 1847.  
Date of Map: 14 January 1925



DP 13103 (Sheets 1 & 2)  
Date of Map: 15 May 1924

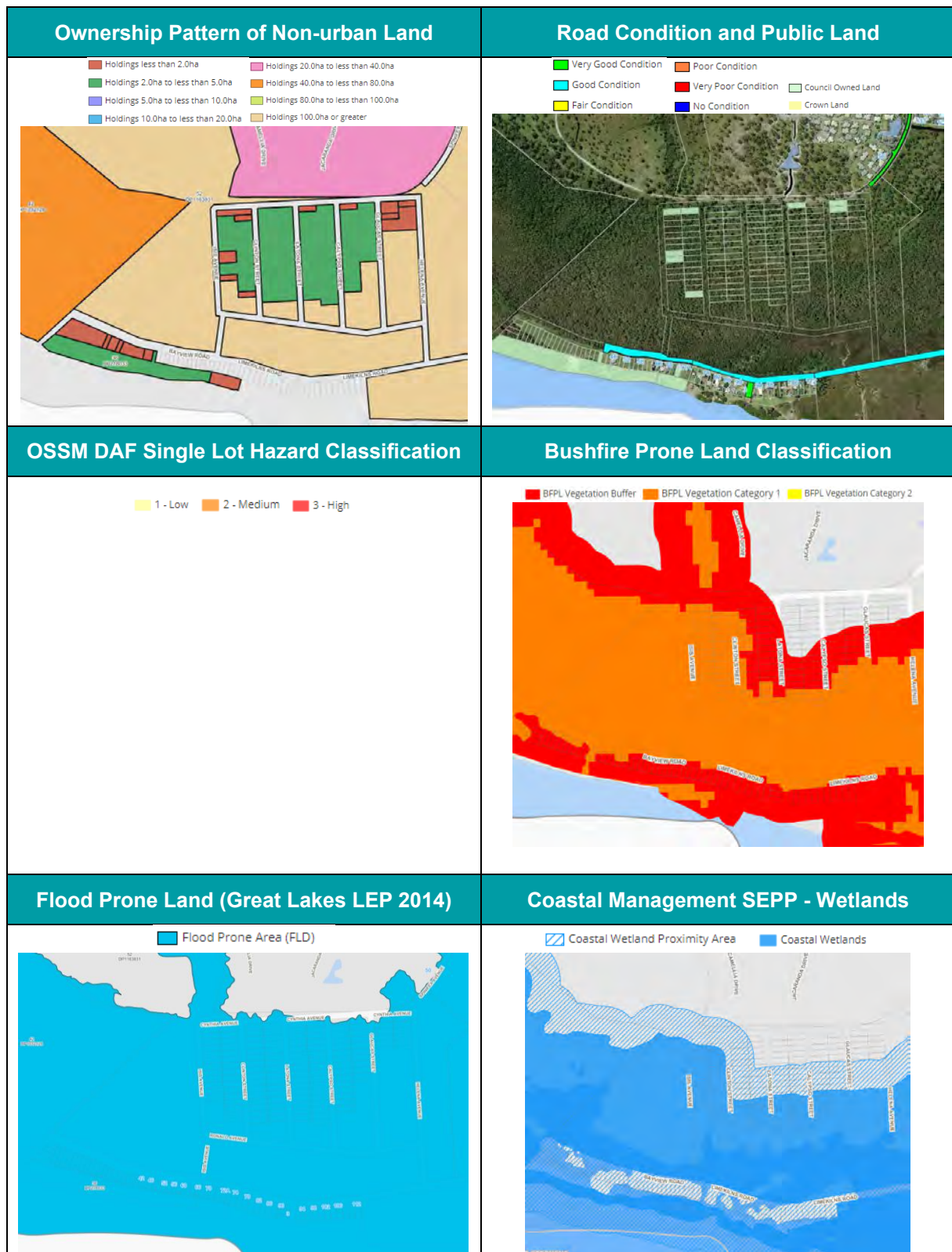


DP 218033 – Sheet 1  
Date of Map: 19 April 1963



DP 218033 – Sheet 2  
Date of Map: 19 April 1963





## Tenure and subdivision holding pattern

The paper subdivision extent of Limekilns has experienced almost no consolidation and eight landowners own over 125 parcels, most of which have a lot size of less than two hectares.

A small number of lots have been transferred to Council and will be transitioned into the appropriate environmental zone, reflecting the high level of constraint over these sites.

## Constraints analysis

LOW	MEDIUM	HIGH
Configuration and ownership		flooding or coastal hazards
steep land of 18% (32 degrees)		Environmentally sensitive vegetation
		Legal and constructed public road access
		Planning for Bushfire Protection
		reticulated water and sewer services
		OSSM DAF mapping

## Recommendations

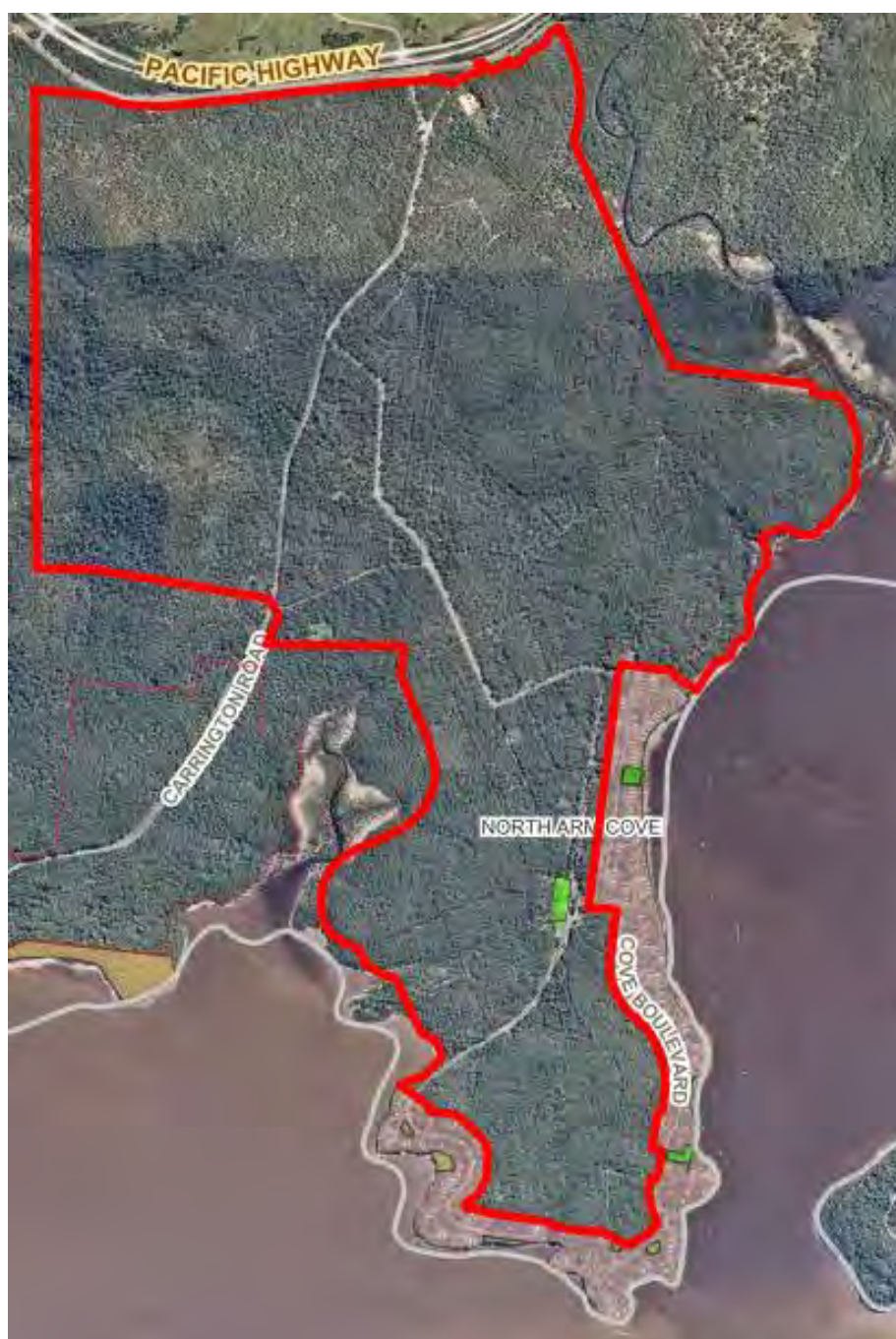
The two sections of the Limekilns paper subdivision are ***highly constrained***. Despite the ***low number of land owners***, large portions are flood affected, heavily vegetated, bushfire prone, identified as significant coastal wetlands and adjoin the Marine Park. These constraints represent significant restrictions to development.

The majority of the paper subdivision is already included in the E2 Environmental Conservation Zone and it is recommended that the remaining areas be included in the E3 Environmental Management Zone and continue to be subject to a minimum lot size of 40 hectares, in recognition of its high level of constraints.

## North Arm Cove

Paper Subdivision summary	
Deposited Plan Numbers	9938, 9939, 9940, 12275, 12276, 12277, 13357 13358 and 13400
Approximate number of lots	3,500
Area	740 hectares
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares

North Arm Cove - Paper Subdivision Extent



## Description and Context

The North Arm Cover paper subdivision is primarily zoned RU2 Rural Landscape with a minimum lot size of 40 hectares under Great Lakes LEP 2014. The area extends from the northern side of Port Stephens to the Pacific Highway.

The location forms part of the Australian Agricultural Company's original land grant in 1826 and between 1826 and 1850 the company headquarters were at Carrington, before being relocated to Stroud. During World War 1 the deep waters for Port Stephens were considered suitable for military and commercial shipping, with development anticipated on the northern foreshores to accommodate returned servicemen.

In 1918 the AA Company holding was transferred to a land development company and Walter Burley Griffin was engaged to prepare a concept plan of 'Port Stephens City'. The unusual subdivision pattern reflects this history and lot sizes are extremely variable, ranging from 328 square metres to over ten hectares.

In 1920 this concept plan of approximately 3200 lots of varying sizes and shapes, was registered by the Registrar General's Department. However, no roads or open space were dedicated in these subdivisions. A similar plan was prepared by W S Griffiths in 1920 at Pindimar and resulted in approximately 2100 lots being registered.

The land has historically been owned by large company holdings and either remained in a natural state or were modified for agricultural activities including pine plantations. The lands were formally zoned rural on 15 May 1964, with limited village zones applied in Carrington, North Arm Cove, Bundabah and Pindimar.

This change also saw the introduction of a 40ha minimum for the construction of a dwelling house, except when: related to a 'legitimate intensive agricultural occupancy', or for owners at the appointed day. For land owners with an 'existing holding', there was also a requirement to address vehicle access and adequacy of utility and other services.

The use and management of the land appears to have changed after a bushfire damaged most of the pine plantation in 1980. Significant speculative land sale campaigns throughout the 1980s diversified ownership across these rural areas, as shown in the promotional information on the following page.

The Hunter Regional Plan No.1 (1982) strategies indicated support for protection of these areas; and growth in more suitable locations at Tea Gardens-Hawks Nest, where infrastructure including public water and sewer systems were available. The Plan also recognised that the oyster industry within Port Stephens may be jeopardised by any significant clearing and development within this area.

Since the 1980s Council and the Department of Planning have received enquiries regarding the potential rezoning and development of land within the paper subdivisions of North Arm Cove and surrounds. Some enquiries have been submitted with commitments to provide infrastructure, services and facilities to the resulting development and environmental studies undertaken by the companies in partnership with other landowners, but none have come to fruition.

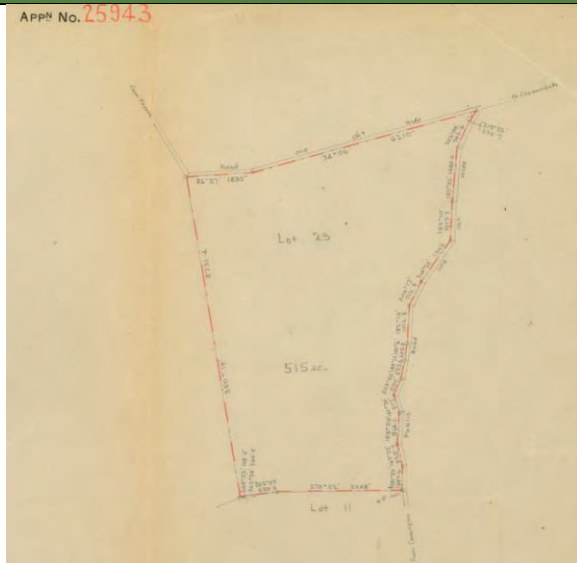
These enquiries were not supported or encouraged by Council or the Department given the lack of strategic merit and unreasonable expectations that funding such investigations and applications may give individual land owners.





The area of North Arm Cove is extensive, heavily vegetated with minimal cleared sections. Several approved dwellings are located adjacent to the RU5 Village of North Arm Cove, while basic structures including sheds, carports and caravan slabs are spread throughout the area, some having been built without authorisation or approval.

## North Arm Cove - Historic mapping



Primary Application 25943 – Lot 25  
Date of Map: unknown



Primary Application 21388 – Lot 427 being part  
of the 464,640 acre grant to the Australian  
Agricultural Company in 1847  
Date of Map: unknown



Walter Burley Griffin "Port Stephens City Site"

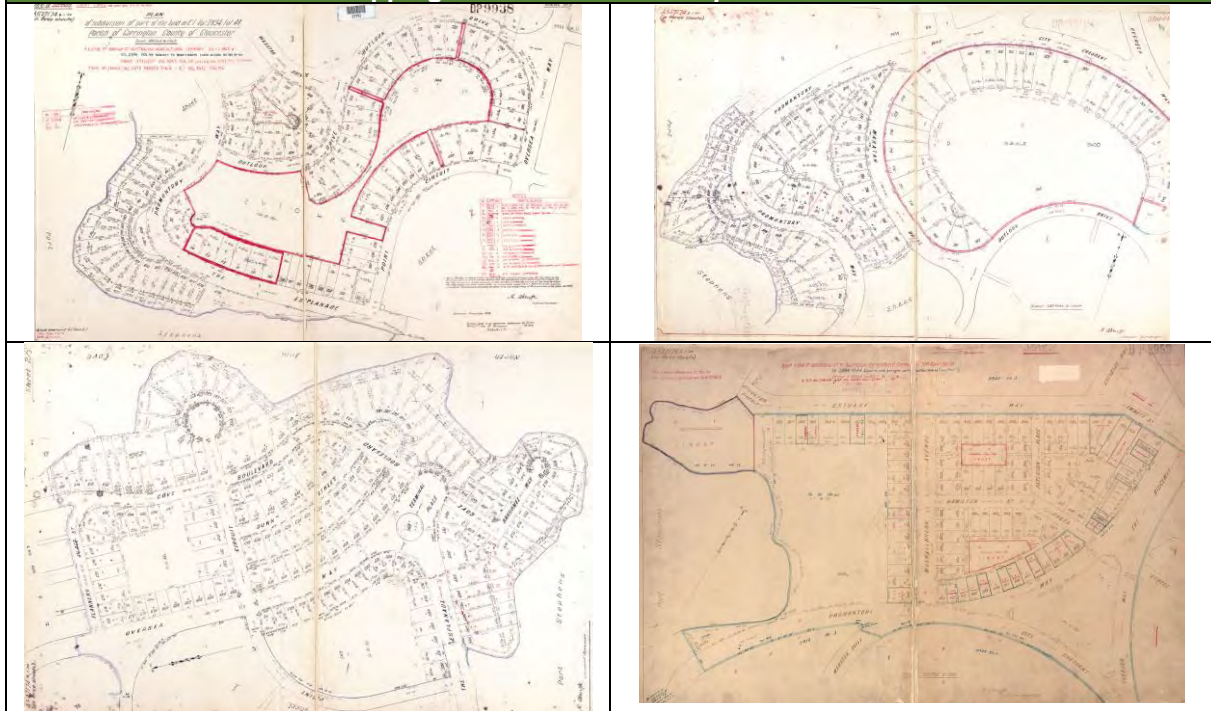


"Port Stephens City" with DP records and  
Village zone identified "V"

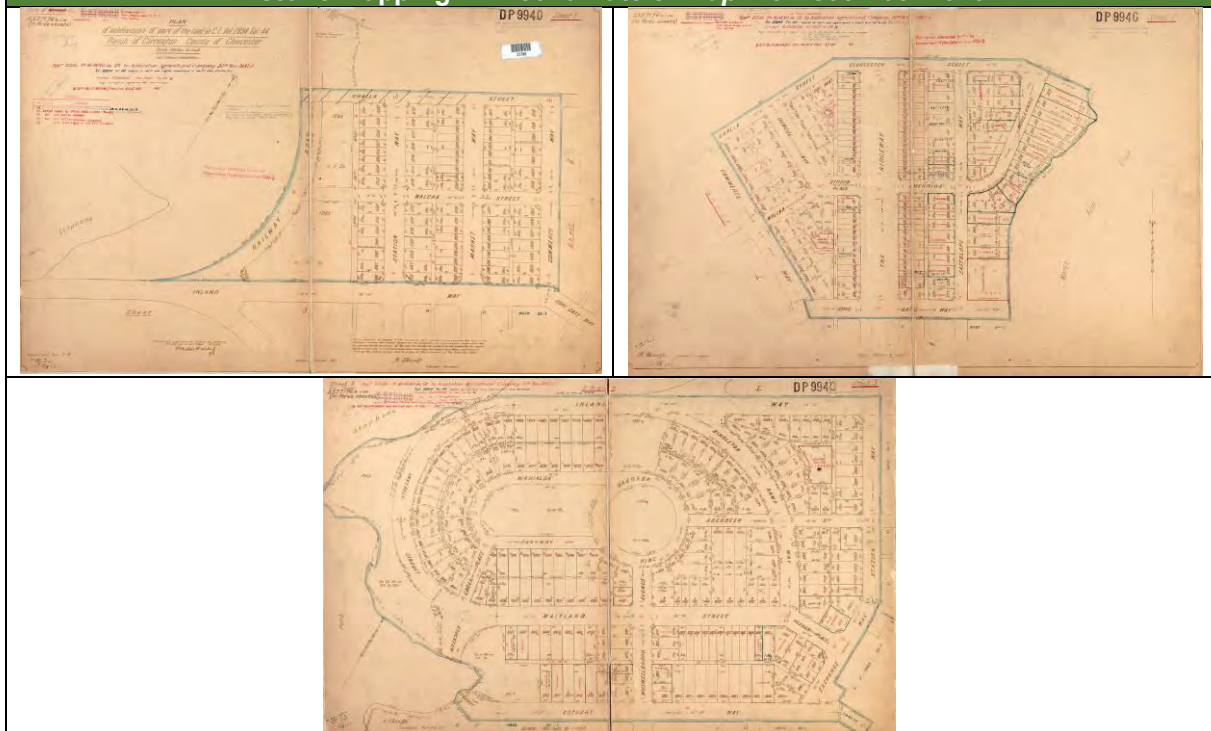
<sup>15</sup> [nla.obj-231550473-e \(1000x1798\)](https://nla.obj-231550473-e (1000x1798))



### Historic mapping - DP 9938 Date of maps: 23 December 1919



### Historic mapping - DP 9940 Date of map: 23 December 1919



### Historic mapping - DP 12276 Date of map: 15 September 1922

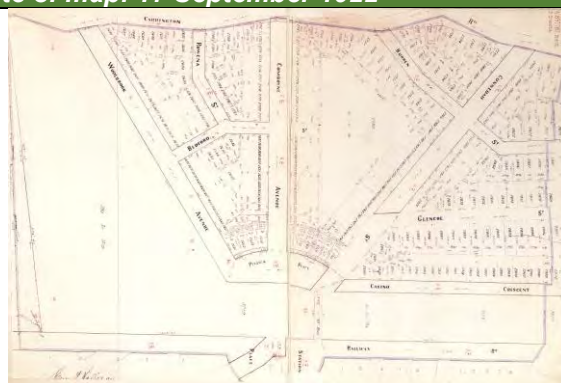


### Historic mapping - DP 12277 Date of map: 15 September 1922





### Historic mapping - DP 12275 Date of map: 17 September 1922



### Historic mapping - DP 13357 Date of map: 2 October 1922



DP 13357 – Port Stephens City Estate (Sheet 1)  
Date of map: 5 October 1922



DP 13357 – Port Stephens City Estate (Sheet 2)  
Date of map: 5 October 1922

### Historic mapping - DP 13358 Date of map: 5 October 1922



## Infrastructure

North Arm Cove is accessed by Carrington Road, Glen Innes Road, Glencoe Street, Market Street and The Ridgeway, only these roads provide constructed public road access to any properties in the paper subdivision or village. Remaining roads, including privately owned roads within the paper subdivision, are unconstructed and may consist of basic bush tracks.

North Arm Cove has no reticulated water or sewerage services.



## Ownership Pattern of Non-urban Land



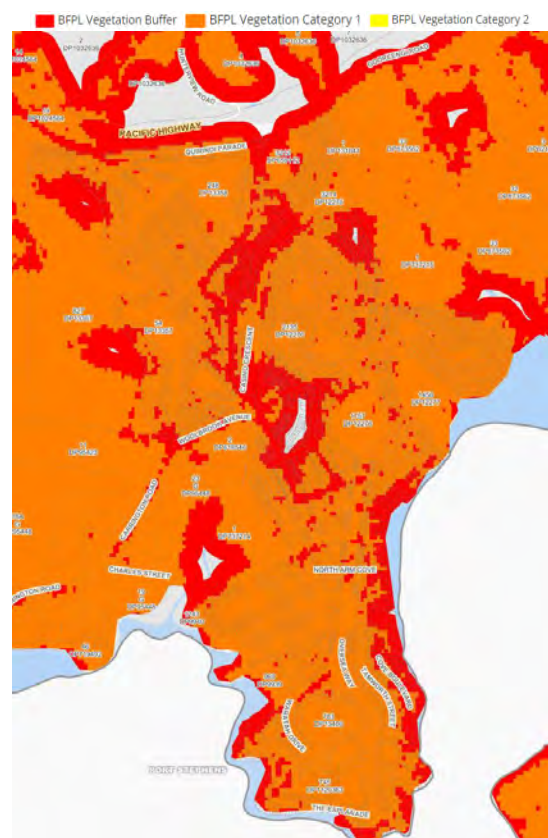
## Road Condition and Public land



## OSSM DAF Single Lot Hazard Classification

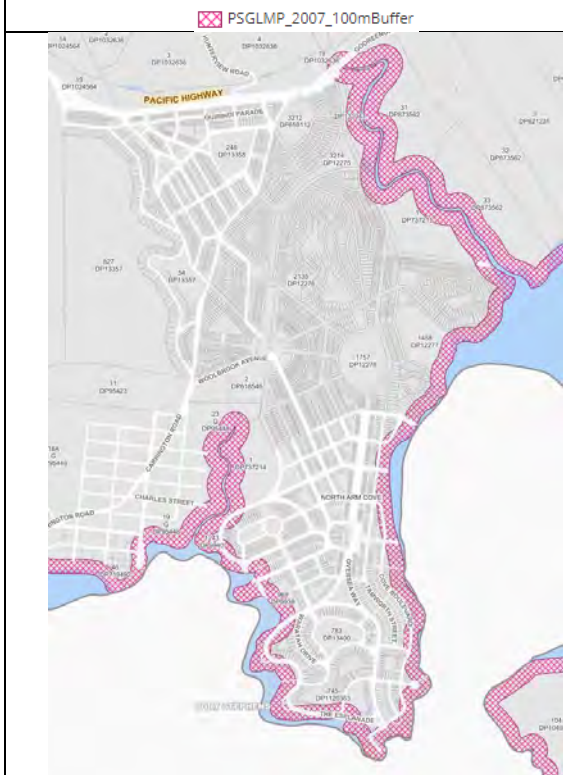


## Bushfire Prone Land Classification

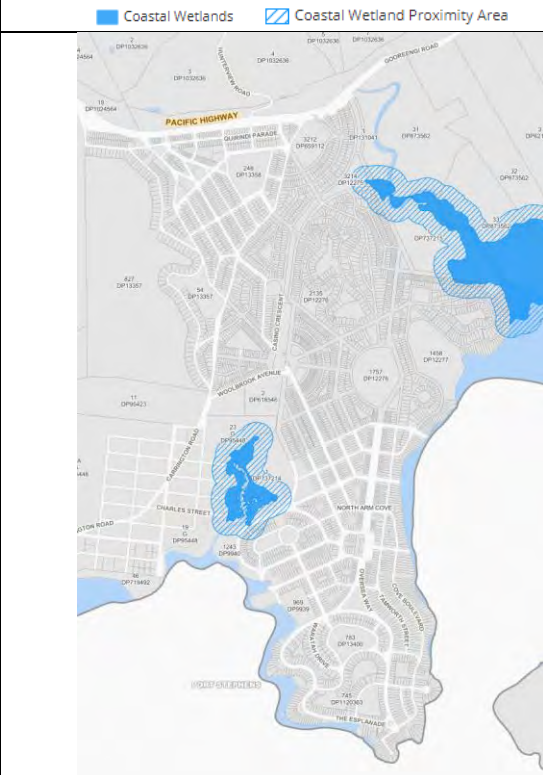




## Port Stephens-Great Lakes Marine Park



## Coastal Management SEPP - Wetlands



## Flood Prone Land (Great Lakes LEP 2014)



## Vegetation Cover (NearMaps 2020)



## Tenure and subdivision holding pattern

The paper subdivision of North Arm Cove has a highly fragmented pattern of ownership, with approximately 2,850 lots being owned by 2,550 separate owners, and most having a land area of less than two hectares. Most allotments, including larger holdings, do not have public or constructed access and are heavily vegetated.

Nearly 1000 original allotments in North Arm Cove have been transferred into Council ownership, with many already in an environmental zone, reflecting their environmental value. The Council ownership pattern is also, extremely fragmented.

## Constraints analysis

LOW	MEDIUM	HIGH
flooding or coastal hazards	Environmentally sensitive vegetation	Legal and constructed public road access
steep land of 18% (32 degrees)	Planning for Bushfire Protection	Configuration and ownership
		reticulated water and sewer services
		OSSM DAF mapping

## Recommendations

The paper subdivision of North Arm Cove has a **medium to high level of constraint**. Primarily these constraints relate to the number of allotments, **very high number of land owners**, lack of access to allotments, environmental constraints that would severely restrict development and on-site sewage management options. In addition, the single road access represents a significant issue relating to isolation and evacuation on bushfire prone land.

The limited development potential of North Arm Cove would be reliant on the provisions of the State Guidelines to achieve a Development Plan with appropriate consolidation and compensation mechanisms. It is therefore recommended that:

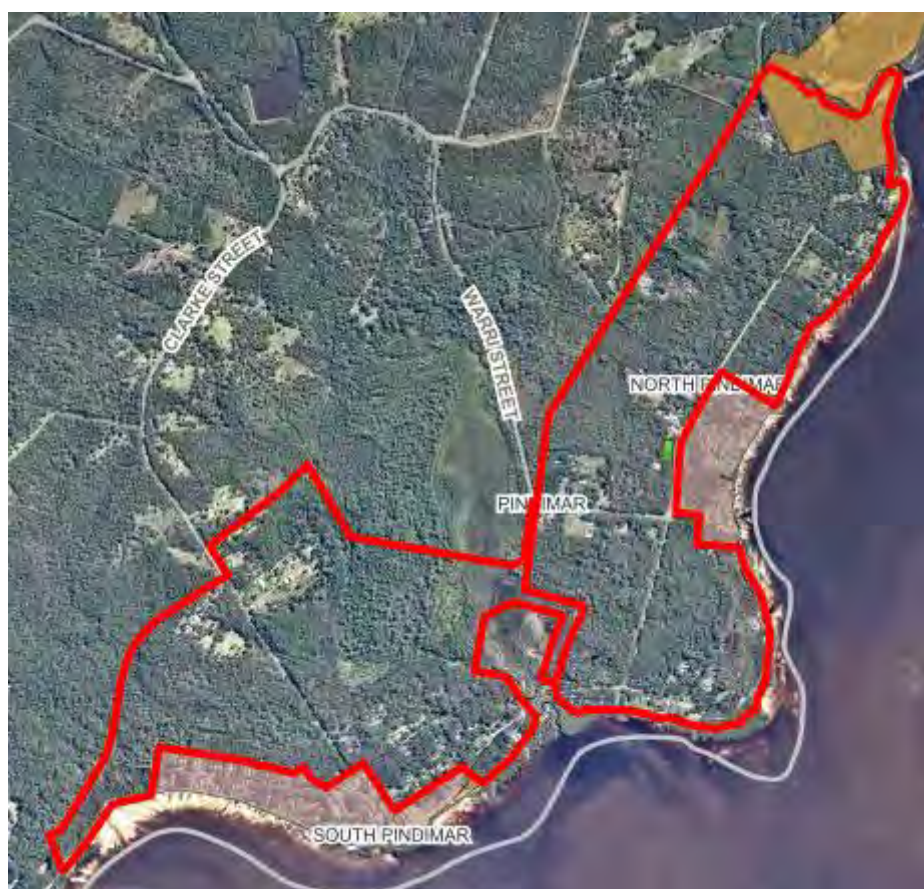
- the paper subdivision be identified in the local environmental plan with the requirement for any future development to be in accordance with the NSW Government Planning for Paper Subdivision Guidelines (2014);
- the land be nominated as an area unsuitable for development or occupation under the SEPP (Exempt & Complying Development) 2008;
- the land in Crown and Council ownership be identified in an appropriate environmental zone;
- land affected by coastal wetlands be rezoned E2 Environmental Conservation;
- remaining areas are to be allocated an E3 Environmental Management zone and minimum lot size of 20 hectares, to reflect the environmental constraints and management requirements.



## Pindimar

Paper Subdivision summary	
Deposited Plan Numbers	8287 & 10869
Number of lots	400 South Pindimar; 300 North Pindimar
Area	70ha South Pindimar; 200ha North Pindimar
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares

### Pindimar – Defined Paper Subdivision Extent



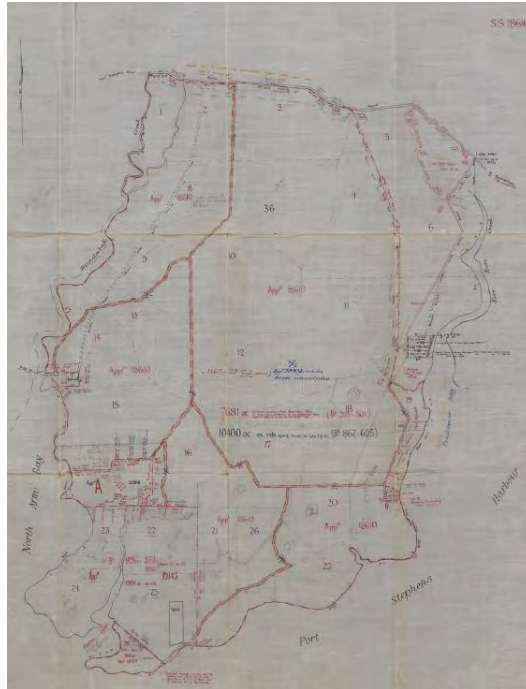
### Description and Context

Pindimar was originally identified as a section of a Primary Application land grant of 464,640 acres to the Australian Agricultural Company in 1847. Surveys exist for North Pindimar from December 1913 and South Pindimar from July 1920.

The Pindimar paper subdivision must therefore be considered as having two distinct parts, both are predominantly located in the RU2 Rural Landscape Zone, with a 40hectare minimum lot size under Great Lakes LEP 2014.

The grid pattern subdivisions do generally follow the orientation of the coastline. Lots range from 730 to 4,000 square metres, with larger lots in North Pindimar compared to South Pindimar.

## Pindimar - Historic mapping



*Primary Application 25311, Date of Map: 1847, being part of the 464,640 acre grant to the Australian Agricultural Company in 1847*

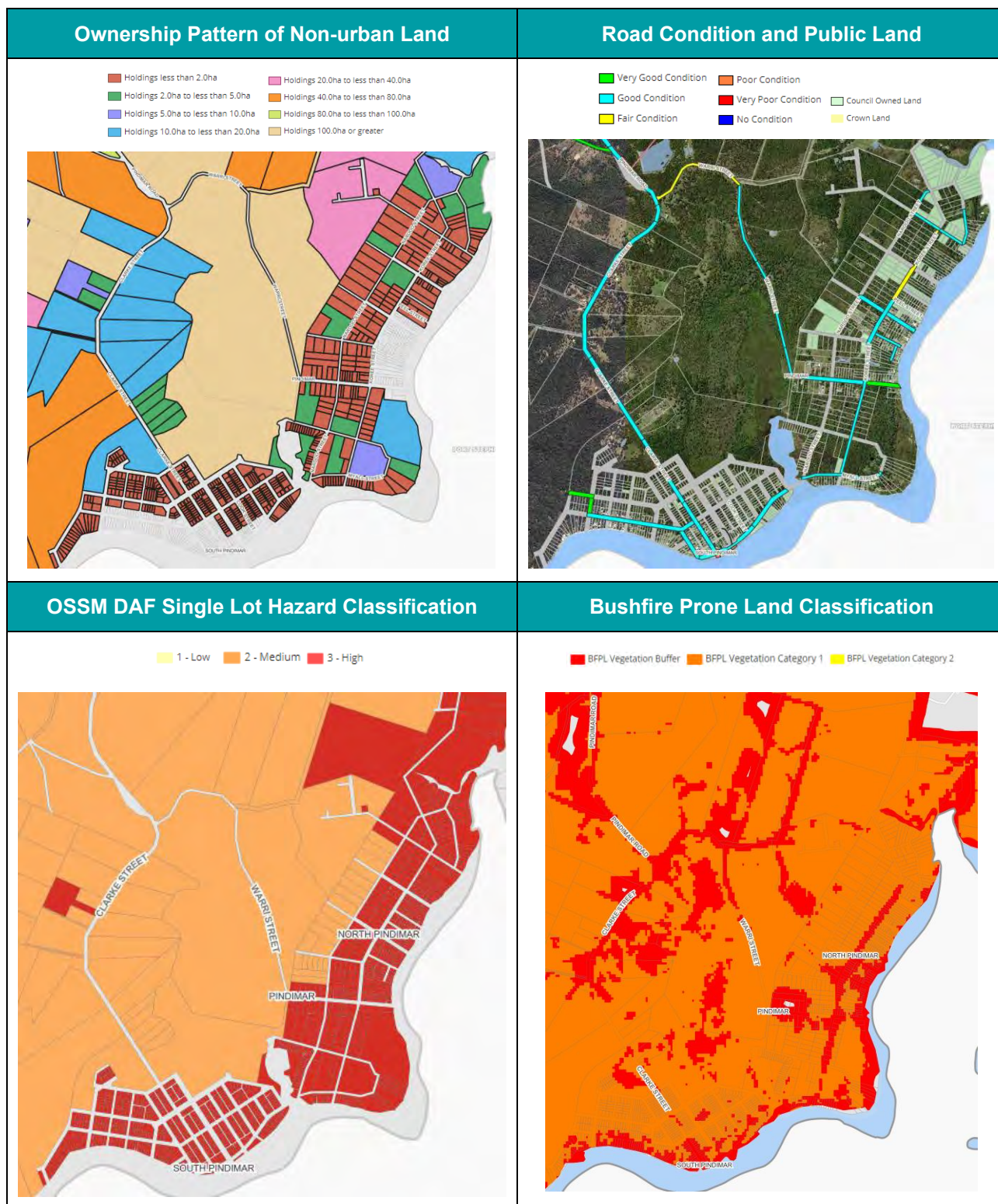


*South Pindimar DP 10869 (Sheets 1 & 2)  
Date of map: 15 July 1920*



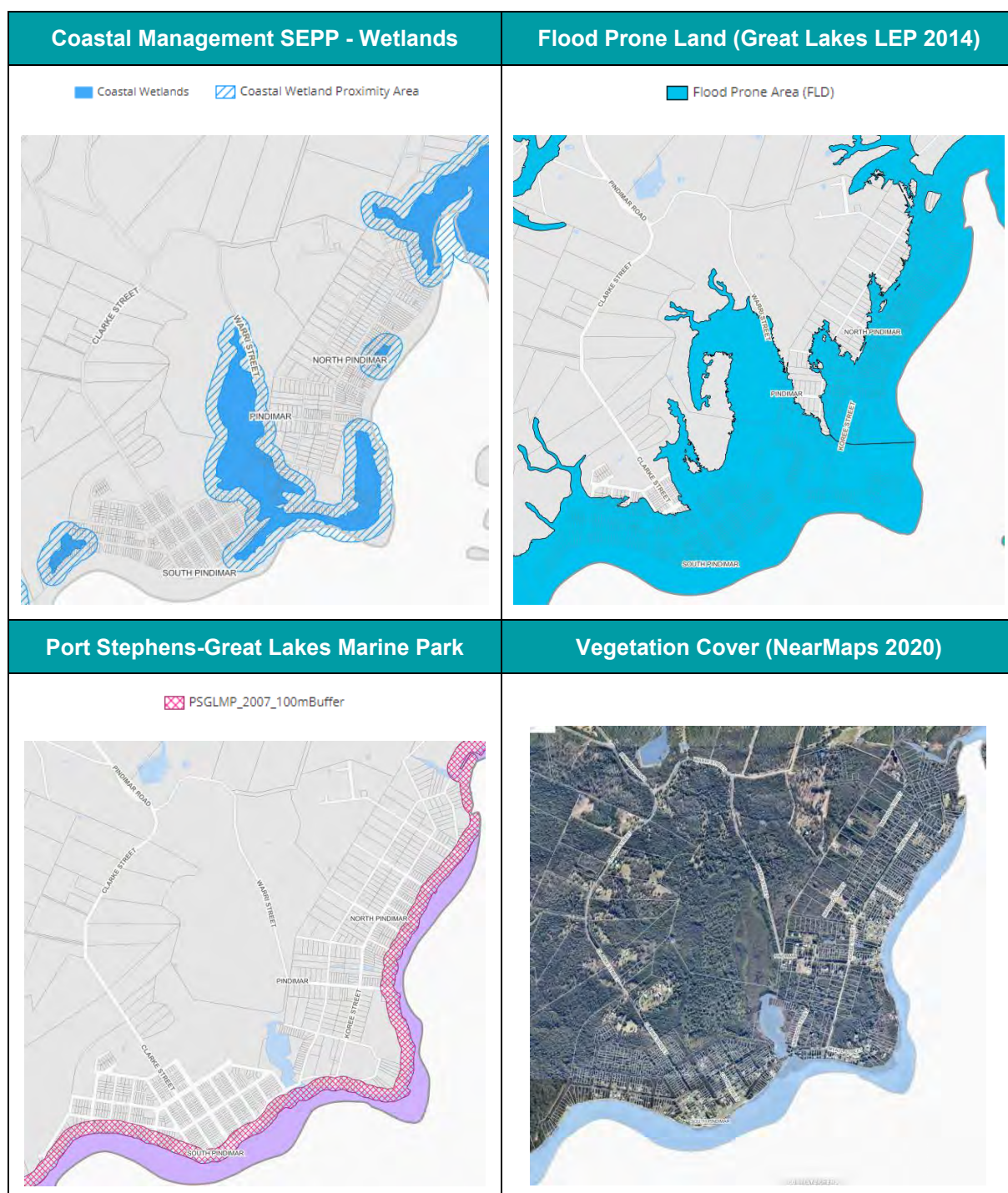
*North Pindimar DP 8287 (Sheets 1 & 2)  
Date of map: December 1913*





## Infrastructure

Pindimar Road, Clarke Street and Warri Street provide access to the sections of Pindimar. Only lots within the RU5 Village Zone have any constructed road access, with the remaining only consisting of unconstructed bush tracks. Pindimar has no reticulated water or sewerage services.



## Tenure and subdivision holding pattern

The paper subdivision extent of Pindimar has experienced minimal consolidation and has a high fragmentation of holdings with most lots having an area of less than two hectares.

Nearly 100 lots in Pindimar have been transferred to Council and some of these lots are already within an environmental zone, reflecting the constraints and environmental value of these areas.



### Constraints analysis – South Pindimar

LOW	MEDIUM	HIGH
steep land of 18% (32 degrees)	Environmentally sensitive vegetation	Legal and constructed public road access
		Configuration and ownership
		flooding or coastal hazards
		Planning for Bushfire Protection
		reticulated water and sewer services
		OSSM DAF mapping

### Recommendations

The paper subdivision extent of South Pindimar has **high constraints**, with limited access, **highly fragmented ownership**, significant areas of flood and bushfire prone land and sensitive coastal wetlands. These constraints severely restrict any opportunity for development and the provision of suitable on-site sewage disposal areas.

All public land in South Pindimar will be transitioned to the most appropriate environmental zone and any land affected by coastal wetlands will be included in the E2 Environmental Conservation zone. It is recommended that the South Pindimar paper subdivision be included in an E3 Environmental zone with a 40ha minimum lot size, to reflect the level of constraints that make this area unsuitable for development.

### Constraints analysis – North Pindimar

LOW	MEDIUM	HIGH
steep land of 18% (32 degrees)	Environmentally sensitive vegetation	Legal and constructed public road access
	flooding or coastal hazards	Configuration and ownership
		Planning for Bushfire Protection
		reticulated water and sewer services
		OSSM DAF mapping

### Recommendations

The Northern Pindimar paper subdivision is also affected, with limited access, **high fragmentation**, significant areas of flood and bushfire prone land and sensitive coastal wetlands, but to a **moderate to high** extent.

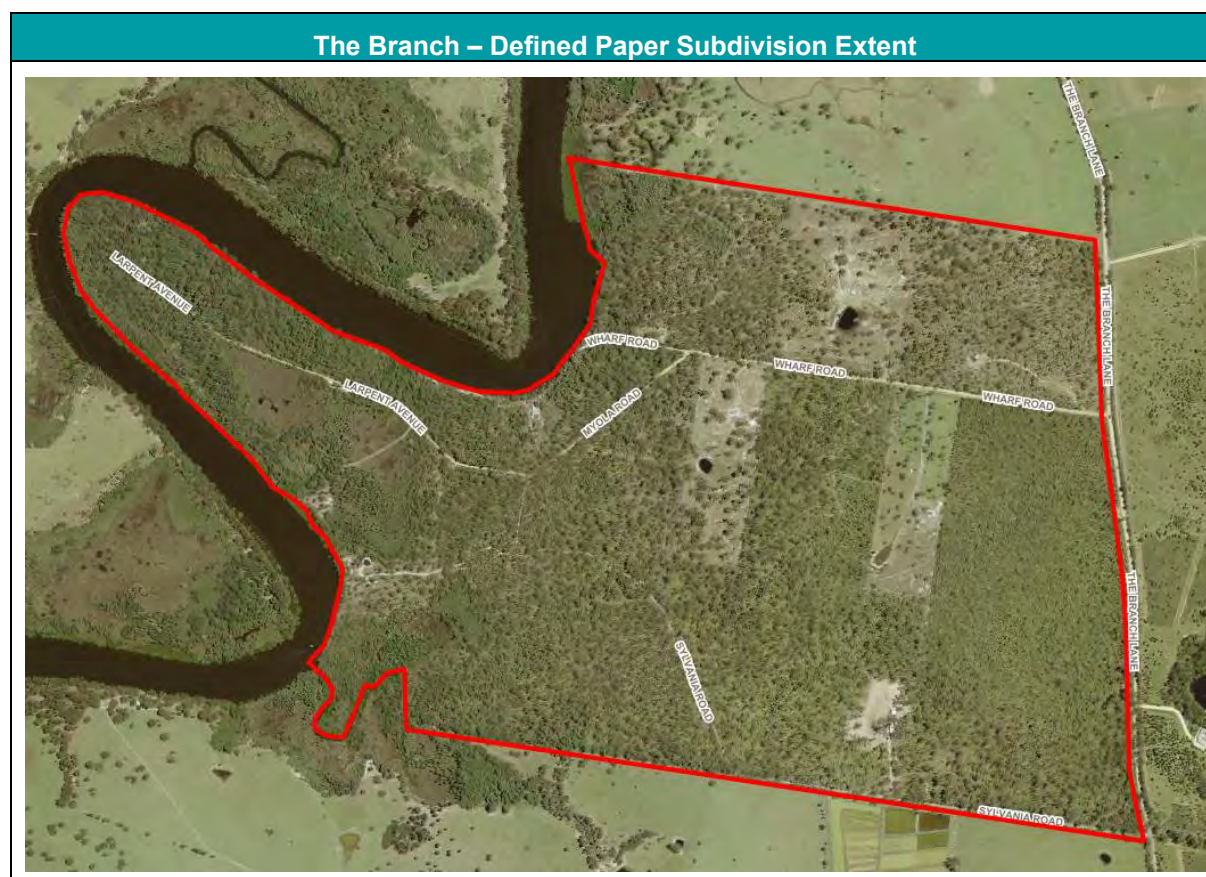
All public land in North Pindimar will be transitioned to the most appropriate environmental zone and any land affected by coastal wetlands will be included in the E2 Environmental Conservation zone.

The North Pindimar paper subdivision has limited development potential that is reliant on consolidation to achieve development and on-site sewage disposal areas outside the flood area. It is therefore recommended that:

- land in Crown and Council ownership be identified in an appropriate environmental zone;
- land affected by coastal wetlands be rezoned E2 Environmental Conservation;
- remaining areas are to be allocated an E3 Environmental Management Zone and minimum lot size of 20 hectares, to reflect the environmental constraints and management requirements;
- the paper subdivision area be identified in the local environmental plan and a local clause prepared, requiring consolidation and consideration of key criteria ensure any future allotments provide developable and on-site disposal areas outside of the flood planning area.

## The Branch

Paper Subdivision summary	
Deposited Plan Numbers	12013
Number of lots	125
Area	Approximately 140 hectares
Land Use Zone	RU2 Rural Landscape (GL LEP 2014)
Minimum Lot Size for Dwelling Entitlement	40 hectares



### Description and Context

The Branch paper subdivision is located on the eastern side of The Branch River and accessed via The Branch Lane which connects Booral Road to the Pacific Highway.

The grid pattern subdivision extends from The Branch Lane along Larpent Avenue into a peninsula of The Branch River. The allotments on the peninsula consist of low-lying swamp and identified coastal wetlands. The lot sizes ranges from 2,000 in the peninsula to over 4,500 square metres towards The Branch Lane.

### Infrastructure

The Branch is only accessible via The Branch Lane. Wharf Road, Sylvania Street, Myola Road and Larpent Avenue are not maintained by Council and are unconstructed basic bush tracks.

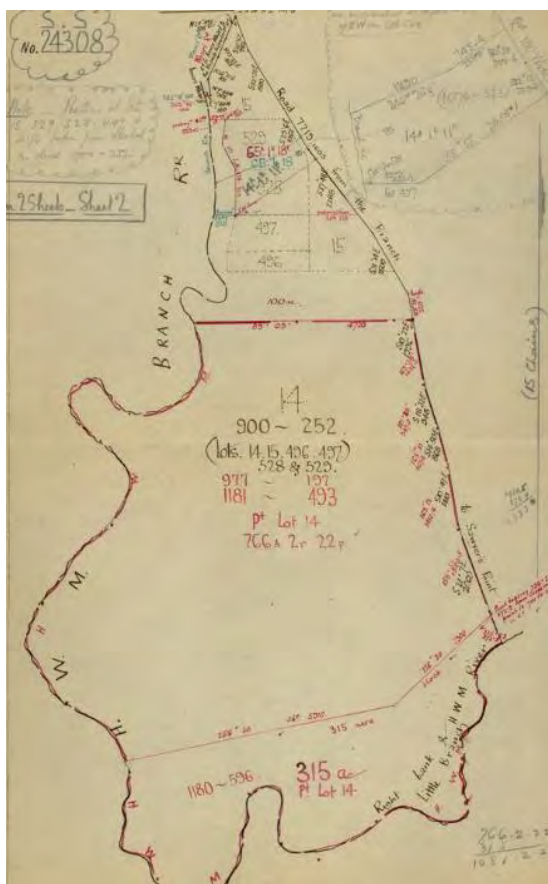
The Branch does not have reticulated water or sewerage services.

## Tenure and subdivision holding pattern

The paper subdivision has experienced minimal consolidation or development as a result of its isolated location and environmental constraints.

Over 95 lots in The Branch have transitioned to Council ownership and are identified as suitable for an E2 Environmental Conservation zone due to the extent of coastal wetlands in this location. There are less than 30 privately owned lots in The Branch, many with site areas of less than two hectares, in coastal wetlands and flood affected.

### The Branch - Historic Mapping

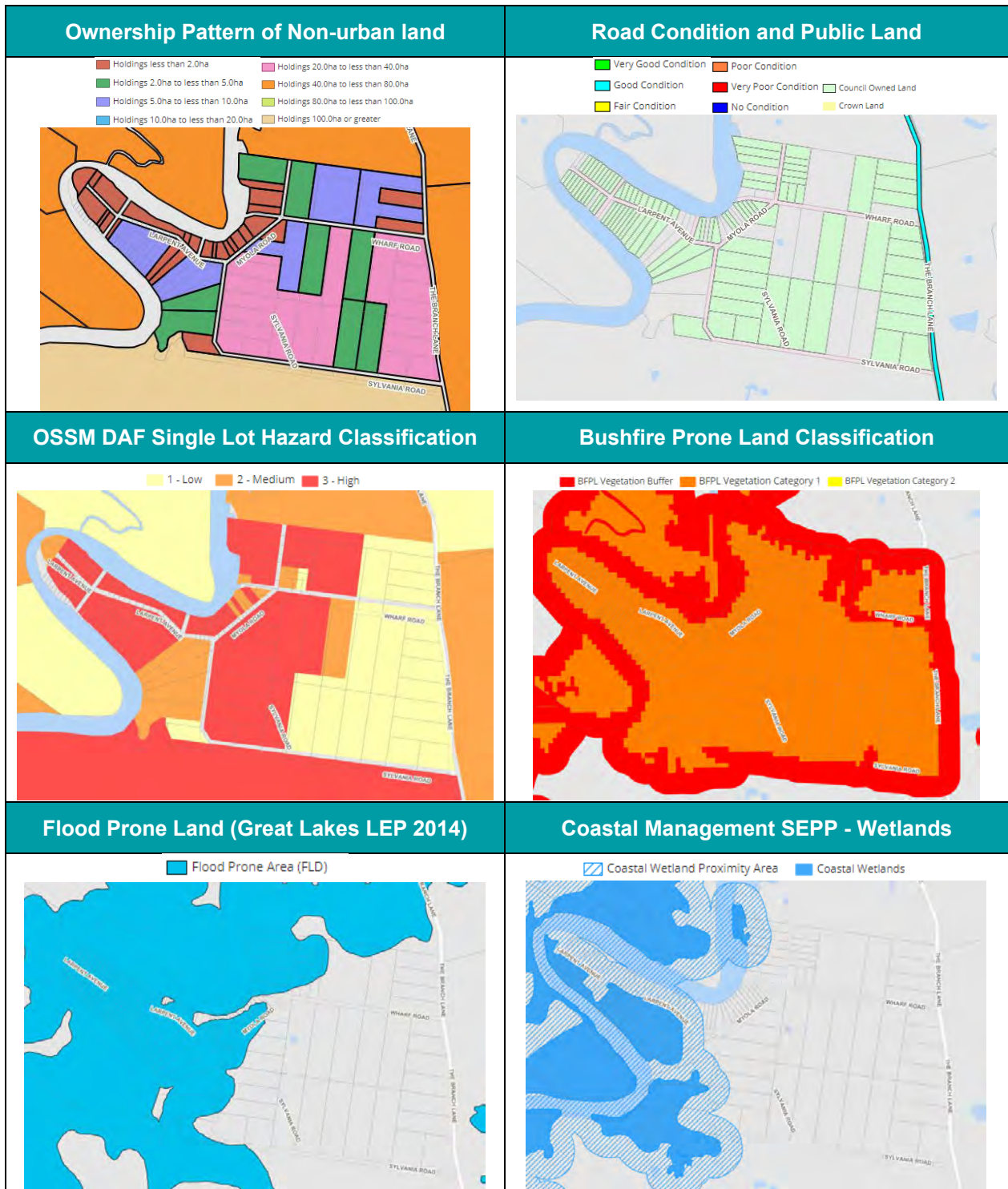


*Primary Application 24308 being part of the 464,640 acre grant to the Australian Agricultural Company in 1847*



*DP 12013 – The Branch (Sheets 1, 2 and 3)  
Date of map: 23 February 1923*





## Constraints analysis

LOW	MEDIUM	HIGH
steep land of 18% (32 degrees)	Configuration and ownership	flooding or coastal hazards
		Environmentally sensitive vegetation
		Legal and constructed public road access
		Planning for Bushfire Protection
		reticulated water and sewer services
		OSSM DAF mapping

## Recommendations


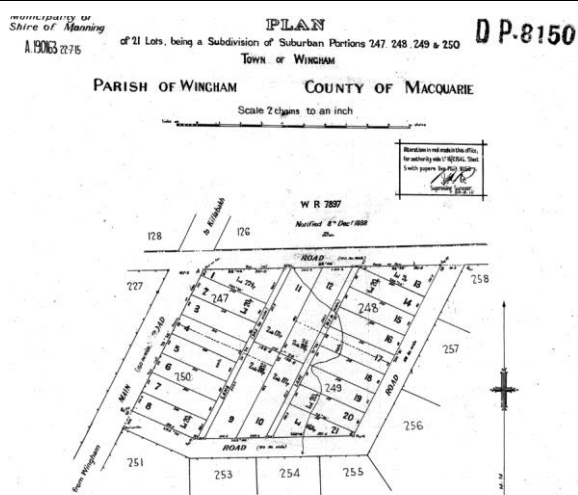
The Branch paper subdivision is **highly constrained**. Large parts of the paper subdivision contain or are buffers to sensitive coastal wetlands, are bushfire prone, and have limited vehicular access. There are significant restrictions of developable land due to land application areas for on-site sewerage management.

However, it is noted that there are a limited number of existing allotments over 4 hectares in size with existing dwellings. This level of development, coupled with the **extensive areas of Council owned** and environmentally constrained lands, makes additional development in this location unlikely. Therefore, it is considered unnecessary to identify The Branch paper subdivision in the local environmental plan, instead:

- the land in Council ownership is to be identified in an appropriate environmental zone;
- land affected by coastal wetlands is to be rezoned E2 Environmental Conservation;
- those allotments with existing dwellings and access from Wharf and Sylvania Roads, having an area of approximately 4 hectares, are to be included in an E4 Environmental Living zone, with a minimum lot size of 10 hectares, to reflect the environmental constraints and management requirements in this location.

## Wingham North (Rifle Range Road)

Paper Subdivision summary	
Deposited Plan Numbers	DP 8150
Number of lots	21
Area	4 hectares
Land Use Zone	RU1 Primary Production (GT LEP 2010)
Minimum Lot Size for Dwelling Entitlement	40 hectares

Wingham North – Paper Subdivision Extent	Wingham North – Historic mapping
	 <p><b>DP 8150</b></p> <p><i>DP 8150 Date of map: 21 June 1915</i></p>

### Description and Context

The Wingham North paper subdivision, in the RU1 Primary Production Zone, is located on the south-eastern corner of Comboyne Road and Rifle Range Road, on the northern fringe of Wingham. The subdivision lot sizes range from 1,500 to 2,300 square metres

### Infrastructure

North Wingham is accessible via Comboyne Road. All other roads, including Rifle Range Road are not maintained by Council.

Wingham North has access to water services but not reticulated sewerage.

### Tenure and subdivision holding pattern

The paper subdivision of Wingham North has experienced limited fragmentation, with all lots being held in two holdings.







### Constraints analysis

LOW	MEDIUM	HIGH
Configuration and ownership	Legal and constructed public road access	flooding or coastal hazards
steep land of 18% (32 degrees)	reticulated water and sewer services	
Environmentally sensitive vegetation	OSSM DAF mapping	
Planning for Bushfire Protection		

### Recommendations

The paper subdivision extent of Wingham North has a small area and is ***moderately constrained***, with a significant section affected by flooding from Cedar Party Creek.

The paper subdivision therefore has limited development potential that is reliant on consolidation to achieve development and on-site sewage disposal areas outside the flood area. It is therefore recommended that:

- the area is included in the an E3 Environmental Management Zone with a minimum lot size of 10 hectares, to reflect the environmental constraints and management requirements;
- the paper subdivision area be identified in the local environmental plan and a local clause prepared, requiring consolidation and consideration of key criteria ensure any future development and on-site sewage disposal areas are located outside of the flood planning area.

## 6 References

NSW Department of Planning (2009), Mid North Coast Regional Strategy. Available: <https://www.planning.nsw.gov.au/-/media/Files/DPE/Strategy-documents/mid-north-coast-regional-strategy-2006-to-2031-2009-03.ashx>.

NSW Department of Planning and Environment (2016), Hunter Regional Plan 2036. Available: <https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/hunter-regional-plan-2036-2016-10-18.pdf>.

NSW Department of Planning and Infrastructure (2014), Planning for Paper Subdivisions Guidelines. Available: <https://www.landcom.com.au/assets/Projects/Riverstone/Publications/PaperSubdivisions-Guideline-1.pdf>.

NSW Department of Premier and Cabinet (2018), A 20-Year Economic Vision for Regional NSW. Available: <https://www.nsw.gov.au/improving-nsw/regional-nsw/a-20-year-economic-vision-for-regional-nsw/>.



© Crown copyright 2014

Department of Planning and Environment

23-33 Bridge Street

Sydney, NSW, Australia 2000

[www.planning.nsw.gov.au](http://www.planning.nsw.gov.au)

Disclaimer: While every reasonable effort has been made to ensure that this document is correct at the time of printing, the State of New South Wales, its agents and employees, disclaim any and all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

ISBN 978-0-7313-3583-1

© State of New South Wales through Department of Planning and Environment, 2014



## CONTENTS

1. INTRODUCTION .....	1
2. WHAT ARE PAPER SUBDIVISIONS? .....	1
3. PAPER SUBDIVISIONS LEGISLATIVE PROVISIONS .....	2
3.1 Subdivision Orders and the relevant authority .....	2
3.2 Making a Subdivision Order .....	3
4. PREPARATION OF DEVELOPMENT PLANS .....	5
4.1 Decision to prepare a Development Plan .....	5
4.2 Advising the Minister of a decision to prepare a Development Plan .....	5
4.3 Content of a Development Plan .....	6
4.4 Preliminary consultation with land owners .....	6
4.5 Rules disapplying or modifying certain requirements of Land Acquisition (Just Terms Compensation) Act 1991 (NSW) .....	7
4.6 Notice of proposal to adopt a Development Plan and consent ballot .....	7
4.7 Adoption of a Development Plan .....	8
4.8 Amendment of a Development Plan .....	8
5. THE CONSENT BALLOT .....	9
5.1 Purpose of the consent ballot .....	9
5.2 Requirements of the Act and Regulation and best practice .....	10
6. ACCOUNTING ISSUES .....	11
6.1 Accounts that should be kept .....	11
6.2 Distribution of surplus funds after implementation of Development Plan .....	12
6.3 Some additional considerations .....	12
APPENDIX A: DEFINITIONS .....	14
APPENDIX B: DEVELOPMENT PLAN PROCESS DIAGRAMS .....	16
APPENDIX C: CHECK VOTE COUNTING METHOD .....	18
APPENDIX D: EXAMPLE BALLOT PAPER .....	21

# 1. INTRODUCTION

The *Planning for Paper Subdivisions Guidelines* ('the guidelines') are intended to assist stakeholders involved in the development of land held in paper subdivisions, using the process set out in Schedule 5 to the *Environmental Planning and Assessment Act 1979* NSW ('the EP&A Act').

The provisions in Schedule 5 to the EP&A Act establish a mechanism to overcome longstanding barriers to realise the development potential of paper subdivisions. The mechanism will be of use primarily where land has been zoned or is subject to a planning proposal under the EP&A Act to enable development, but where fragmented ownership and owners' lack of funding and development expertise make the development process difficult.

The use of this mechanism will only be appropriate in certain circumstances: where the land is held as a paper subdivision and it has been demonstrated to have development potential by an environmental planning instrument or planning proposal which facilitates development. The mechanism does not change the process required to rezone land or the merit assessment process for rezoning and development assessment of subdivision and construction development applications.

The guidelines should be read together with Schedule 5 to the EP&A Act and Part 16C (Paper Subdivisions) of the *Environmental Planning and Assessment Regulation 2000* ('the Regulation') which are available at [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au)

The guidelines outline the following key issues:

- **What** are paper subdivisions.
- **Legislative provisions** for paper subdivisions.
- **Development plans** including guidance on preparation, content, adoption and amendment.
- **Ballot procedures**.
- **Accounting practices**, including the administration, collection and use of funds for a development plan.
- **Key acronyms** and definitions.

## 2. WHAT ARE PAPER SUBDIVISIONS?

'Paper subdivisions' denotes land comprising lots that have recognition only on paper and, in most cases, with no formed roads, drainage, reticulated water, sewer or electricity. Most paper subdivisions have existed for many years, some originating as long ago as the late 1800s or early 1900s. The land is likely to be largely undeveloped, often with little or no development potential under existing land use zonings. Lots typically range in size from 200m<sup>2</sup> to 20,000m<sup>2</sup> and are usually held in separate titles by multiple land owners.

Locations of paper subdivisions in NSW include:

- Riverstone and Marsden Park – in Blacktown City Local Government Area (LGA);
- Parts of Jervis Bay – Shoalhaven LGA; and
- South Buttaba Hills Estate – Lake Macquarie LGA.

Land use zoning and a lack of services have often prevented or limited development of paper subdivision land. However, land owners may have the expectation that, over time, their land will be rezoned for residential development. They may also assume that the infrastructure to facilitate rezoning and housing construction will be funded by government.

Normally, for land to become available for development, it needs to be appropriately zoned with a plan of subdivision and details of necessary infrastructure and subdivision works in place, and infrastructure and associated works funded and programmed for provision. For new development proposals, this work is normally coordinated by, or on behalf of land owners. The main difficulty in achieving the development of paper subdivisions is the large and diverse number of land owners involved who frequently have limited development expertise and access to funding to re-subdivide land to meet current subdivision standards.

The provisions in the EP&A Act and Regulation dealing with paper subdivisions have been introduced to provide a potential mechanism to help overcome these barriers to development.

### **3. PAPER SUBDIVISIONS LEGISLATIVE PROVISIONS**

Schedule 5 to the EP&A Act and the supporting provisions in the Regulation set out a mechanism which may be used for paper subdivision land. The current legislation can be viewed at the New South Wales Government NSW Legislation website at <http://www.legislation.nsw.gov.au>

#### **3.1 Subdivision Orders and the relevant authority**

The provisions in the EP&A Act provide a mechanism for the Minister for Planning ('the Minister') to make a Subdivision Order. The Subdivision Order confers upon an authority specified functions to enable it to implement a Development Plan for land held in a paper subdivision.

Under clause 2, Schedule 5 to the EP&A Act, the Minister may designate in a Subdivision Order any of the following authorities as the relevant authority for the subdivision land:

- the corporation (meaning the corporation sole established under section 8 of the EP&A Act), or
- a local council, or
- UrbanGrowth NSW, or
- a development corporation established under the *Growth Centres (Development Corporations) Act 1974 NSW*, or
- any other body prescribed by the Regulation (Note: Currently, none are prescribed).

A Subdivision Order can empower the authority to manage the development and resubdivision of the land. Where the land can be developed using the existing lot pattern, a Subdivision Order will not normally be necessary or available.

### 3.2 Making a Subdivision Order

There are several key requirements, set out in clause 3(2) Schedule 5 to the EP&A Act, that must be met before the Minister may make a Subdivision Order, including the following:

- The land must be the subject of an environmental planning instrument or planning proposal that will facilitate the proposed planning purpose.
- A Development Plan must have been prepared for the land and contain matters specified in clause 6 of Schedule 5 of the EP&A Act.
- At least 60% of the land owners, and the owners of at least 60% of the total area of land the subject of the Subdivision Order, must have consented to the Development Plan.

An authority may request the Minister to make a Subdivision Order. A submission to the Minister requesting the making of a Subdivision Order should provide the following details:

- Title particulars of the subject land.
- Any studies prepared to inform the planning purpose and the development plan.
- Details of the planning purpose.
- Consultation with land owners and the local council.
- Reasons why the land cannot be developed for the planning purpose using the existing lot pattern.

The Minister will consider the following matters in making a Subdivision Order:

- The planning purpose.
- Details of the functions sought to be conferred and how they relate to the planning purpose.
- Proposed subdivision works to be undertaken by the relevant authority.
- Any conditions proposed to be attached to the exercise of the functions.
- Whether and how the planning purpose will promote and co-ordinate the orderly and economic use and development of the land.
- Whether the land has been subdivided and is held by more than one owner.
- Whether there is currently no or inadequate provision for subdivision works.
- Particulars of the environmental planning instrument or planning proposal applicable to the land and how it will facilitate the proposed planning purpose.
- Consultation undertaken with the relevant council.
- Details of a development plan prepared for the land.
- Any provisions of the development plan that modify or disapply the provisions of Division 4 of Part 3 of the [\*Land Acquisition \(Just Terms Compensation\) Act 1991\*](#).
- Whether the requisite land owners' consents to the proposed development plan have been obtained.

The functions that may be conferred on an authority by a Subdivision Order may include powers to:

- Carry out subdivision works.
- Enter and deal with land (including to acquire land by agreement or compulsory process, or to dispose of land).
- Require payment of contributions.

The Regulation includes provisions for:

- The preparation, notification, adoption and amendment of Development Plans.
- Conducting ballots to seek land owners' consent to a proposed Development Plan.



- Reporting requirements to the Minister and councils.
- Information to be specified on planning certificates.

The Minister's issue of a Subdivision Order does not affect any other legal requirement to lodge a Development Application (DA) and obtain development consent under the EP&A Act for development of the land, or for the land to be rezoned to enable the development to proceed. Applicants need to address relevant environmental assessment matters under the EP&A Act through the rezoning and DA process, for example, biodiversity, bush fire, flooding, heritage, contamination, and compliance with relevant Commonwealth, State and local planning controls.

The following case study (source: UrbanGrowth NSW) of the Riverstone Scheduled Lands and UrbanGrowth NSW highlights the difficulties of ownership and development of paper subdivision land, and the potential benefits of the guidelines and associated legislative provisions.

#### **Case Study: Riverstone Scheduled Lands and UrbanGrowth NSW**

The Riverstone Scheduled Lands ('the scheduled lands') were originally subdivided in the late 19th century in a terrace style grid pattern following the establishment of the railway line to Richmond. Each lot is about 550 square metres, about 9 metres wide and 61 metres deep. The area was subdivided to support the Riverstone meat works.

Until the gazettal of the *County of Cumberland Planning Scheme* (June, 1951), there were no planning controls applicable to the area. Under the County of Cumberland Planning Scheme, the land was zoned for rural use and required a minimum area of 5 acres (2 hectares) for dwelling construction.

On 17 May 2010, the NSW Government finalised the rezoning of the Riverstone Precinct of the North West Growth Centre by amending *State Environmental Planning Policy (Sydney Region Growth Centres) 2006*.

As a result, the majority of land within the precinct, including the scheduled lands in Riverstone and Vineyard, has been rezoned from general rural purposes to permit future urban development. The new zonings mean that Blacktown City Council can consider Development Applications for subdivision and housing, subject to the availability of urban services such as water, sewer and electricity.

A new Development Control Plan for the precinct, *Blacktown City Council Growth Centre Precincts Development Control Plan 2010*, was adopted by Planning and Infrastructure and came into effect on 19 May 2010.

An estimated 550 land owners share ownership of almost 3,600 narrow and small lots at Riverstone – creating a challenging task to plan and deliver services to develop the area. Although most of the scheduled lands have been rezoned to allow residential development, land owners face challenges before being able to build, including:

- The land ownership pattern is fragmented, making the coordination of urban infrastructure difficult. Orderly development of the area is unlikely to occur unless a large number of land owners work together to develop and build.
- Many of the existing lots are too narrow to accommodate standard homes.
- The area is mainly unserviced, without infrastructure such as water, sewer, underground electricity and urban roads needed for a new community.

UrbanGrowth NSW is working with local land owners to enable the development of a new residential community for the scheduled lands. Although UrbanGrowth NSW is not a landowner, it is acting as development manager to master plan and assist with the future development of the scheduled lands. UrbanGrowth NSW is working with the local landowner group, Planning and Infrastructure and Blacktown City Council to identify a model to facilitate the coordinated and viable development of the scheduled lands.

## 4. PREPARATION OF DEVELOPMENT PLANS

### 4.1 *Decision to prepare a Development Plan*

Under clause 6(1) of Schedule 5 to the EP&A Act a relevant authority must prepare a Development Plan for subdivision land or proposed subdivision land if requested to do so by the Minister or, may of its own initiative, decide to prepare a Development Plan.

The Regulation requires that:

- When an authority decides to prepare a Development Plan on its own initiative, it must give the Minister written notice of the decision (clause 268ZA(1)).
- When an authority decides to prepare a Development Plan, it must consult with any public authorities likely to be affected by the proposed Development Plan and the local council(s) for the area in which the land is situated (clause 268ZA(2)).
- The authority must consider any submissions made by public authorities when it prepares the Development Plan (clause 268ZA(3)).

**Figure 1** at **Appendix B** illustrates the process for preparing a Development Plan.

### 4.2 *Advising the Minister of a decision to prepare a Development Plan*

An authority is to provide the following information in its written notice to the Minister of its decision to prepare a Development Plan:

- Land to which the proposed Development Plan will relate.
- History of use of the land.
- Current use(s) of the land and a brief description of any improvements on the land.
- Proposed future uses.
- What (if any) services (e.g. reticulated water, sewerage, electricity etc) are available for the land.
- Any environmental planning instrument or planning proposal currently applying or proposed to apply to the land.
- Existing subdivision pattern of the land, total number of land owners, and how many (if any) existing lots are owned by a public authority.
- Types and extent of subdivision works expected to be required and (if possible) indicative costs for those works.
- The outcome of any preliminary consultation with land owners and occupants
- Indicative timetable for preparation of a Development Plan.

### ***Development Plans – adoption timing in relation to Subdivision Orders***

The Minister, in making a Subdivision Order (see section 3.2 above) will consider whether a Development Plan has been prepared for the land by the relevant authority (clause 3(2)(e) of Schedule 5 to the EP&A Act).

The relevant authority is responsible for preparing and adopting a Development Plan (clause 268ZJ Regulation and clause 6(1) of Schedule 5 to EP&A Act). A Development Plan is likely to be at the point of adoption (that is, still a draft if approved by landowners) when the relevant authority requests the Minister to make a Subdivision Order.

### **4.3 Content of a Development Plan**

The content of a Development Plan may vary depending on the authority proposing to implement it and the needs of the land to which it relates. Nonetheless, clause 6, Schedule 5 to the EP&A Act outlines the following requirements for a Development Plan:

- Proposed plan of subdivision for the land.
- Details of subdivision works to be undertaken for the land.
- Details of the costs of the subdivision works and the proposed means of funding those works.
- Details of development plan costs.
- Details of the proportion of costs to be borne by owners of the land and the manner in which the owners may meet those costs, (including details of any proposed voluntary land trading scheme, or voluntary contributions or, if voluntary measures are not agreed to by owners, of compulsory land acquisition or compulsory contributions).
- Rules as to the form of compensation for land that is compulsorily acquired and how entitlement to compensation is to be calculated.
- Rules as to the distribution of any surplus funds after the completion of subdivision works for the land.
- Any other matters prescribed by the Regulation.

The Regulation (clause 268Z) also requires that the Development Plan include:

- The land value of the land as determined by the Valuer-General under the *Valuation of Land Act 1916*.
- If the development is to be staged, a description of the proposed stages.
- A proposed time table for subdivision of the land and the carrying out of subdivision works.

In respect of proposed future uses of the land, it is recommended that the relevant authority considers key assessment issues for future DAs for the land when preparing the Development Plan.

### **4.4 Preliminary consultation with land owners**

An authority that proposes, or is requested by the Minister, to prepare a Development Plan, should undertake preliminary consultation with the owners of paper subdivision land to which the Plan will apply as early as possible.

As a minimum, an authority should provide the following information to the land owners:

- What the paper subdivision legislation does and expected benefits of making a Subdivision Order and a Development Plan for the land.
- Roles of the relevant authority and land owners in the process.
- Estimated timeframes for preparing and implementing a Development Plan.
- Means of funding proposed subdivision works.
- Amounts to be paid by land owners.
- Timing of payments and possible mechanisms to compel payment.

The authority may consider providing land owners with conceptual alternatives for subdivision, including a preferred concept for the proposed subdivision land, to explain the implications of the proposed Development Plan and seek land owners' support. Any concepts should address and explain the environmental, hazard and urban design factors influencing the proposed subdivision design.

The authority should inform land owners of the environmental planning instrument or planning proposal applying to, or proposed to apply to the land, to facilitate the proposed planning purpose. Contact details for the local council or any other body responsible for the instrument or planning proposal should also be provided.

Where possible, the authority should conduct face-to-face meetings with land owners to discuss relevant matters. It is also important to remember that land owners may live some distance from the land. Owners should be given adequate time after meetings to provide feedback to the authority on the subdivision concepts, proposals for subdivision works and potential funding mechanisms for those works.

#### **4.5 Rules disapplying or modifying certain requirements of Land Acquisition (Just Terms Compensation) Act 1991 (NSW)**

Clause 7(4) Schedule 5 to the EP&A Act allows the rules in a Development Plan in respect of land acquisition powers to provide that any or all of the provisions of Division 4 of Part 3 of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) ('the Just Terms Act') do not apply to the determination of compensation under a Development Plan, or apply with modification as set out in the Development Plan.

This will enable a Development Plan to allow for the possibility of non-monetary compensation to a land owner for the compulsory acquisition of subdivision land (such as works-in-kind or other benefits accruing to other land held by the land owner) in lieu of monetary compensation only under the Just Terms Act. If the rules in a Development Plan provide for non-monetary compensation, the authority should explain how the relevant rules may affect the land owners' interests.

If the rules in a Development Plan disapply or modify application of the Just Terms Act, those rules must apply fairly to all land owners and be comprehensive enough to replace the relevant provisions of the Just Terms Act. The rules will need to identify the forms of compensation which may be provided (such as works in-kind or other benefits accruing to land held by the land owner) and the method of calculation of compensation.

It is important to note that the provisions of the Just Terms Act will be varied only if the Minister makes a Subdivision Order. In making a Subdivision Order, the Minister is specifically obliged to consider any provisions of the Development Plan that modify or disapply the provisions of Division 4 of Part 3 of the Just Terms Act (clause 3(2)(f) of Schedule 5 to the EP&A Act).

An authority may also consider the following when proposing rules that disapply or modify application of (part or the whole of) Division 4 of Part 3 of the Just Terms Act:

- How private agreements for acquiring land will be negotiated.
- How a voluntary land trading scheme may operate under the Development Plan.

#### **4.6 Notice of proposal to adopt a Development Plan and consent ballot**

If an authority proposes to adopt a Development Plan, the Regulation (clause 268ZB) requires that it must:

- Give a minimum 14 days notice before ballot papers are issued for the consent ballot.
- Publish a notice in a local newspaper and a daily newspaper circulating generally in NSW.
- Give written notice to the local council and display a notice on or in the vicinity of the land to which the Development Plan will apply, for not less than 28 days before the ballot closes.



- Make the proposed Development Plan publicly available.

#### **4.7 Adoption of a Development Plan**

Clause 268ZJ of the Regulation provides that a Development Plan is adopted if:

- the authority resolves to adopt the plan or takes such other action as is necessary to take the decision to adopt the plan, and
- the authority causes a notice of the adoption to be published in a local newspaper and a daily newspaper circulating generally in NSW within 28 days after the decision of the authority to adopt the plan.

Clause 3(2) of Schedule 5 to the EP&A Act requires that at least 60% of the total number of owners of the land, and owners of at least 60% of the total area of that land, consent to the Development Plan. A Development Plan cannot be adopted unless the authority is satisfied such consent has been obtained (clause 268ZJ(2)).

Once a Development Plan is adopted it may be gazetted. If a Development Plan is gazetted its validity cannot be questioned in legal proceedings unless they are commenced within 3 months of gazettal under clause 6(4) Schedule 5 to the EP&A Act.

Under clause 268ZJ of the Regulation, once a Development Plan is adopted by the relevant authority, the Development Plan will be "in force" for the purposes of clause 4(5) of Schedule 5 to the EP&A Act.

The Minister can make a Subdivision Order in accordance with clause 3 of Schedule 5. This does not require the Development Plan to have been adopted - only for it to have been prepared (clause 3(2)(e)), and for the Minister to have considered any provisions of the Development Plan which modify or disapply the Just Terms Act (clause 3(2)(f)), and for 60% of the total number of owners and for the owners of at least 60% of the total area of the land to have consented to the Development Plan (clause 3(2)(g)).

The adoption of the Development Plan is up to the relevant authority. The Development Plan can be adopted before or after a Subdivision Order is made and the timing of this will be a matter for the Minister and relevant authority. The timing of these processes will depend upon the circumstances relevant to the particular case.

**Figure 2 in Appendix B** illustrates an indicative process for implementing a Development Plan.

#### **4.8 Amendment of a Development Plan**

The Regulation (clauses 268ZK and 268ZL) sets out a process for the making of three different classes of amendment to a Development Plan: major amendments; minor amendments; and amendments which are neither, major nor minor.

**Major amendment** means an amendment to a Development Plan that is not a minor development and that:

- (a) in the opinion of the Minister, if adopted, would require an amendment to be made to the Subdivision Order relating to the land to which the Development Plan applies, or
- (b) amends provisions of the Development Plan that modify or disapply the provisions of Division 4 of Part 3 of the *Land Acquisition (Just Terms Compensation) Act 1991*.

**Minor amendment** means an amendment to a Development Plan that:

- (a) corrects an error or misdescription, or
- (b) consists of a minor realignment of the boundaries of lots in the proposed plan of subdivision that will not create additional lots or the opportunity for additional dwellings, or
- (c) alters to a minor extent the location of roads or services to be provided, or
- (d) varies the proportion of costs to be borne by one or more owners of the land by not more than 5% in any particular case.

Clause 268ZK of the Regulation sets out the process for the adoption of amendments to a Development Plan as follows:

A proposed amendment to a Development Plan is adopted by the relevant authority and comes into force (clause 268ZK), if:

- (a) the authority resolves to adopt the amendment or takes such other action as is necessary to take the decision to adopt the amendment, and
- (b) the authority gives written notice of the amendment to the Minister, the owners of the land to which the Development Plan applies, and each council in whose area the land is situated, within 28 days after the decision of the authority to adopt the amendment.

Additional requirements for major amendments include:

- Notice must be given in accordance with the requirements of clause 268ZB of the Regulation.
- The consent of at least 60% of the land owners, and the owners of at least 60% of the total area of land to which the Development Plan applies, must have consented to the amendment.

***Amendments other than major and minor amendments:***

For other amendments that are not major or minor, an authority must comply with the requirements of clause 268ZL, as follows:

- (a) Publish a notice in a local newspaper and a daily newspaper circulating generally in NSW.
- (b) Give written notice to any council in whose area the land is situated.
- (c) Display a notice on, or in the vicinity of the land to which the Development Plan applies during the submission period specified in the notice.
- (d) Make the proposed amendment publicly available.
- (e) Before adopting the amendment, consider any submissions received within the submission period specified in a notice given in accordance with the clause.

A notice under clause 268ZL(3) must specify the following:

1. The place, date and time at which the proposed amendment is available for inspection or the address of a website where it may be found.
2. The period (being not less than 28 days) during which submissions may be made to the authority about the proposed amendment.
3. The name, contact phone number and email address of the authority.

## **5. THE CONSENT BALLOT**

### ***5.1 Purpose of the consent ballot***

The purpose of the consent ballot is for the authority to seek land owners' consent to the proposed Development Plan. Under clause 3(2)(g) of Schedule 5 to the EP&A Act, the

Minister may not make a Subdivision Order unless at least 60% of the total number of owners of the land the subject of the proposed Development Plan, and the owners of at least 60% of the total area of that land, have consented to the proposed Development Plan.

**Appendix C** provides a check sheet method which may be used by a returning officer in the counting of votes to enable straightforward calculation of 60% requirements. A ballot paper is required to list all land owned by the landowner. A landowner's vote is to be counted in accordance with the Regulation.

The consent ballot may be conducted by the authority or by an independent body (such as the Australian Electoral Commission) on behalf of the authority. Division 3 of Part 16C of the Regulation sets out detailed requirements for the ballot.

## ***5.2 Requirements of the Act and Regulation and best practice***

The Regulation requires the relevant authority to appoint a returning officer to conduct a consent ballot. A consent ballot is then required to be held to determine consent to a proposed development plan by owners of the land. The returning officer is required to prepare a voting roll.

The minimum voting period for a ballot of land owners on a proposed Development Plan is 28 days. Notification of the holding of the consent ballot should be published on the authority's website for the duration of the ballot and for at least 14 days preceding the despatch of ballot papers.

The Regulation requires the form of the ballot paper to be as determined by the authority and approved by the Secretary. An example of a possible form of ballot paper is at **Appendix D** of the guideline.

A ballot paper must be sent by mail to each person who owns land within the area covered by the Development Plan along with a statement about the place, date and time at which the proposed Development Plan is available for inspection or, the address of the website where it may be found. A statement relating to the ballot in the form approved by the Secretary must also be included. An envelope addressed to the returning officer should also be included. The reverse side of the envelope should be noted or printed with the name and address of the owner and the lots and deposited plan numbers of the land to which the ballot paper relates together with a small envelope in which the ballot paper is to be enclosed.

Clause 3(3) of Schedule 5 to the EP&A Act provides that for the purposes of counting the votes and calculating whether the required percentage of owners consent to the Development Plan, that two or more owners of the same lot are to be treated as one owner. The Regulation also prescribes the method for vote counting and preparation by the returning officer of a statement relating to the ballot result.

A voting period longer than 28 days may be considered by the authority if it is likely a number of the people entitled to vote will take some time to receive their ballot papers (for example, those who may live overseas), if the number of people entitled to vote is large, if many of the lots are in multiple ownership or if there has recently been a high turnover of ownership. Similarly, in such circumstances, the authority may wish to give more than the 14 days notice required by the Regulation of a proposed ballot.

Explanatory material accompanying the ballot paper should outline the ballot process, including making clear that ballot papers received by the returning officer after the closing date for the ballot cannot be accepted. Inclusion of a summary sheet with the ballot paper material regarding the content and purpose of the proposed Development Plan may assist voters.

The explanatory material should also explain that a proposed Development Plan cannot be adopted unless at least 60% of the total number of owners of the land, and the owners of at least 60% of that land consent to the proposed plan. The Regulation prescribes a specific method for vote counting where a lot is owned by a group of co-owners depending upon whether all or a majority of the co-owners cast a formal vote in favour of the development plan.

Relevant authorities may provide general information to individuals on the Development Plan but they should also advise people (including potential buyers) to seek independent advice as to how the provisions of the Development Plan may specifically affect them and their land holding(s).

In the material despatched with the ballot paper, the authority should include its contact details for any enquiries about the proposed Development Plan, and of the returning officer for queries regarding the ballot process. It should be made clear that votes are to be returned by post and cannot be returned on-line.

The Regulation requires scrutineers are required to observe the ballot counting process. Scrutineers should not be a landowner or a relative of a landowner and it is appropriate to require scrutineers to sign a statutory declaration to this effect.

The authority must report the result of the consent ballot to the Secretary under clause 268ZH(1) of the Regulation, and should do so as soon as possible after the results are known.

If a consent ballot does not achieve the required (60%/60%) consent to a proposed Development Plan, the authority may carry out further consultation with land owners on options for amendments for a further ballot.

## **6. ACCOUNTING ISSUES**

### ***6.1 Accounts that should be kept***

The following guidance is provided on accounting matters:

- Purchase and sale by the authority of subdivision land or proposed subdivision land.
- Contributions land owners are required to make, and have made or not made, to meeting the costs of subdivision works.
- Payments made by the relevant authority from funds received for the carrying out of subdivision works.
- Compensation paid by the relevant authority for subdivision land it compulsorily acquires.
- Distribution of any surplus funds after the completion of subdivision works or immediately prior to withdrawal of an implemented Development Plan.
- Any other matter specified in writing by the Minister to the relevant authority.



The above matters should be included in end of financial year annual reports by the relevant authority to the Minister on implementation of the Development Plan. Clause 268ZP of the Regulation sets out reporting requirements.

The annual report should include details of the progress of land owners in meeting their share of subdivision works costs, and details of subdivision land compulsorily acquired in the preceding financial year, (including compensation paid for that land).

Under clause 10(1) of Schedule 5 to the EP&A Act the following are to be paid by the authority to a fund or funds approved by the Minister:

- A monetary contribution paid to a relevant authority by the owner of subdivision land for subdivision works and the Development Plan costs.
- Any money paid by the relevant authority to meet contribution amounts under the Development Plan in respect of land acquired by the authority.
- The proceeds of the disposal by the relevant authority of land acquired.

Under clause 10(2) of Schedule 5 to the EP&A Act, the following may be paid from any fund to which contributions or amounts are paid under that clause:

- Payments to persons or bodies for the provision of subdivision works.
- Payments in connection with the exercise of functions by the relevant authority for the planning purpose specified in the subdivision order.
- Payments for the whole or part of compensation payable under clause 7, Schedule 5 to the Act and any payments required to be made under the Just Terms Act.
- Payments for the distribution of any surplus funds after the completion of subdivision works and any other payments under clause 10, Schedule 5 to the Act.
- Any money required to meet the administrative expenses of the relevant authority in relation to its functions under the Subdivision Order.

## **6.2 Distribution of surplus funds after implementation of Development Plan**

Surplus funds comprise unspent and uncommitted money after the completion of subdivision works.

In establishing matters for consideration for distribution of surplus funds, the relevant authority should consider the entitlements of land owners to different amounts. Factors to consider include the proportions of total funding contributed by a landowner and the extent to which a landowner has benefited from the carrying out of the work to fulfil that purpose.

## **6.3 Some additional considerations**

Additional suggestions for good accounting practice by a relevant authority are:

- Establish accounts for each Development Plan, rather than part of a plan or two or more plans.
- Promptly record changes in land title and land descriptions as property transactions occur to ensure records are accurate.
- Obtain agreed sums for subdivision works from all relevant land owners before works commence, to avoid reallocation of funds committed for other purposes.
- Incorporate construction and approval costs (including contributions and levies payable under Division 6 of Part 4 of the EP&A Act) when preparing a budget for implementation of a Development Plan.
- Provide for contingency for costs variation.

- Distribute surplus funds on a per-square metre basis not a per-lot basis, as the lots may be of various sizes.
- Create separate accounts for any reimbursement of surplus funds after completion of subdivision works.

Note: Construction costs for subdivision works should be indexed against a recognised price indexing mechanism, such as the Consumer Price Index Implicit Price Deflator (For more information on that mechanism see *Australian National Accounts: Concepts*, *Australian Bureau of Statistics, Cat. No. 5216.0*, [www.abs.gov.au](http://www.abs.gov.au)).

## APPENDIX A: DEFINITIONS

**Act** means the *Environmental Planning and Assessment Act 1979* (NSW).

**Department** means the Department of Planning and Environment.

**Development plan** means a development plan for subdivision land or proposed subdivision land.

**Environmental planning instrument** means an environmental planning instrument (including a SEPP or LEP but not including a DCP) made, or taken to have been made, under Part 3 and in force.

**Minister** means the Minister for Planning.

**Paper subdivision** is not defined in the provisions. However, the provisions are only available to land that has been subdivided and is held by more than one owner and the Minister is satisfied that the land is land for which no provision or inadequate provision has been made for subdivision works.

**Planning proposal** means a document that explains the intended effect of a proposed environmental planning instrument and sets out the justification for making the proposed instrument under Part 3 Division 4 of the EP&A Act.

**Planning purpose** means the purpose for which a subdivision order is made.

**Relevant authority** for subdivision land means the authority designated by a subdivision order as the relevant authority for the land.

**Secretary** means Secretary of the Department of Planning and Environment.

**Subdivision land** means land subject to a subdivision order.

**Subdivision order** means an order by the Minister, which may be gazetted, that does all of the following:

- (a) declares specified land to be subdivision land.
- (b) specifies the relevant authority for the subdivision land.
- (c) specifies the purpose for which the order is made (the *planning purpose*).
- (d) specifies the functions (if any) under Schedule 5 to the EP&A Act conferred on the relevant authority.
- (e) specifies the conditions (if any) to which the exercise of those functions are subject.
- (f) specifies the subdivision works (if any) to be undertaken by the relevant authority in respect of the subdivision land.

**Subdivision works** means works for the following purposes:

- a) roads.
- b) water supply, sewerage services and drainage.
- c) telecommunications.
- d) electricity supply.
- e) remediation of contaminated land
- f) demolition of a building or work if the demolition is required to carry out other subdivision works,
- g) gas supply.

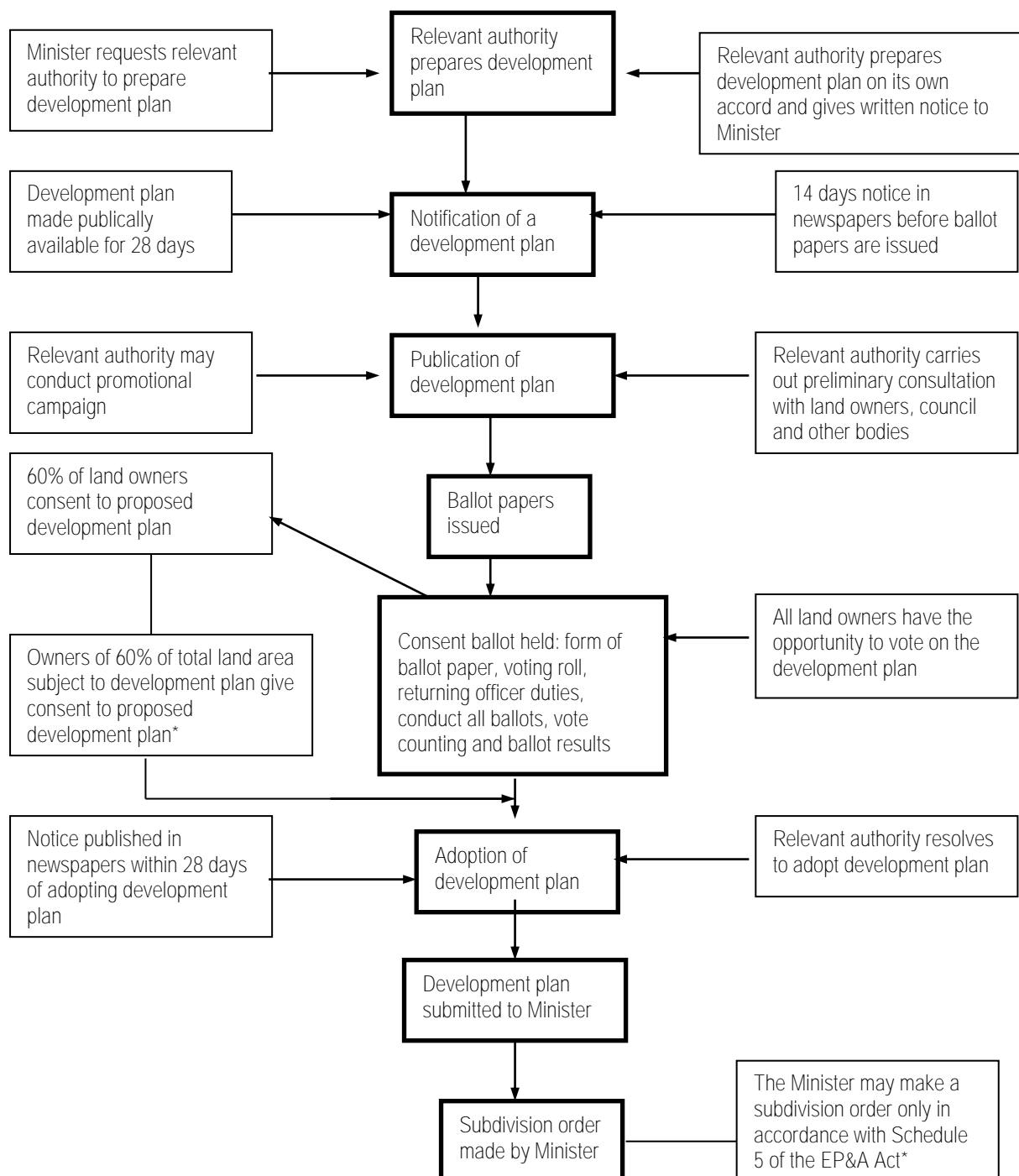
***Voluntary contributions agreement*** means a voluntary agreement between a relevant authority and a person who owns subdivision land under which the owner is required to pay a monetary contribution to be used for or applied for subdivision works.



## APPENDIX B: DEVELOPMENT PLAN PROCESS DIAGRAMS

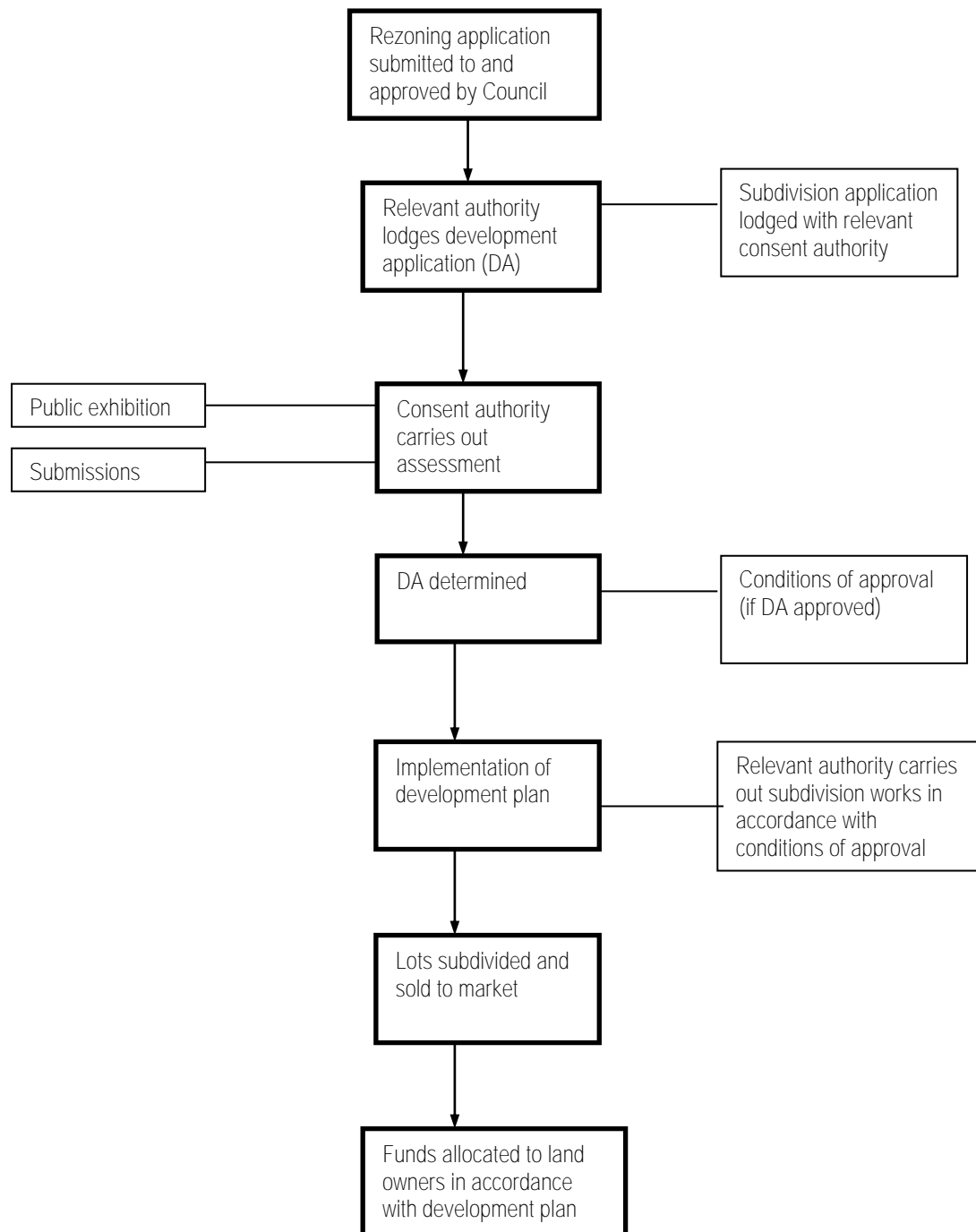
This appendix contains details on relevant aspects of a Development Plan. **Figure 1** illustrates the process for preparing a Development Plan for submission to the Minister. **Figure 2** provides an indicative guide for the implementation of a Development Plan.

**Figure 1: Process for preparing a Development Plan**



\* Note: the Minister cannot make a subdivision order unless at least 60% of the total number of owners of the land and the owners of at least 60% of the total area of that land have consented to the proposed development plan.

**Figure 2: Indicative guide for implementation of a Development Plan**



## **APPENDIX C: CHECK VOTE COUNTING METHOD**

The following tables provide an example counting method for use by returning officers, when counting votes made for consent ballots.

### **Voting roll (under cl.268ZD(1)(c)&(d)):**

<b>Owner</b>	<b>Lots</b>	<b>Lot Area</b>	<b>Total Area</b>
Person A	Lot 1	100 m <sup>2</sup>	500 m <sup>2</sup>
	Lot 4	400m <sup>2</sup>	
Person B	Lot 2	500 m <sup>2</sup>	500 m <sup>2</sup>
Person C	Lot 5	1425 m <sup>2</sup>	2485 m <sup>2</sup>
	Lot 18	160 m <sup>2</sup>	
	Lot 19	900 m <sup>2</sup>	
Person E	Lot 7	1500 m <sup>2</sup>	1500 m <sup>2</sup>
Company G	Lot 8	600 m <sup>2</sup>	600 m <sup>2</sup>
Company H	Lot 9	300 m <sup>2</sup>	300 m <sup>2</sup>
Person I	Lot 11	400 m <sup>2</sup>	400 m <sup>2</sup>
Person J	Lot 12	700 m <sup>2</sup>	2000 m <sup>2</sup>
	Lot 13	700 m <sup>2</sup>	
	Lot 14	600 m <sup>2</sup>	
Local Council	Lot 20	2000 m <sup>2</sup>	2000 m <sup>2</sup>
Co-owner Group CG1 Being Person A and Person B jointly	Lot 3	1600m <sup>2</sup>	1600 m <sup>2</sup>
Co-owner Group CG2 Being Person D and Person E and Person F jointly	Lot 6	500 m <sup>2</sup>	500 m <sup>2</sup>
Co-owner Group CG3 Being Person D and Company H jointly	Lot 10	450 m <sup>2</sup>	450 m <sup>2</sup>
Co-owner Group CG4 Being Person J and Person A jointly	Lot 15	1900 m <sup>2</sup>	1900 m <sup>2</sup>
Co-owner Group CG5 Being Person K, Person L, Person M and Person N	Lot 16	1700 m <sup>2</sup>	3500 m <sup>2</sup>
	Lot 17	1800 m <sup>2</sup>	

**Owner voting:**

Number	Owner	Vote cast		Vote counted
1	Person A	Yes		Yes
2	Person B	No		No
3	Person C	Yes		Yes
4	Person E	None – informal		-
5	Company G	No		No
6	Company H	Yes		Yes
7	Person I	Yes		Yes
8	Person J	Yes		Yes
9	CG1	Person A	Yes	No
		Person B	No	
10	CG2	Person D	Yes	Yes
		Person E	None – informal	
		Person F	Yes	
11	CG3	Person D	Yes	Yes
		Company H	Yes	
12	CG4	Person J	Yes	Yes
		Person A	Yes	
13	CG5	Person K	No	No
		Person L	No vote received	
		Person M	No	
		Person N	Yes	
14	Local Council	Yes		Yes

Total eligible voters: 14

Total yes votes counted: 8

Proportion:  $8/14 = 57.8\%$



**Land area voting:**

Number	Owner	Vote counted	Lots	Lot Area	Total area Yes votes
1	Person A	Yes	Lot 1	100 m <sup>2</sup>	500 m <sup>2</sup>
			Lot 4	400m <sup>2</sup>	
2	Person B	No	Lot 2	500 m <sup>2</sup>	-
3	Person C	Yes	Lot 5	1425 m <sup>2</sup>	2485 m <sup>2</sup>
			Lot 18	160 m <sup>2</sup>	
			Lot 19	900 m <sup>2</sup>	
4	Person E	-	Lot 7	1500 m <sup>2</sup>	-
5	Company G	No	Lot 8	600 m <sup>2</sup>	-
6	Company H	Yes	Lot 9	300 m <sup>2</sup>	300 m <sup>2</sup>
7	Person I	Yes	Lot 11	400 m <sup>2</sup>	400 m <sup>2</sup>
8	Person J	Yes	Lot 12	700 m <sup>2</sup>	2000 m <sup>2</sup>
			Lot 13	700 m <sup>2</sup>	
			Lot 14	600 m <sup>2</sup>	
9	CG1	No	Lot 3	1600 m <sup>2</sup>	-
10	CG2	Yes	Lot 6	500 m <sup>2</sup>	500 m <sup>2</sup>
11	CG3	Yes	Lot 10	450 m <sup>2</sup>	450 m <sup>2</sup>
12	CG4	Yes	Lot 15	1900 m <sup>2</sup>	1900 m <sup>2</sup>
13	CG5	No	Lot 16	1700 m <sup>2</sup>	-
			Lot 17	1800 m <sup>2</sup>	
14	Local Council	Yes	Lot 20	2000 m <sup>2</sup>	2000 m <sup>2</sup>
<b>Total</b>				<b>18235 m<sup>2</sup></b>	<b>10535 m<sup>2</sup></b>

Total proportion of land area owned by consenting voters: 57.7%.

## APPENDIX D: EXAMPLE BALLOT PAPER

### EXAMPLE BALLOT PAPER

**Proposed Development Plan Name and No. [to be completed by the relevant authority]**\_\_\_\_\_

In black or blue ink, please clearly mark an 'X' in the relevant box.

☐

YES – consent granted to Development Plan

☐

NO – consent refused to Development Plan

*Land owner's name [to be completed by the relevant owner]*\_\_\_\_\_

*Lot and Deposited Plan numbers [to be completed by the relevant authority]*\_\_\_\_\_

*Name of any other co-owner of a Lot/Deposited Plan listed above [this is mandatory information ]*\_\_\_\_\_

*Signature*\_\_\_\_\_

NOTE: If voting as a proxy or under a Power of Attorney, please attach details.

# NSW Reference Rates Manual

Valuation of water supply, sewerage  
and stormwater assets



Publisher: Department of Primary Industries, a division of NSW Department of Trade and Investment, Regional Infrastructure and Services

Title: NSW Reference Rates Manual - Valuation of Water Supply, Sewerage and Stormwater Assets

First published June 2014

ISBN 978 1 74256 646 7

NSW Office of Water

Level 18, 227 Elizabeth Street

GPO Box 3889

Sydney NSW 2001

T 02 8281 7777 F 02 8281 7799

[information@water.nsw.gov.au](mailto:information@water.nsw.gov.au)

[www.water.nsw.gov.au](http://www.water.nsw.gov.au)

Compiling editors:

Sam Samra, Senior Manager, Water Utility Performance

Maree Abood, Director, Urban Water



**BEST PRACTICE MANAGEMENT**

© State of New South Wales through the Department of Trade and Investment, Regional Infrastructure and Services 2014. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute the Department of Trade and Investment, Regional Infrastructure and Services as the owner.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (June 2014). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser.



## Foreword

This *2014 Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets* updates the 2003 edition of the manual and was prepared by the Urban Water branch of the NSW Office of Water. NSW Local Water Utilities are required to determine the fair value<sup>1</sup> and current replacement cost depreciation for their water supply, sewerage and stormwater assets in accordance with this Manual.

The Reference Rates shown are for June 2014 and are based on competitive contract prices obtained by NSW Public Works for water supply and sewerage projects within NSW, supplemented by published rates for water supply, sewerage and stormwater works and also rates obtained from a number of LWUs and other agencies.

---

<sup>1</sup> Valuations are on a MEERA – Modern Engineering Equivalent Replacement Asset basis.

## Acknowledgements

The NSW Office of Water<sup>2</sup> acknowledges NSW Public Works, Goldenfields Water County Council, Gosford City Council and Tweed Shire Council for providing contract information for water supply and sewerage projects, Landcom, Roads and Maritime Services, Fairfield and Shoalhaven City Councils, for providing cost data for stormwater assets.

An advance copy of the manual was distributed for comment to a representative group of LWUs and to industry groups. Valuable comments provided by the following are acknowledged: Local Government NSW (LGNSW), the NSW Water Industry Directorate, Albury City Council, Clarence Valley Council, Cootamundra Shire Council, Dubbo City Council, Goldenfields Water County Council, Leeton Shire Council, Orange City Council, Lismore City Council, Riverina Water County Council, Shoalhaven City Council, Tumut Council, Wagga Wagga City Council, Hydrosience Consulting and NSW Public Works.

---

<sup>2</sup> The NSW Office of Water is responsible for managing the NSW Government's *Country Towns Water Supply and Sewerage (CTWSS) Program* ([www.water.nsw.gov.au](http://www.water.nsw.gov.au)), which is a major reform Program. The Office of Water oversees and monitors utility performance, provides leadership, guidance, software and training to the utilities and is the primary regulator for the 105 regional LWUs.

## Abbreviated Contents

Foreword .....	i
Acknowledgements.....	ii
Abbreviated Contents.....	iii
Contents .....	iv
Tables.....	vii
Abbreviations.....	viii
1. Executive Overview .....	1
2. Basis of Reference Rates .....	5
3. Reference Rates Tables .....	10
4. Applying the Reference Rates.....	39
5. Contract Rates – Figures 18 to 34.....	45
Attachment 1 NSW Water Supply & Sewerage Construction Cost Indices .....	62
Attachment 2 Indicative Useful Lives of Assets.....	64
Index .....	65

## Contents

Foreword .....	i
Acknowledgements.....	ii
Abbreviated Contents .....	iii
Contents.....	iv
Tables .....	vii
Abbreviations.....	viii
1. Executive Overview.....	1
1.1. Best-Practice Management Framework.....	1
1.2. Purpose of Reference Rates Manual.....	1
1.3. Use of Reference Rates for Existing Assets .....	3
1.4. Use of Reference Rates for Future Works.....	3
1.5. Related Publications .....	3
2. Basis of Reference Rates.....	5
2.1. General .....	5
2.2. Reference Rates.....	5
2.3. Contract Rates.....	6
2.4. Survey, Investigation, Design & Project Management (SID).....	6
2.5. Contingencies.....	7
2.6. Estimates Based on these Reference Rates .....	8
2.7. Additional Costs for Rock Excavation and Construction Difficulty.....	8
2.8. Site-Specific Works.....	9
3. Reference Rates Tables.....	10
4. Applying the Reference Rates .....	39
4.1. Water Supply Mains.....	39
4.1.1 Example 1: 150 Diameter AC Water Supply Reticulation Main.....	39
4.1.2 Example 2: 200 Diameter DICL Water Supply Trunk Main .....	39
4.1.3 Example 3: 375 Diameter uPVC Water Supply Trunk Main .....	39
4.1.4 Example 4: 600 Diameter Steel Water Supply Trunk Main .....	40
4.1.5 Example 5: 200 Diameter DICL Water Supply Trunk Main with 5% Rock ..	40
4.1.6 Example 6: 200 Diameter DICL Water Supply Trunk Main with Moderate Construction Difficulty .....	40
4.2. Sewer Mains.....	40
4.2.1 Example 7: 150 Diameter VC Sewer Reticulation Main at Minimum Depth	40
4.2.2 Example 8: 225 Diameter uPVC Sewer Trunk Main at Minimum Depth....	40
4.2.3 Example 9: 100 Diameter uPVC Sewer Rising Main at Minimum Depth....	40
4.2.4 Example 10: 150 Diameter VC Sewer Reticulation Main - 3m Depth.....	41



4.2.5	Example 11: 150 Diameter VC Sewer Reticulation Main - 4m Depth, 15% Rock.....	41
4.2.6	Example 12: 150 Diameter VC Sewer Reticulation Main - 3m Depth with High Construction Difficulty .....	41
4.3.	Water Pumping Stations .....	41
4.3.1	Example 13: Water Pumping Station (1200 kW) .....	41
4.4.	Water Treatment Works .....	42
4.4.1	Example 14: Water Treatment Works of 10 ML/d Capacity .....	42
4.5.	Service Reservoirs.....	42
4.5.1	Example 15: Service Reservoir (4ML Storage Capacity).....	42
4.6.	Sewage Pumping Stations .....	42
4.6.1	Example 16: Sewage Pumping Station (Peak Wet Weather Flow 30 L/s at 30m head) .....	42
4.7.	Sewage Treatment Works.....	42
4.7.1	Example 17: Double Unit Biological Trickling Filtration Plant for 8,000 EP.....	42
4.7.2	Example 18: Double Unit Extended Aeration Tank for 12,000 EP.....	43
4.7.3	Example 19: B4000 Extended Aeration Box for 4,000 EP .....	43
4.8.	Stormwater .....	44
4.8.1	Example 20: 450 Diameter RCP Stormwater Main.....	44
4.8.2	Example 21: Kerb Inlet Pit (Double Grate with Extended Lintel) .....	44
4.8.3	Example 22: 600 Diameter RCP Stormwater Culvert beneath Road Embankment .....	44
5.	Contract Rates – Figures 18 to 34 .....	45
	Attachment 1 NSW Water Supply & Sewerage Construction Cost Indices .....	62
	Attachment 2 Indicative Useful Lives of Assets.....	64
	Index .....	65

## Figures

Figure 1 NSW Best Practice Management of Water Supply and Sewerage Framework .....	4
Figure 2 Conventional Water Treatment Works .....	15
Figure 3 Lagoon Sedimentation.....	15
Figure 4 Lagoon Sedimentation Kangaroo Valley (Shoalhaven) .....	15
Figure 5 Standpipe Service Reservoir, Collarenebri (Walgett).....	19
Figure 6 Ground Level Service Reservoir, Murwillumbah (Tweed).....	19
Figure 7 In-ground Submersible Pumping Station.....	22
Figure 8 In-ground Pumping Station.....	22
Figure 9 Elements of Preliminary Treatment.....	24
Figure 10 Mechanically Raked Bar Screen (left) and Grit Channel and Flume (right). ....	24
Figure 11 Typical Sludge Lagoon .....	27
Figure 12 Typical Sludge Lagoon, Shoalhaven Heads NSW.....	27
Figure 13 Aerated Lagoon, Cobar NSW .....	28
Figure 14 Intermittent Extended Aeration Tanks (IDEA), Port Macquarie NSW .....	28
Figure 15 Box Intermittent Extended Aeration Tanks (IDEA), Bathurst NSW.....	28
Figure 16 Intermittent Decanted Extended Aeration (IDEA) Channel .....	30
Figure 17 Typical Intermittently Decanted Extended Aeration Tank .....	30
Figure 18 Water Mains – Reticulation.....	45
Figure 19 Water Mains - Trunk Mains.....	46
Figure 20 Water Pumping Stations.....	47
Figure 21 Water Treatment Works – Conventional Water Treatment and Lagoon Sedimentation.....	48
Figure 22 Service Reservoirs .....	49
Figure 23 Sewer Mains .....	50
Figure 24 Sewage Pumping Stations – Low Head Submersible Type .....	51
Figure 25 Sewage Treatment Works – Siteworks .....	52
Figure 26 Sewage Treatment Works – Preliminary Treatment .....	53
Figure 27 Sewage Treatment Works – Sludge Lagoon and Effluent Ponds.....	54
Figure 28 Sewage Treatment Works – UV Disinfection.....	55
Figure 29 Sewage Treatment Works – Extended Aeration Tanks .....	56
Figure 30 Sewage Treatment Works – Extended Aeration Channels/Boxes.....	57
Figure 31 Stormwater Mains .....	58
Figure 32 Stormwater Pits.....	59
Figure 33 Stormwater Culverts.....	60
Figure 34 Headwalls .....	61

## Tables

Table 1 Water Mains – uPVC .....	11
Table 2 Water Mains - DICL .....	12
Table 3 Water Mains - Steel .....	13
Table 4 Water Pumping Stations and Bores .....	14
Table 5 Water Treatment Works.....	16
Table 6 Water Chlorinators .....	17
Table 7 Fluoridation Plants.....	18
Table 8 Water Service Reservoirs .....	20
Table 9 Sewer Mains .....	21
Table 10 Sewage Pumping Stations.....	23
Table 11 Sewage Treatment Works - Siteworks .....	25
Table 12 Sewage Treatment Works - Preliminary Treatment .....	26
Table 13 Sewage Treatment Works - Sludge Lagoons & Effluent Ponds .....	29
Table 14 Sewage Treatment Works - Intermittent Decanted Extended Aeration (IDEA) .....	31
Table 15 Sewage Treatment Works - UV Disinfection.....	33
Table 16 MBR Sewage Treatment Works.....	34
Table 17 Additional Costs for Construction Difficulty, Rock Excavation and Dewatering .....	35
Table 18 Stormwater Mains.....	36
Table 19 Stormwater Pits .....	37
Table 20 Stormwater Culverts .....	38

## Abbreviations

AC	Asbestos Cement
CI	Cast Iron
CICL	Cast Iron Cement Lined
CPI	Consumer Price Index
DIA	Diameter
DICL	Ductile Iron Cement Lined
EA	Extended Aeration
EP	Equivalent Persons
FRC	Fibre Reinforced Cement
IDEA	Intermittent Decanted Extended Aeration
GST	Goods and Services Tax
kW	Kilowatt
L/s	Litres per second
M	Million
m	Metre
MBR	Membrane Bioreactor – sewage treatment works
MEERA	Modern Engineering Equivalent Replacement Asset
ML	Megalitre
M & E	Mechanical and Electrical
NOW	NSW Office of Water
NWI	National Water Initiative
O & M	Operation and Maintenance
OTR	Other Than Rock
PVC	Polyvinyl Chloride
RC	Reinforced Concrete
RCP	Reinforced Concrete Pipe
SID	Survey, Investigation, Design and Project Management
uPVC	Unplasticised Polyvinyl Chloride
UV	Ultra-violet irradiation
VC	Vitrified Clay



# 1. Executive Overview

## 1.1. Best-Practice Management Framework

The NSW Government's *Best-Practice Management of Water Supply and Sewerage Framework* (page 4) has been developed as a practical means of implementing the Goal of the Government's Country Towns Water Supply and Sewerage Program<sup>3</sup>. The Framework<sup>4</sup> is the key driver for reform of planning, pricing and management for continuing productivity improvement by each utility. It consolidates earlier initiatives and involves 6 elements:

- Integrated Water Cycle Management
- Strategic business planning and financial planning
- Pricing and regulation of water supply, sewerage and trade waste (including pay-for-use water pricing, strong pricing signals, full cost recovery, commercial sewer usage, trade waste and developer charges and a trade waste regulation policy).
- Water conservation and demand management
- Drought management
- Annual performance monitoring<sup>5</sup> – including annual
  - Performance Monitoring Report – Statewide performance and key performance indicators
  - Benchmarking Report – benchmarking data and performance trends over the last 6 years
  - 2-page triple bottom line (TBL) Performance Report from the NSW Office of Water for each utility and
  - Action Plan by each utility.

The outcome of a local water utility (LWU) implementing the 19 requirements of the *Best-Practice Management Guidelines* is appropriate<sup>6</sup>, affordable and cost-effective<sup>7</sup> services to meet community needs while protecting public health and the environment.

Utilities which have implemented the requirements of the *NSW Best-Practice Management Framework* have also implemented the 9 national requirements shown in Figure 1 on page 4.

## 1.2. Purpose of Reference Rates Manual

This 2014 Reference Rates Manual updates the 2003 edition of the manual and has been prepared by the Urban Water branch of the NSW Office of Water. LWUs are required to determine the fair value<sup>8</sup> of their water supply, sewerage and stormwater assets in accordance with this Manual.

<sup>3</sup> Appropriate, affordable and cost-effective water supply and sewerage services in urban areas of regional NSW which meet community needs and protect public health and the environment.

<sup>4</sup> The Framework is based on the *Best-Practice Management of Water Supply and Sewerage Guidelines, 2007* (available at [www.water.nsw.gov.au](http://www.water.nsw.gov.au)).

<sup>5</sup> Refer to Section 14 and Appendix G of NSW Water & Sewerage Strategic Business Planning Guidelines, July 2011 (available at [www.water.nsw.gov.au](http://www.water.nsw.gov.au)).

<sup>6</sup> I.e. fit for purpose, without wasteful 'gold plating'.

<sup>7</sup> Effective and efficient services including appropriate use of modified standards for small communities, eg. National Handbook on Affordable Water Supply and Sewerage for Small Communities, ARMCANZ/WSAA, 1999.

<sup>8</sup> Valuations are on a MEERA - Modern Engineering Equivalent Replacement Asset basis.

In accordance with the Australian Accounting Standards Board's AASB116 Property, Plant and Equipment, infrastructure assets are to be valued at fair value. It is noted that there are no material practical differences

The manual was first published in June 2003 and since that time the Office of Water has published an annual update of Attachment 1 on page 62 to reflect changes in the construction cost index due to inflation and also to reflect changes in the construction industry. However, together with these annual changes, there have also been substantial changes in the prices for some of the infrastructure included in the manual (note 2 on page 10). This 2014 Manual has been prepared to reflect these price movements.

The Reference Rates shown are based on competitive contract prices obtained by NSW Public Works for water supply and sewerage projects within NSW, supplemented by published rates for water supply, sewerage and stormwater works and also rates obtained from a number of LWUs and other agencies (page ii).

The manual will assist NSW LWUs in implementing two requirements:

- (1) Determining the fair value and current replacement cost depreciation for their water supply, sewerage and stormwater assets. These must be reported in each LWU's annual financial statements, including Special Schedule Nos 3 to 6<sup>9,10</sup>.
- (2) As part of best-practice management of water & sewerage businesses each LWU is required to prepare a 20 to 30-year capital works program as part of its strategic business plan<sup>11</sup>.

These requirements involve estimating the capital cost of existing and future water supply, sewerage and stormwater assets on a MEERA<sup>8</sup> basis.

The Reference Rates in this manual apply to the capital cost of works such as pipelines, service reservoirs, pumping stations and treatment works but not to works such as dams, weirs, river intakes, tunnels and outfalls where the cost is dependant on the particular site. For these site-specific works a separate valuation would be required, as discussed in section 2.8 on page 9.

Page 74 of the Division of Local Government's Planning and Reporting Manual 2010 identifies the asset management planning requirements for water supply and sewerage:

‘There are specific asset management planning requirements for water supply and sewerage. They require compliance with the *Best-Practice Management of Water Supply and Sewerage Guidelines 2007* and the *NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets*. Further guidance for councils is provided in the *Water Supply and Sewerage Asset Management Guidelines*<sup>12</sup> 1991.

These requirements include the need to prepare an Asset Register, a 20 to 30 year Operation Plan, Maintenance Plan and a Capital Works Plan which identifies the required renewals, works for improved levels of service and works for serving new growth.

Councils must continue to meet these asset management planning requirements for their water supply and sewerage infrastructure.’

---

between fair value and deprival value in the valuation of physical non-current assets such as water supply, sewerage and stormwater drainage (refer to Appendix E of Accounting Policy: Valuation of Physical Non-Current Assets at Fair Value, tpp 07-1, NSW Treasury, April 2007 (available at [www.treasury.nsw.gov.au](http://www.treasury.nsw.gov.au))). Note although tpp 07-1 has been amended by Treasury Circulars NSW TC 12/05 and 10/07, the amendments do not affect Appendix E of the Accounting Policy.

<sup>9</sup> *Local Government Code of Accounting Practice and Financial Reporting*, Division of Local Government, NSW Department of Premier and Cabinet, June 2013 (available at [www.dlg.nsw.gov.au](http://www.dlg.nsw.gov.au)).

<sup>10</sup> It is important to note that all 30 National Water Initiative (NWI) financial performance indicators are independently audited annually for each NSW local water utility. These are reported in Notes 2 and 3 of the Special Purpose Financial Reports to each LWU's annual financial statements.

<sup>11</sup> NSW Water and Sewerage Strategic Business Planning Guidelines, NSW Office of Water, 2011 (available at [www.water.nsw.gov.au](http://www.water.nsw.gov.au)).

<sup>12</sup> Updated guidance is available in Section 10 of the above Strategic Business Planning Guidelines.

---

### 1.3. Use of Reference Rates for Existing Assets

To obtain the fair value of assets, the current replacement cost using the Reference Rates should be reduced to reflect the portion of the useful life of the asset that has been used up. Attachment 2 on page 64 provides typical useful lives for water and sewerage assets<sup>13</sup>. It is expected that these would be used for calculating the fair value and the current replacement cost depreciation<sup>14</sup> of assets, except for assets where the LWU has prepared detailed estimates of useful life. Similarly, where a LWU has access to suitable recent contract prices, it is encouraged to use such local data for its valuations.

The Reference Rates quoted are estimates for June 2014 valuation of the capital cost of existing assets, and exclude contingencies and the Goods and Services Tax (GST).

LWUs are required to annually index their asset values in the years between full revaluations using the annual construction cost index shown on page 62 of Attachment 1. Such annual indexing is necessary in order to avoid understating asset values<sup>15</sup> and depreciation. The NSW Office of Water will continue to update Attachment 1 annually.

### 1.4. Use of Reference Rates for Future Works

The Reference Rates are also suitable for estimating the capital cost of future works, where specific cost estimates are not available - eg. in the early stages of a project, before completion of investigation reports and concept designs. For such future works, LWUs must add an appropriate contingency amount to the Reference Rates in accordance with section 2.5 on page 7.

A more detailed estimate would normally be warranted at the concept or detailed design stage. Such an estimate would also take account of the prevailing market conditions. These Reference Rates may be used for estimating the capital cost of assets required to service new development, in which case the contingency amount may not exceed 20%.

### 1.5. Related Publications

This manual complements other guidelines published<sup>16</sup> by the NSW Office of Water including:

- Best Practice Management of Water Supply and Sewerage Guidelines, 2007;
- NSW Water and Sewerage Strategic Business Planning Guidelines, 2011;
- Liquid Trade Water Regulation Guidelines, 2009;
- 2012-13 NSW Water Supply and Sewerage Performance Monitoring Report<sup>17</sup>; and
- 2012-13 NSW Water Supply and Sewerage Benchmarking Report.

Other guidelines proposed to be updated by the NSW Office of Water in 2014 are:

- NSW Water and Sewerage Community Involvement Guidelines; and
- FINMOD User Manual<sup>18</sup>.

<sup>13</sup> Including relined water mains and relined sewerage mains.

<sup>14</sup> Refer to note 10 on page 21 in regard to the depreciation of sewer mains.

<sup>15</sup> Such understating of asset values and depreciation may lead to failure to fully recover costs as required by National Competition Policy and the NSW Best-Practice Management Framework (page 4).

<sup>16</sup> Available at [www.water.nsw.gov.au](http://www.water.nsw.gov.au).

<sup>17</sup> Other software, guidelines and training for LWUs developed by the NSW Office of Water are shown on page 15 of the *2012-13 NSW Water Supply and Sewerage Performance Monitoring Report*.

<sup>18</sup> The NSW Office of Water will continue to provide the FINMOD User Manual to all licensed users of the FINMOD software (NSW Financial Planning Model).

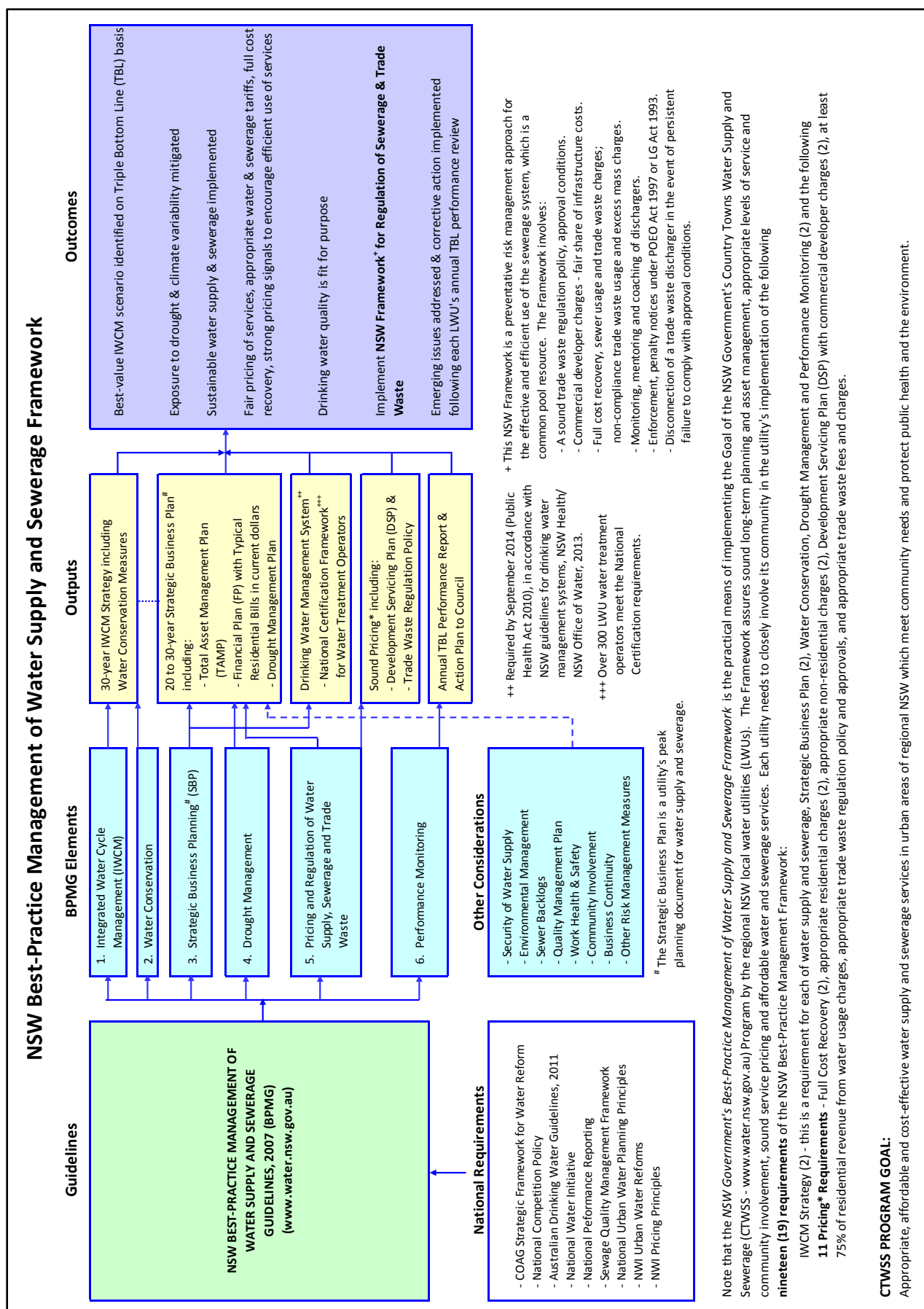


Figure 1 NSW Best-Practice Management of Water Supply and Sewerage Framework

## 2. Basis of Reference Rates

### 2.1. General

The sources used to determine the 2014 Reference Rates shown in this manual are competitive contract prices obtained by NSW Public Works for water supply, sewerage and stormwater projects within NSW together with data obtained from Local Water Utilities (LWUs) and other NSW agencies, supplemented by published rates where available for water supply, sewerage and stormwater works. Sources of rates are acknowledged on page ii.

The Reference Rates Tables included in this manual are listed in section 3 on page 10. The tables show both the contract rate and the reference rate for the capital cost of the following assets:

#### WATER SUPPLY (page 11)

- Water Mains
- Water Pumping Stations (Distribution)
- Water Treatment Works
- Service Reservoirs

#### SEWERAGE (page 21)

- Sewer Mains
- Sewage Pumping Stations
- Sewage Treatment Works

#### STORMWATER (page 36)

- Stormwater Mains
- Stormwater Pits
- Stormwater Culverts

### 2.2. Reference Rates

The Reference Rates are made up of a "**Contract Rate**", plus allowance for **SID** (survey, investigation, design and project management) for the capital cost of each asset. Contingencies are not included.

- **Contract Rate** - the prime cost to construct the asset determined from prices obtained from competitive tenders (section 2.3 on page 6), plus
- **SID** - a percentage increase to be applied to the Contract Rate to allow for survey, investigation, design and project management (section 2.4 on page 6).

As indicated in section 1.4 on page 3, a contingency amount should be added to the Reference Rates in preparing cost estimates for future works (section 2.5 on page 8). However, as contingencies are considered to be not warranted for the valuation of existing assets, they are not included in the Reference Rates (page 8).



Figures showing the Contract Rates for the capital cost of each facility (ie. **excluding** SID) versus key characteristics, such as storage capacity for a service reservoir are also provided in section 5 on page 45. These figures have been determined by drawing a curve of best fit through the available data points. The curve was then used as the basis for determining the Contract Rates and the Reference Rates (which **include** SID) presented in the tables shown in section 3 on page 10.

As noted above, the Reference Rates are a 'general' guide covering the whole of NSW and have been determined from a generalised curve fitted through the available data points. For some assets the range of available prices is large and therefore the Reference Rates should be applied with caution, with due allowance for local or site-specific conditions and for specific projects. As noted in section 1.3 on page 3, where a LWU has access to suitable recent contract prices, it is encouraged to use such local data for its valuations.

## 2.3. Contract Rates

The "**Contract Rate**" is the estimated prime cost for constructing an asset. It is based on competitive contract prices obtained by NSW Public Works for water supply, sewerage and stormwater projects within NSW, together with data obtained from Local Water Utilities (LWUs) and other NSW agencies, supplemented by published rates where available for water supply, sewerage and stormwater works.

It is important to note that only data from **substantial contracts** (eg. those with long lengths of pipe consisting of several kilometres of mains) have been used to compile these rates. The rates shown in the following tables **do not apply to minor works** (eg. short lengths of mains renewals).

The Contract Rate is an "all up" rate which includes some allowance for ancillary works associated with the asset (eg. the rate for sewer reticulation includes an allowance for access chambers (or maintenance holes), sidelines, sewer risers and road crossings). However significant additional costs may need to be added to allow for assets with unusual construction difficulty, rock excavation or for unusual contracts including dewatering etc. These are explained in section 2.7 on page 8.

The Contract Rates **do not** include operation or maintenance costs.

## 2.4. Survey, Investigation, Design & Project Management (SID)

The Survey, Investigation, Design and Project Management (SID) component of a project varies with the complexity, size and the technology involved in the project. A complex project or a project with "state of the art" technology will require greater inputs both in design and management than a conventional project.

The SID component can vary from 5% to 20% and some typical SID allowances are shown below:

- Water and sewerage mains 10%
- Service reservoirs, pumping stations 15%
- Water or sewage treatment works 20%

A suggested value for the SID component is provided in the notes below the Table of rates for each type of asset.

## 2.5. Contingencies

Contingencies are required to allow for risk or uncertainty in the estimate. Uncertainty can be due to inherent risk (uncertainty in the scope of work and uncertainty in the estimated cost of the assets within the scope of work) or contingent risk (uncertainty due to additional costs which are beyond the control of the designer or constructor).

**Inherent risk** is dependent on the type of asset and also the stage at which the estimate is undertaken. It will be higher at earlier stages (eg. feasibility) where there is less definition of the scope of works and costs must be applied with less knowledge of unknowns (eg. site conditions). Inherent risk includes the following:

- Uncertainty in the scope of work. There will be greater uncertainty at earlier stages in design, where there is only a broad outline of the scope of work. This will result in a greater uncertainty in the quantities.
- Uncertainty in the costs to be applied. A complex or high tech asset will generally have greater uncertainty in the costs. Also, at earlier stages of design, costing will necessarily be an “all up rate” with less detail known of the assets involved which will result in a greater uncertainty.
- Uncertainty in site conditions (eg. unexpected rock, groundwater or other services). This will be greater at earlier stages where less investigation has been carried out.

It is suggested that the following approximate percentages may be suitable for inherent risk.

- Feasibility stage - 30%,
- Concept design stage - 20%,
- Preliminary design stage - 15%,
- Detailed design stage - 10%.

However, the primary purpose of this manual is for valuation of existing assets and for this case it is considered reasonable to assume that the inherent risk is zero (ie. the scope of works is accurately defined and the estimated asset costs are within acceptable limits).

**Contingent risk** (factors beyond the control of the designers or constructors). These include:

- industrial issues;
- adverse weather;
- availability of labour and materials; and
- extensions of time due to unforeseen construction problems or site conditions;

The percentage to be applied for contingent risk is dependent on each site and the conditions prevailing at the time.

**Existing Assets** – a contingency allowance is not warranted as it is considered that both the inherent risk and the contingent risk for such assets are minimal. No contingency allowance has therefore been included in the Reference Rates.

**Future Assets** – a contingency allowance should be included in accordance with the above and section 1.4 on page 3. The contingency allowance for future works required within 10 years must not exceed 20 per cent. The Reference Rates should be increased by adding the above contingency allowance to the Reference Rates.

## 2.6. Estimates Based on these Reference Rates

The Reference Rates shown in this manual have been determined by multiplying the Contract Rates by a factor corresponding to the allowance for SID (eg. 1.15 for 15% SID). The Reference Rates have then been rounded to an appropriate number.

These Reference Rates are intended for valuation of existing assets. For the valuation of future works, a contingency amount should be added to the Reference Rates in accordance with section 1.4 on page 3 and section 2.5 on page 7.

The Reference Rates for water supply, sewerage and stormwater mains shown in this manual may also need to be increased to allow for construction difficulty, rock excavation or other factors as indicated in section 2.7.

It should be noted that the Reference Rates are a 'general' guide covering the whole of NSW. They should be applied with due allowance for local and site-specific conditions and for specific projects. Refer also to section 1.3 on page 3.

The capital cost estimates for some projects (eg. treatment works, pumping stations and service reservoirs) may also need to include the cost of additional factors such as:

- land acquisition
- provision of power and data connections to remote sites
- access roads
- significant environmental constraints
- fencing and landscaping

These latter factors are **not included** in the rates provided in this manual.

## 2.7. Additional Costs for Rock Excavation and Construction Difficulty

The Reference Rates for **water mains, sewer mains and stormwater mains** in this manual are for "normal" conditions (ie. typical residential areas). Where the mains are constructed in congested urban areas (eg. town centres) or where there is rock or groundwater, additional costs may be required.

These additional costs arise from factors such as:

- Rock excavation
- Construction difficulty including

- traffic control
- congestion/relocation of existing services
- restricted access
- special compaction and restoration under roads
- particular environmental requirements
- Dewatering

These factors, particularly construction difficulty, can add significantly to the capital cost of the water, sewer or stormwater main and should be considered carefully. A guide to these additional costs is given in Table 17 on page 35.

## 2.8. Site-Specific Works

Valuation of site-specific water supply works such as dams, weirs and tunnels are heavily dependent on the type of asset (eg. type of dam) and the particular site conditions. In addition, the impact of new technology may affect the type and cost of the asset. For example, a concrete gravity dam or an embankment dam may be replaced at lower cost by a roller compacted concrete dam.

Similarly, provision should be made for site-specific **stormwater** works such as flood retarding basins, gross pollutant traps or wetlands.

It is suggested that generally the asset be valued as described in (a) below. However, as upgrading or replacement of the asset becomes imminent, a more detailed estimate will be warranted. The suggested valuation process is as follows:

- (a) Generally it would be reasonable to estimate the current cost of the asset by indexing the historic capital cost of the asset using the construction cost indices in Attachment 1 on page 62. Alternatively, where a more detailed estimate is warranted, a valuation can be carried out as indicated for (b) below.
- (b) When upgrading or replacement of the works becomes imminent, the valuation should be based on a conceptual design for the works providing the required service, using up to date technology and current unit rates.

### 3. Reference Rates Tables

Reference Rates for the valuation of water supply, sewerage and stormwater assets are shown in the following Tables:

Table	Page
1 Water Mains – uPVC	11
2 Water Mains - DICL	12
3 Water Mains - Steel	13
4 Water Pumping Stations and Bores	14
5 Water Treatment Works	16
6 Water Chlorinators	17
7 Fluoridation Plants	18
8 Water Service Reservoirs	20
9 Sewer Mains	21
10 Sewage Pumping Stations	23
11 Sewage Treatment Works - Siteworks	25
12 Sewage Treatment Works - Preliminary Treatment	26
13 Sewage Treatment Works - Sludge Lagoons & Effluent Ponds	29
14 Sewage Treatment Works - Intermittent Decanted Extended Aeration (IDEA)	31
15 Sewage Treatment Works - UV Disinfection	33
16 MBR Sewage Treatment Works	34
17 Additional Costs for Construction Difficulty, Rock Excavation and Dewatering	35
18 Stormwater Mains	36
19 Stormwater Pits	37
20 Stormwater Culverts	38

#### GENERAL NOTES

1. The rates shown are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included for valuation of new works (section 2.5 on pages 7 and 8).
2. The 2014 rates for water, sewer and stormwater mains (Tables 1, 2, 9 and 18), water treatment works (Table 5), pumping stations (Tables 4 and 10), service reservoirs (Table 8) and stormwater culverts (Table 20) have increased significantly more than the capital cost inflation rate since 2003. However, there has not been a significant increase in the real cost of most other assets (larger steel mains (Table 3), most elements of sewage treatment works (Tables 11 to 16) and stormwater pits (Table 19)). Capital Cost Indices are shown in Attachment 1 (page 62). A guide to the increases since 2003 is shown in the notes for each table.
3. Contract Rate is the prime cost for construction of the asset based on competitive contract prices.
4. Reference Rate = Factor for SID x Contract Rate (ie. no contingencies - refer to section 2.5 on page 7). For Contract Rates and SID, refer to sections 2.3 and 2.4 on page 6.



**Table 1** Water Mains – uPVC

(See also Table 17 on page 35 for additional costs)

	<i>Diameter (mm)</i>	<i>Contract Rate (\$/m) 2014</i>	<i>Reference Rate (\$/m) 2014</i>
<b>Reticulation uPVC</b>	<b>50</b>	56	62
	<b>80</b>	73	80
	<b>100</b>	86	95
	<b>150</b>	127	140
	<b>200</b>	173	190
	<b>250</b>	227	250
	<b>300</b>	291	320
	<b>375</b>	382	420
<b>Trunk Mains uPVC</b>	<b>80</b>	62	68
	<b>100</b>	77	85
	<b>150</b>	105	115
	<b>200</b>	145	160
	<b>250</b>	182	200
	<b>300</b>	227	250
	<b>375</b>	336	370

**NOTES**

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that the rates for uPVC trunk mains and reticulation mains have **increased** by about **20%** above the capital cost inflation rate since 2003. These increases are not uniform over all size ranges.
3. Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
4. Caution: Additional costs apply for mains constructed in congested urban areas (eg. in town centres), in rock or where dewatering is required (refer Table 17 on page 35).
5. The rates allow for pipe supply, excavate, lay, backfill, restoration, fittings and thrust blocks.
6. "Reticulation" rates include an allowance for service connections, isolating valves, hydrants and restoration for typical urban reticulation.
7. "Trunk main" rates include air valves, scour valves and isolating valves.
8. Excavation is in OTR and pipelines are laid to minimum depth.
9. Pipe material is uPVC Class 12 (for mPVC mains assume 7% reduction in capital cost).
10. Existing mains of materials that are no longer used should be valued on the basis of replacement assets (ie. AC mains can be valued as uPVC mains).

**Table 2** Water Mains - DICL

(See also Table 17 on page 35 for additional costs)

	<i>Diameter (mm)</i>	<i>Contract Rate (\$/m) 2014</i>	<i>Reference Rate (\$/m) 2014</i>
<b>Reticulation DICL</b>	<b>100</b>	145	160
	<b>150</b>	182	200
	<b>200</b>	227	250
	<b>250</b>	264	290
	<b>300</b>	309	340
	<b>375</b>	391	430
<b>Trunk Mains DICL</b>	<b>100</b>	91	100
	<b>150</b>	136	150
	<b>200</b>	173	190
	<b>250</b>	209	230
	<b>300</b>	264	290
	<b>375</b>	355	390
	<b>450</b>	464	510
	<b>500</b>	536	590
	<b>600</b>	682	750
	<b>750</b>	910	1 000

## NOTES

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that the rates for DICL reticulation mains have increased by about 15% above the capital cost inflation rate since 2003, while the rate for DICL trunk mains has increased above the inflation rate by about 10% for mains up to 250mm, about 25% for 300mm to 450mm and up to 45% for larger mains. These increases are not uniform over all size ranges.
3. Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
4. Caution: Additional costs apply for mains constructed in congested urban areas (eg. in town centres), in rock or where dewatering is required (refer Table 17 on page 35).
5. The rates allow for pipe supply, excavate, lay, backfill, restoration, fittings and thrust blocks.
6. "Reticulation" rates include an allowance for service connections, isolating valves, hydrants and restoration for typical urban reticulation.
7. "Trunk main" rates include air valves, scour valves and isolating valves.
8. Excavation is in OTR and pipelines are laid to minimum depth.
9. Pipe materials are DICL Class K9.
10. Existing mains of materials that are no longer used should be valued on the basis of replacement assets. CI or CICL mains can be valued as DICL mains.

**Table 3** Water Mains - Steel

(See also Table 17 on page 35 for additional costs)

	<i>Diameter (mm)</i>	<i>Contract Rate (\$/m) 2014</i>	<i>Reference Rate (\$/m) 2014</i>
<b>Trunk Mains Steel</b>	<b>300</b>	400	440
	<b>375</b>	509	560
	<b>450</b>	591	650
	<b>500</b>	655	720
	<b>600</b>	782	860
	<b>750</b>	955	1 050
	<b>900</b>	1 180	1 300
	<b>1 050</b>	1 500	1 650
	<b>1 200</b>	1 770	1 950

## NOTES

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that the rates for steel trunk mains have **increased** by about **50%** above the capital cost inflation rate since 2003 for mains **up to 600mm**. The increase for 900mm to 1200mm mains was about 5% above the inflation rate. These increases are not uniform over all size ranges.
3. Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
4. Caution: Additional costs apply for mains constructed in congested urban areas (eg. in town centres), in rock or where dewatering is required (refer Table 17 on page 35).
5. The rates allow for pipe supply, excavate, lay, backfill, restoration, fittings and thrust blocks.
6. The rates include air valves, scour valves and isolating valves.
7. Excavation is in OTR and pipelines are laid to minimum depth.
8. Pipe materials are steel mains with generally minimum plate thickness.
9. For valuation of existing steel mains in sizes 300mm to 750mm diameter, use prices for ductile iron mains (Table 2 on page 12) as these can perform the function of most existing steel mains and are less costly.

**Table 4** Water Pumping Stations and Bores

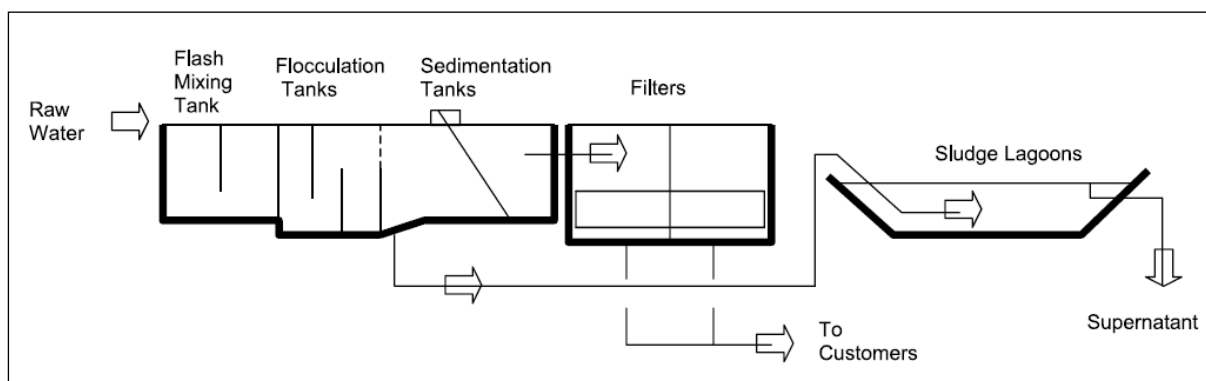
(Distribution System Pumping Stations — does not include River Intakes)

	<b>Installed Power (kW)</b>	<b>Contract Rate (\$) 2014</b>	<b>Civil (%)</b>	<b>M&amp;E (%)</b>	<b>Reference Rate (\$) 2014</b>
<b>Distribution System Pumping Station</b>	<b>10</b>	70 000	31	69	80 000
	<b>20</b>	100 000	30	70	115 000
	<b>30</b>	122 000	29	71	140 000
	<b>50</b>	165 000	28	72	190 000
	<b>100</b>	322 000	27	73	370 000
	<b>200</b>	504 000	38	62	580 000
	<b>400</b>	826 000	36	64	950 000
	<b>600</b>	1 190 000	34	66	1 370 000
	<b>800</b>	1 565 000	32	68	1 800 000
	<b>1 000</b>	1 910 000	30	70	2 200 000
	<b>1 200</b>	2 350 000	28	72	2 700 000
	<b>1 400</b>	2 740 000	26	74	3 150 000
	<b>1 600</b>	3 130 000	25	75	3 600 000
<b>Bores</b>	<b>5</b>	43 000			50 000
	<b>115</b>	248 000			285 000
	<b>130</b>	296 000			340 000

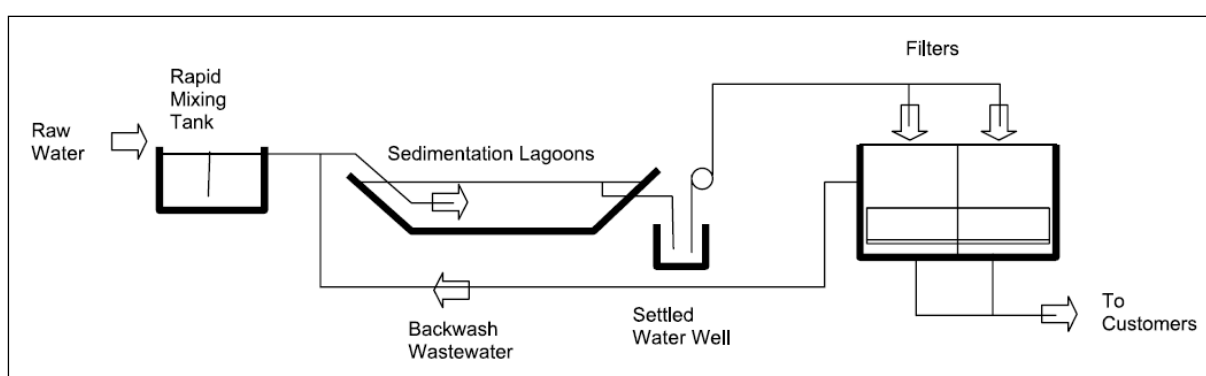
## NOTES

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that the rates for distribution system pumping stations have increased by 10% to 35% above the capital cost inflation rate since 2003, while the rate for bores has increased by about 20%. These increases are not uniform over all size ranges.
3. Reference Rate = 1.15 x Contract Rate (ie. Contract Rate plus SID of 15%).
4. Installed power is the total installed motor power, including standby capacity.
5. This table only applies to distribution system pumping stations. Major additional costs would apply for pumping stations at river intakes (eg. for inlet training works, river channel works and flood protection). For pumping stations at river intakes see section 2.8 on page 9.
6. The rates are based on installation of two pumping machinery sets, each with half of the installed power for the pumping station. This provides standby capacity where if one pump is out of action the pumping station would still be able to deliver the required transfer capacity.
7. For each pumping machinery set, motor power is calculated using the formula :  

$$\text{kW} = Q \text{ (L/s)} \times h \text{ (m)} \times 1.1 \text{ (pipeline tolerance factor)} / 100 \times \text{pump efficiency (say 0.8)}$$
8. For power ≤ 100kW the rates are for lower cost, outdoor pumping stations. For units > 100kW the rates are for centrifugal pumps in an above ground pumping station on a level site.
9. Includes pipework within pumping station & connection to adjacent supply & delivery mains.
10. Land acquisition, power supply, data connection, access roads, fencing are not included.
11. Operation and maintenance costs are not included.



**Figure 2** Conventional Water Treatment Works



**Figure 3** Lagoon Sedimentation



**Figure 4** Lagoon Sedimentation Howlong (Corowa)



**Table 5** Water Treatment Works

	<b>Capacity</b> (ML/d)	<b>Contract Rate</b> (\$) 2014	<b>Reference Rate</b> (\$) 2014
<b>Conventional Water Treatment</b>	<b>0.3</b>	958 000	1 150 000
	<b>0.5</b>	1 420 000	1 700 000
	<b>0.8</b>	1 920 000	2 300 000
	<b>1</b>	2 170 000	2 600 000
	<b>2</b>	3 670 000	4 400 000
	<b>5</b>	7 000 000	8 400 000
	<b>10</b>	11 700 000	14 000 000
	<b>20</b>	19 200 000	23 000 000
	<b>40</b>	30 800 000	37 000 000
	<b>50</b>	35 800 000	43 000 000
	<b>70</b>	46 700 000	56 000 000
	<b>100</b>	59 200 000	71 000 000
<b>Lagoon Sedimentation</b>	<b>0.8</b>	1 420 000	1 700 000
	<b>1</b>	1 580 000	1 900 000
	<b>2</b>	2 670 000	3 200 000
	<b>5</b>	4 920 000	5 900 000
	<b>10</b>	8 080 000	9 700 000
	<b>20</b>	13 300 000	16 000 000

**NOTES**

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works. Refer to the box on page 17 for further information on the use of lagoon sedimentation for water treatment.
2. Review of recent contract rates for water treatment works has shown **increases of 40%** or more above the capital cost inflation rate since 2003.
3. Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
4. The rates include civil, mechanical and electrical costs for both conventional water treatment works and also for lower cost lagoon sedimentation works.
5. For treatment works of  $\geq 5$  ML/d, the mechanical, electrical and process components of water treatment works are each approximately 13% of the Contract Rate, while the civil component is approximately 60% of the Contract Rate for the water treatment works and includes a clear water tank with 1 hour's storage capacity.
6. Excavation is in OTR.
7. Land acquisition, power supply, data connection, access roads and fencing are not included.
8. Operation and maintenance costs are not included.

**Table 6** Water Chlorinators

	<b>Capacity</b> (ML/d)	<b>Contract Rate</b> (\$) 2014	<b>Reference Rate</b> (\$) 2014
<b>Water Chlorinators</b>	<b>Up to 10</b>	48 000	57 000
	<b>20</b>	53 000	63 000
	<b>40</b>	58 000	70 000
	<b>80</b>	63 000	76 000
	<b>140</b>	68 000	82 000

**NOTES**

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
3. The rates include process and dosing/metering equipment. The capital cost of the **chlorination room is excluded**.
4. The rates shown are for 'typical' water sources in NSW. For water sources with a high organic load, use the capital cost of chlorinators with twice the required capacity, as higher chlorine doses will be required.
5. Excavation is in OTR.
6. Land acquisition and power supply are not included.
7. Operation and maintenance costs are not included.

**Lagoon Sedimentation**

The Lagoon sedimentation concept for water treatment (refer to Figures 3 and 4 on page 15 and Table 5 on page 16) has been successfully developed and implemented by the NSW Office of Water and NSW Public Works as a cost-effective means of providing water treatment for regional NSW. Examples include:

Adelong (3 ML/d, 1996, Tumut), Barham (2 ML/d, 1993, Wakool), Binnaway (1 ML/d, 1993, Warrumbungle), Boorowa (3 ML/d, 1993, Boorowa), Buronga/Gol-Gol/Dareton (4 ML/d, 1994, Wentworth), Coonabarabran (8 ML/d, 1993, Warrumbungle), Coonamble (8 ML/d, under construction, Coonamble), Dorrigo (3 ML/d, 1993, Bellingen), Geurie (2 ML/d, 1994, Wellington), Howlong (5 ML/d, 1989, Corowa), Mendooran (1 ML/d, 2009, Warrumbungle), Murrumbidgee (0.3 ML/d, 1993, Leeton), Nundle (1 ML/d, 1995, Tamworth), Pooncarie (0.2 ML/d, 1994, Wentworth), Tottenham (1 ML/d, 1994, Lachlan) and Wellington (15 ML/d, 1993, Wellington).

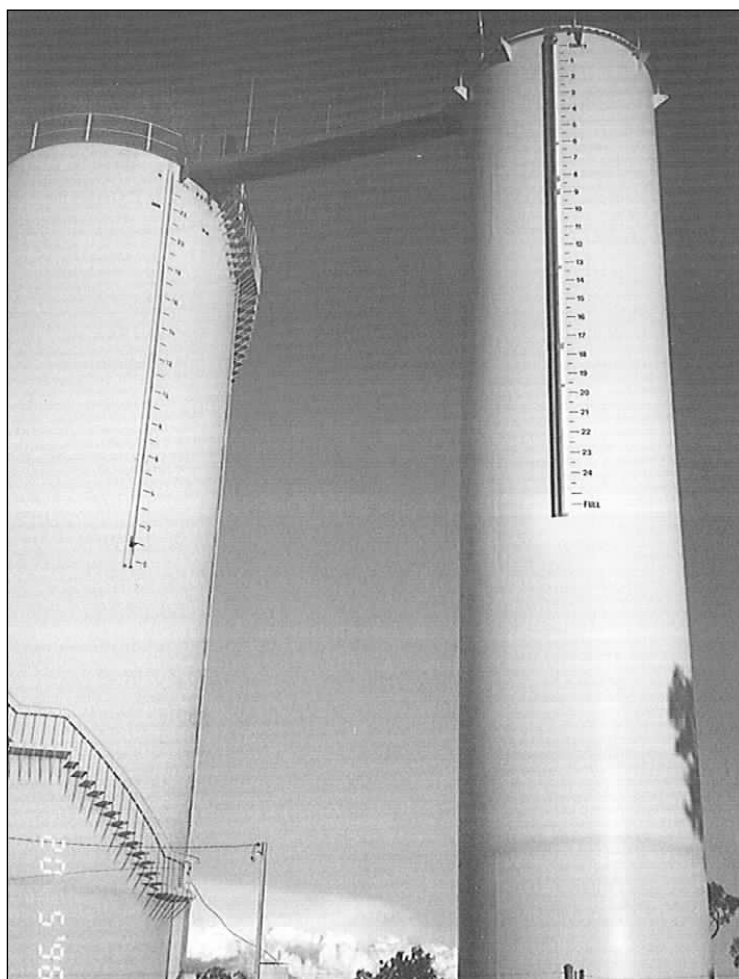
Table 5 on page 16 shows that the capital cost of lagoon sedimentation is about 70% of the capital cost of a conventional water treatment works.

**Table 7** Fluoridation Plants

	<b>Capacity</b> (ML/d)	<b>Contract Rate</b> (\$) 2014	<b>Reference Rate</b> (\$) 2014
<b>Fluoridation Plants</b>	<b>Up to 5</b>	92 000	110 000
	<b>10</b>	108 000	130 000
	<b>20</b>	158 000	190 000
	<b>40</b>	217 000	260 000
	<b>80</b>	308 000	370 000
	<b>100</b>	350 000	420 000

## NOTES

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
3. The rates **include dosing/metering equipment** and the **fluoridation room**.
4. Excavation is in OTR.
5. Land acquisition and power supply are not included.
6. Operation and maintenance costs are not included.



**Figure 5** Standpipe Service Reservoir, Collarenebri (Walgett)



**Figure 6** Ground Level Service Reservoir, Murwillumbah (Tweed)

**Table 8** Water Service Reservoirs

	<b>Storage</b> (ML)	<b>Contract Rate</b> (\$) 2014	<b>Reference Rate</b> (\$) 2014
<b>Steel Reservoirs</b>	<b>0.5</b>	343 000	395 000
	<b>1</b>	513 000	590 000
	<b>2</b>	730 000	840 000
	<b>4</b>	1 000 000	1 150 000
	<b>5</b>	1 150 000	1 320 000
	<b>8</b>	1 570 000	1 800 000
	<b>10</b>	1 830 000	2 100 000
	<b>15</b>	2 480 000	2 850 000
	<b>20</b>	3 040 000	3 500 000
	<b>30</b>	4 000 000	4 600 000
<b>Concrete Reservoirs</b>	<b>0.1</b>	55 000	63 000
	<b>0.2</b>	91 000	105 000
	<b>0.4</b>	200 000	230 000
	<b>0.5</b>	274 000	315 000
	<b>1</b>	470 000	540 000
	<b>2</b>	870 000	1 000 000
	<b>4</b>	1 650 000	1 900 000
	<b>5</b>	1 910 000	2 200 000
	<b>8</b>	2 700 000	3 100 000
	<b>10</b>	3 040 000	3 500 000
	<b>15</b>	3 610 000	4 150 000
	<b>20</b>	3 910 000	4 500 000
<b>Steel Standpipes</b>	<b>0.5</b>	374 000	430 000
	<b>1</b>	548 000	630 000
	<b>2</b>	870 000	1 000 000
	<b>3</b>	1 090 000	1 250 000
	<b>4</b>	1 290 000	1 480 000

**NOTES**

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that rates for steel reservoirs have increased by about 15% above the capital cost inflation rate since 2003, while concrete reservoirs have increased by about 50% and steel standpipes by about 20%. The increases are not uniform over all sizes.
3. Reference Rate = 1.15 x Contract Rate (ie. Contract Rate plus SID of 15%).
4. The rates include foundation excavation, roofing, restoration, pipework, isolating valves and scour valves. **Control valves** (eg. motorised butterfly valves, altitude control valves) are **not included**.
5. "Standpipe" reservoirs are steel reservoirs which are taller than they are wide (Figure 5 on page 19).
6. A reservoir roof is assumed to be approximately 15% of the total capital cost while retrofitting a roof to a concrete reservoir is assumed to be approximately 20% of the total capital cost.
7. For asset valuation, depreciation should be calculated separately for the roof and for the reservoir structure.
8. Excavation is in OTR.
9. Land acquisition, power supply, data connection, access roads and fencing are not included.

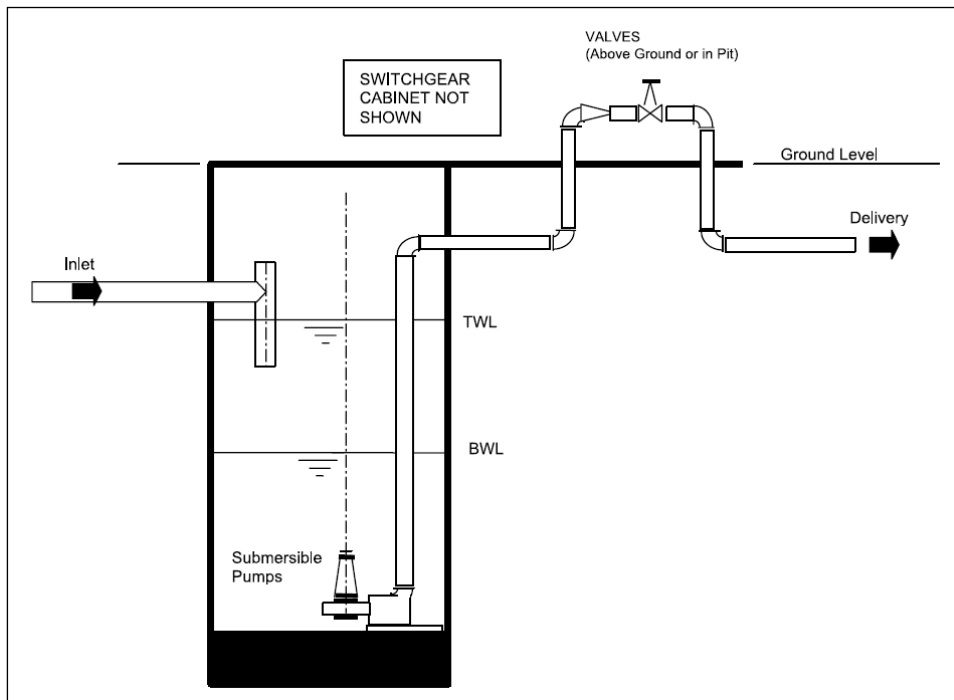


**Table 9** Sewer Mains (See also Table 17 on page 35 for additional costs)

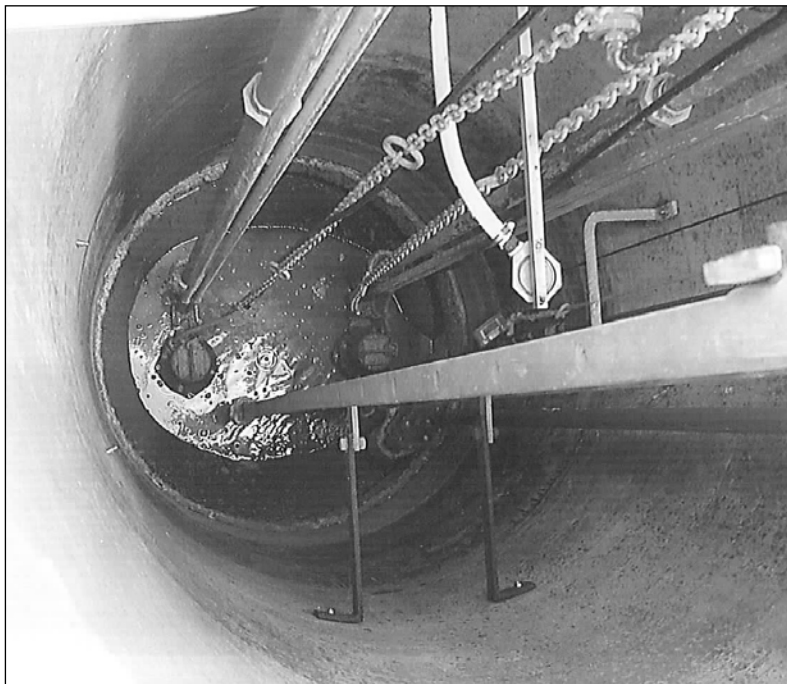
	<i>Dia</i> (mm)	<i>Contract</i> <i>Rate</i>	<i>Reference Rate</i>			
		<i>Min depth</i> (\$/m)	<i>Min depth</i> (\$/m)	<i>1.5–3m deep</i> (\$/m)	<i>3–4.5m deep</i> (\$/m)	<i>&gt;4.5m deep</i> (\$/m)
		2014	2014	2014	2014	2014
<b>Reticulation</b>	<b>100</b>	136	150	216	315	400
	<b>150</b>	159	175	248	348	440
	<b>225</b>	218	240	320	432	550
	<b>300</b>	327	360	430	570	675
	<b>375</b>	450	490	590	705	820
	<b>450</b>	586	645	738	865	970
	<b>500</b>	686	750	830	970	1 090
	<b>600</b>	855	940	1 030	1 180	1 290
<b>Trunk Mains</b>	<b>150</b>	150	165	253	340	420
	<b>225</b>	200	220	315	410	505
	<b>300</b>	300	330	427	520	615
	<b>375</b>	409	450	553	660	765
	<b>450</b>	518	570	670	775	880
	<b>500</b>	605	665	775	885	990
	<b>600</b>	768	845	1 000	1 110	1 220
	<b>750</b>	1 010	1 110	1 340	1 450	1 570
<b>Rising Mains (DACL)</b>	<b>100</b>	105	115			
	<b>150</b>	145	160			
	<b>200</b>	173	190			
	<b>250</b>	214	235			
	<b>300</b>	269	295			
	<b>375</b>	364	400			
	<b>450</b>	459	505			
	<b>500</b>	527	580			
	<b>600</b>	670	740			
	<b>750</b>	871	960			

## NOTES

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that rates for sewer mains have increased above the capital cost inflation rate since 2003 as follows – sewer reticulation mains and trunk mains by up to 10% and sewer rising mains (DACL) up to 35%. The increases are not uniform over all sizes.
- Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
- Caution: Additional costs apply for mains constructed in congested urban areas (eg. in town centres), in rock or where dewatering is required (refer Table 17 on page 35).
- The rates allow for pipe supply, excavate, lay, backfill, restoration, fittings and thrust blocks.
- "Reticulation" rates include an allowance for access chambers (or maintenance holes), sidelines and restoration.
- "Trunk main" rates include an allowance for access chambers (or maintenance holes).
- Excavation is in OTR.
- Pipe materials are VC Class Z, AC Class 50, uPVC Class SNB, Concrete Class 2. For uPVC rising mains, use the values for a water trunk main shown on page 11.
- Note that depreciation of sewers should be based on the cost of relining or renewing a sewer, as these avoid the need for excavation and backfill and are typically about 60% of the cost of reconstructing a shallow sewer ie. an existing sewer main would be valued at 40% of its replacement cost at the end of its useful life. For deep sewers, the saving from relining is correspondingly greater.



**Figure 7** In-ground Submersible Pumping Station



**Figure 8** In-ground Pumping Station

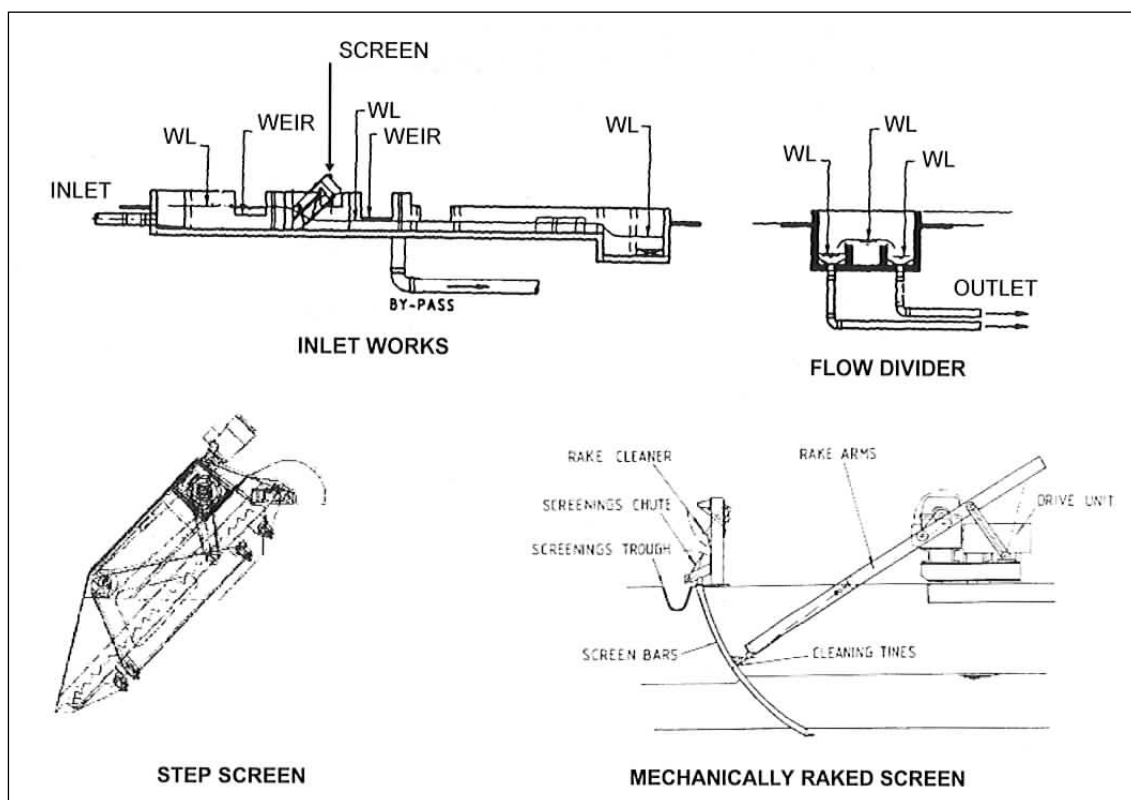
**Table 10** Sewage Pumping Stations

(In-ground Submersible Type with Low Pumping Head)

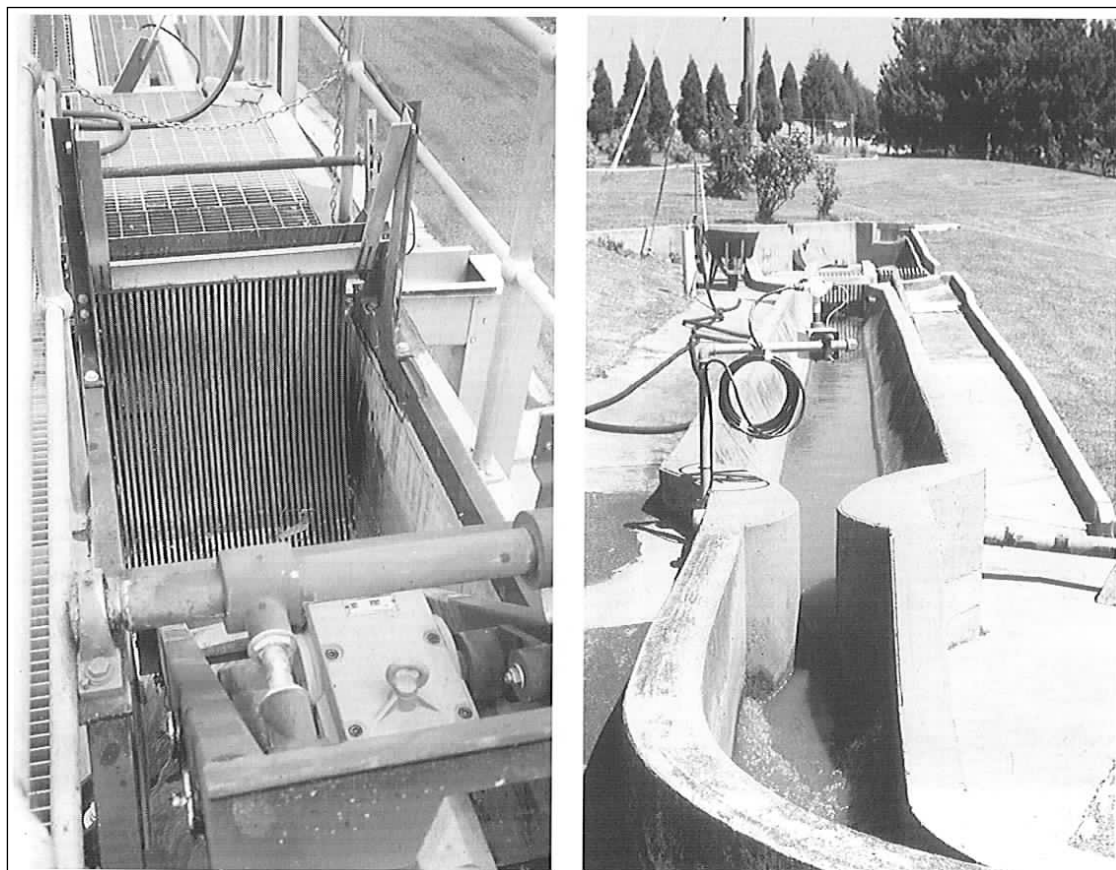
	<i>Flow (L/s)</i>	<i>Contract Rate (\$) 2014</i>	<i>Reference Rate (\$) 2014</i>
<b>Low Head In-ground Submersible</b>	<b>10</b>	278 000	320 000
	<b>20</b>	365 000	420 000
	<b>30</b>	461 000	530 000
	<b>40</b>	548 000	630 000
	<b>50</b>	626 000	720 000
	<b>60</b>	696 000	800 000
	<b>80</b>	826 000	950 000
	<b>100</b>	930 000	1 070 000
	<b>140</b>	1 130 000	1 300 000
	<b>180</b>	1 300 000	1 500 000
	<b>200</b>	1 390 000	1 600 000

## NOTES

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that rates for sewage pumping stations have increased significantly (by up to 140%) above the capital cost inflation rate since 2003. These increases are not uniform over all size ranges.
3. Reference Rate = 1.15 x Contract Rate (ie. Contract Rate plus SID of 15%).
4. Caution: The size and type of superstructure can add significant additional costs to the cost of the pumping station. These rates allow for submersible type pumping stations with low pumping heads (up to 50m). A superstructure is not included.
5. The rate includes excavation in OTR, concrete pumping station structure, mechanical and electrical works and controls, pipework within the pumping station and adjacent above ground weatherproof switchgear cabinet.
6. A typical submersible sewage pumping station layout is shown in Figure 7 on page 22.
7. The rates shown are for Design Flows (ie. Peak Wet Weather Flows).
8. Land acquisition and provision of power and data connection to the pumping station are not included.
9. Operation and maintenance costs are not included.
10. Emergency storage is not included.



**Figure 9** Elements of Preliminary Treatment



**Figure 10** Mechanically Raked Bar Screen (left) and Grit Channel and Flume (right).

**Table 11** Sewage Treatment Works - Siteworks

(For Preliminary Treatment see Table 12 on page 26, for Sludge Lagoons & Effluent Ponds see Table 13 on page 29, for Aeration Tanks see Table 14 on page 31, for UV Disinfection see Table 15 on page 33)

	<b>EP</b> (EP x 1000)	<b>Contract Rate</b> (\$) 2014	<b>Reference Rate</b> (\$) 2014
<b>Siteworks</b>	<b>2</b>	283 000	340 000
(Local fencing,	<b>4</b>	400 000	480 000
power and water	<b>8</b>	583 000	700 000
within the site,	<b>12</b>	683 000	820 000
roadworks within	<b>15</b>	750 000	900 000
the site,	<b>20</b>	892 000	1 070 000
amenities)	<b>30</b>	1 125 000	1 350 000

**NOTES**

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that the increase in rates for sewage treatment works – siteworks has remained similar to the capital cost inflation rate since 2003.
- Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
- The rate for sewage treatment consists of:  
Siteworks (common to all treatment processes) +  
(Prelim Treatment +/-or Sludge Lagoons +/-or Effluent Ponds +/-or Filtration +/-or Aeration +/-or UV Disinfection) ie. select the relevant processes and add to Siteworks. Other treatment processes (sand filtration, chemical nutrient reduction etc.) should be estimated separately and also added.  
Refer also to the examples on pages 42 and 43.
- Elements of preliminary treatment are illustrated in Figures 9 and 10 on page 24.
- Excavation is in OTR.
- Land acquisition, power supply to the site, data connection, access roads to the site and fencing around the site are not included.
- Operation and maintenance costs are not included.



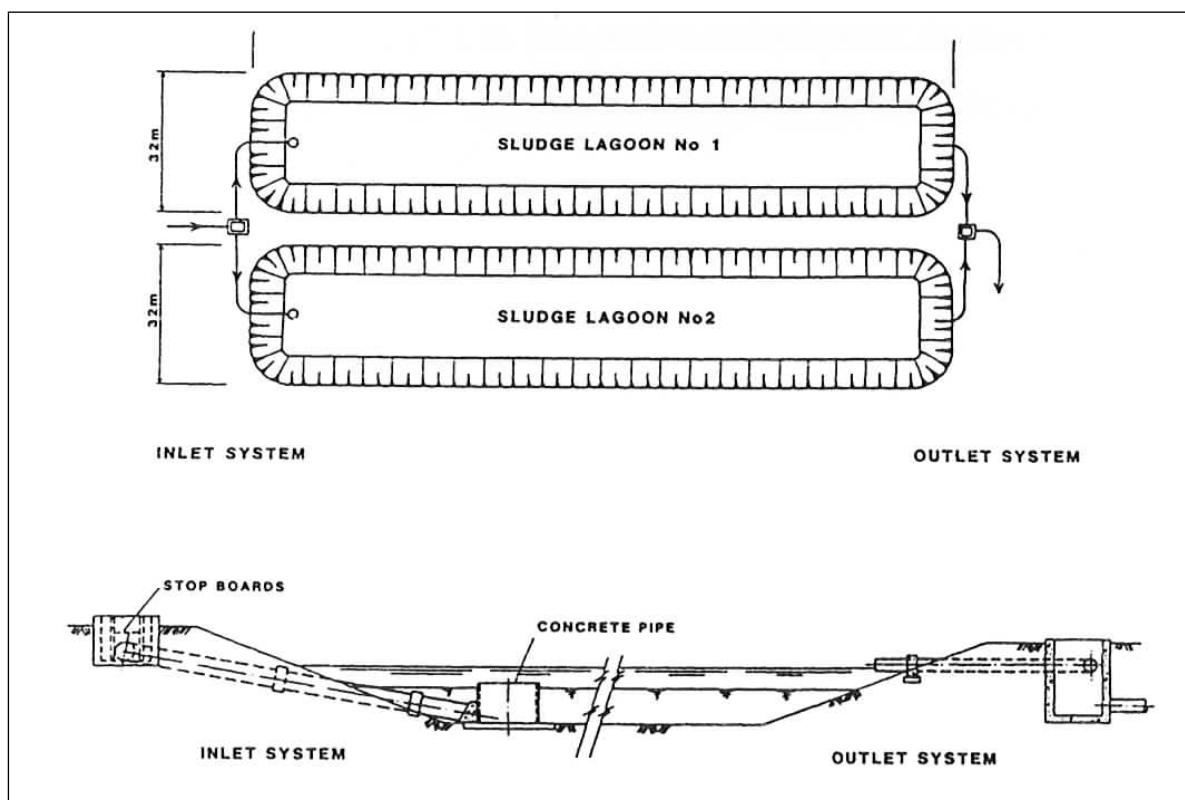
**Table 12** Sewage Treatment Works - Preliminary Treatment

(For Siteworks see Table 11 on page 25, for Sludge Lagoons & Effluent Ponds see Table 13 on page 29, for Aeration Tanks see Table 14 on page 31, for UV Disinfection see Table 15 on page 33)

	<b>EP</b> <i>(EP)</i>	<b>Contract Rate</b> <i>(\$)</i> 2014	<b>Reference Rate</b> <i>(\$)</i> 2014
<b>Mechanised Treatment</b>	<b>8 000</b>	1 042 000	1 250 000
	<b>12 000</b>	1 292 000	1 550 000
	<b>15 000</b>	1 375 000	1 650 000
	<b>20 000</b>	1 580 000	1 900 000
	<b>30 000</b>	2 080 000	2 500 000
<b>Nonmechanised Treatment</b>	<b>2 000</b>	79 000	95 000
	<b>4 000</b>	100 000	120 000
	<b>8 000</b>	166 000	200 000
	<b>12 000</b>	200 000	240 000
	<b>15 000</b>	242 000	290 000

## NOTES

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that the increase in rates for sewage treatment works – preliminary treatment (both mechanised and nonmechanised treatment) has remained similar to the capital cost inflation rate since 2003.
- Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
- The rate for sewage treatment consists of:  
Siteworks (common to all treatment processes) +  
(Prelim Treatment +/-or Sludge Lagoons +/-or Effluent Ponds +/-or Filtration +/-or Aeration +/-or UV Disinfection)  
ie. select the relevant processes and add to Siteworks.  
Refer also to the examples on pages 42 and 43.  
Other treatment processes (sand filtration, chemical nutrient reduction etc.) should be estimated separately and also added.
- Elements of preliminary treatment are illustrated in Figures 9 and 10 on page 24.
- Excavation is in OTR.
- Land acquisition, power supply to the site, data connection, access roads to the site and fencing around the site are not included.
- Operation and maintenance costs are not included.



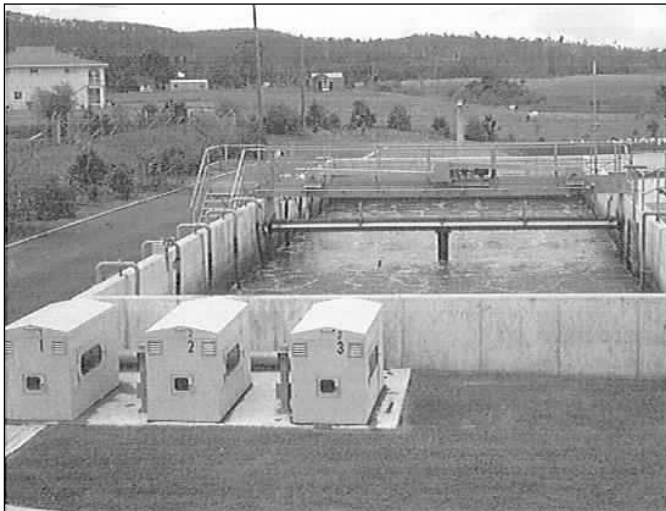
**Figure 11** Typical Sludge Lagoon



**Figure 12** Typical Sludge Lagoon, Shoalhaven Heads NSW



**Figure 13** Aerated Lagoon, Cobar NSW



**Figure 14** Intermittent Extended Aeration Tanks (IDEA), Port Macquarie NSW



**Figure 15** Box Intermittent Extended Aeration Tanks (IDEA), Bathurst NSW

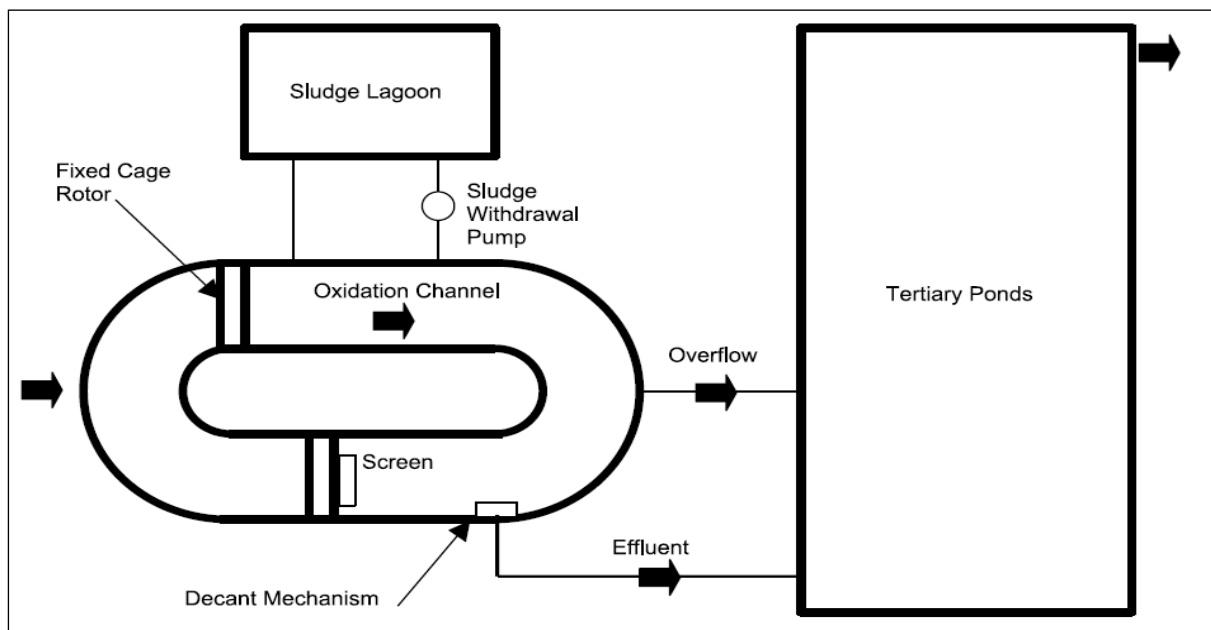
**Table 13** Sewage Treatment Works - Sludge Lagoons & Effluent Ponds

(For Siteworks see Table 11 on page 25, for Preliminary Treatment see Table 12 on page 26, for Aeration Tanks see Table 14 on page 31, for UV Disinfection see Table 15 on page 33)

	<i><b>EP</b></i>	<i><b>Contract Rate (\$) 2014</b></i>	<i><b>Reference Rate (\$) 2014</b></i>
<b>Sludge Lagoon No Mechanical Dewatering</b>	<b>2 000</b>	192 000	230 000
	<b>4 000</b>	290 000	350 000
	<b>8 000</b>	483 000	580 000
	<b>12 000</b>	658 000	790 000
	<b>15 000</b>	750 000	900 000
<b>Sludge Lagoon Mechanical Dewatering</b>	<b>12 000</b>	1 140 000	1 370 000
	<b>15 000</b>	1 230 000	1 480 000
	<b>20 000</b>	1 420 000	1 700 000
	<b>30 000</b>	1 670 000	2 000 000
<b>Effluent Pond</b>	<b>2 000</b>	192 000	230 000
	<b>4 000</b>	292 000	350 000
	<b>8 000</b>	483 000	580 000
	<b>12 000</b>	658 000	790 000
	<b>15 000</b>	750 000	900 000

## NOTES

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that rates for sludge lagoons (no mechanical dewatering) have increased by as much as 100% above the capital cost inflation rate since 2003, while the rate for sludge lagoons (mechanical dewatering) has not increased and the increase for effluent ponds is less than the capital cost inflation rate since 2003 by 15 to 35%. These changes are not uniform over all size ranges.
- Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
- The rate for sewage treatment consists of:  
Siteworks (common to all treatment processes) +  
(Prelim Treatment +/-or Sludge Lagoons +/-or Effluent Ponds +/-or Filtration +/-or Aeration +/-or UV Disinfection)  
ie. select the relevant processes and add to Siteworks.  
Refer also to the examples on pages 42 and 43.  
Other treatment processes (sand filtration, chemical nutrient reduction etc.) should be estimated separately and also added.
- Sludge Lagoons are illustrated in Figures 11 and 12 on page 27. Figure 13 on page 28 shows an aerated lagoon.
- Excavation is in OTR.
- Land acquisition is not included.
- Operation and maintenance costs are not included.

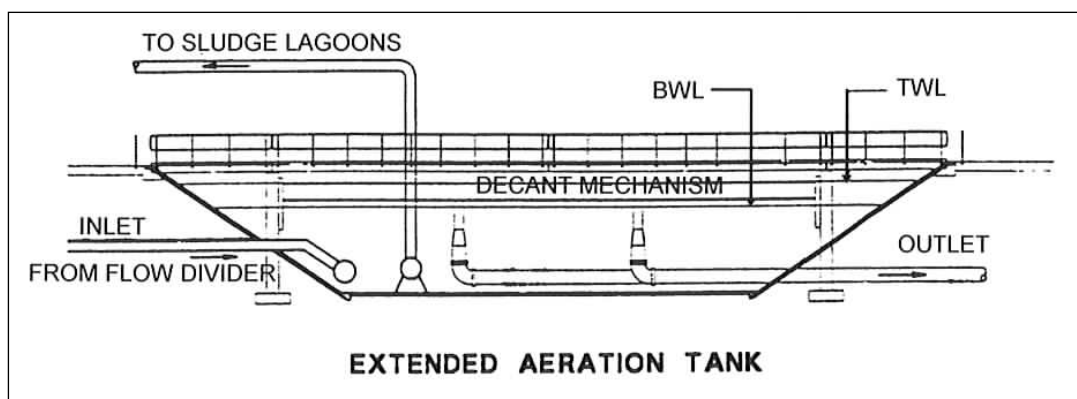


**Figure 16** Intermittent Decanted Extended Aeration (IDEA) Channel

The intermittent decanted extended aeration (IDEA) process is a variation of the activated sludge process. It does not include preliminary treatment. Three aeration tank configurations are frequently used in NSW:

- Aeration Channel (**Pasveer Channel P1000, P2000**) – a shallow concrete lined, continuous channel in sizes 500 ep to 2000 ep. The aerators are brush type surface aerators, consisting of two independent rotors mounted on floats. **There is usually no pretreatment with this process.**
- Aeration Box (**Bathurst Box B4000**) – a rectangular concrete tank is used instead of a continuous channel, in sizes 2000 and 4000 ep. The aerators are pontoon mounted vertical shaft mechanical aerators.
- Aeration Tank (Port Macquarie Tank) – concrete lined earth tanks in sizes 4000 ep to 20 000 ep. Aerators are float mounted similar to a Bathurst Box.

A variation of the IDEA process is the continuous EA process which includes a clarifier to separate solids and liquids and a sludge return. The solids are recirculated and the liquids are drawn-off.



**Figure 17** Typical Intermittently Decanted Extended Aeration Tank



**Table 14** Sewage Treatment Works - Intermittent Decanted Extended Aeration (IDEA)

(For siteworks see Table 11 on page 25, for Preliminary Treatment see Table 12 on page 26, for sludge and effluent ponds see Table 13 on page 29, for UV disinfection see Table 15 on page 33. Does not include filtration, phosphorus removal or clarifier.)

	<i>EP</i>	<i>Contract Rate (\$) 2014</i>	<i>Mech (%)</i>	<i>Elec (%)</i>	<i>Reference Rate (\$) 2014</i>
<b>Single Unit</b>	<b>1 000</b>	625 000	46	12	750 000
	<b>2 000</b>	1 100 000	46	12	1 320 000
	<b>4 000</b>	1 830 000	46	12	2 200 000
	<b>8 000</b>	3 080 000	46	12	3 700 000
	<b>12 000</b>	4 330 000	46	12	5 200 000
	<b>15 000</b>	5 080 000	46	12	6 100 000
<b>Double Unit</b>	<b>4 000</b>	2 170 000	46	12	2 600 000
	<b>8 000</b>	3 250 000	46	12	3 900 000
	<b>12 000</b>	4 500 000	46	12	5 400 000
	<b>15 000</b>	5 330 000	46	12	6 400 000
	<b>20 000</b>	6 500 000	46	12	7 800 000
	<b>30 000</b>	8 420 000	46	12	10 100 000
<b>P1000 Unit</b>	<b>1 000</b>	875 000	50	12	1 050 000
	<b>2 000</b>	1 790 000	50	12	2 150 000
<b>P2000 Unit</b>	<b>2 000</b>	1 790 000	50	10	2 150 000
	<b>4 000</b>	3 080 000	50	10	3 700 000
	<b>8 000</b>	5 500 000	50	10	6 600 000
<b>B4000 Unit</b>	<b>4 000</b>	2 330 000	33	8	2 800 000
	<b>8 000</b>	4 420 000	33	8	5 300 000
	<b>12 000</b>	5 670 000	33	8	6 800 000
<b>Twin B4000 Unit</b>	<b>4 000</b>	1 320 000			1 580 000
	<b>8 000</b>	3 080 000	30	8	3 700 000
	<b>12 000</b>	4 420 000			5 300 000

\* Typical Mechanical and Electrical costs are shown as a percentage of the Contract Rate

#### NOTES:

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that rates for aeration tanks, P1000 Units and P2000 Units have **increased** by about **10%** above the capital cost inflation rate since 2003.
- Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
- The rate for IDEA sewage treatment consists of:  
Siteworks (common to all treatment processes) +(Sludge Lagoons +/- Effluent Ponds + Aeration Tanks +/- UV Disinfection) ie. select the relevant processes and add to Siteworks.  
Refer also to the examples on pages 42 and 43.

- Other treatment processes (sand filtration, chemical nutrient reduction etc.) should be estimated separately and also added.
5. The IDEA process and terminology is illustrated on page 30. Examples of Aeration Tanks are shown in Figures 14 and 15 on page 28.
  6. Phosphorus removal is not included. This could add from \$200,000 to \$500,000 to the contract cost, depending on the size of the works.
  7. **Tertiary filtration** is not included in Table 14. Preliminary figures suggest that this can add a further 15% to the total treatment works cost.
  8. Excavation is in OTR.
  9. Land acquisition, power supply, data connection, access roads and fencing are not included.
  10. These rates should also be used for existing Trickling Filter and Continuous Aeration treatment works.
  11. Operation and maintenance costs are not included.

**Table 15** Sewage Treatment Works - UV Disinfection

(For siteworks see Table 11 on page 25, for Preliminary Treatment see Table 12 on page 26, for sludge lagoons and effluent ponds see Table 13 on page 29, for Aeration Tanks see Table 14 on page 31.)

	<i>EP</i>	<i>Contract Rate (\$) 2014</i>	<i>Civil Works (%)</i>	<i>Disinfection Equipment (%)</i>	<i>Reference Rate (\$) 2014</i>
<b>UV Disinfection</b>	<b>4 000</b>	175 000	10	90	210 000
	<b>8 000</b>	217 000	11	89	260 000
	<b>12 000</b>	267 000	12	88	320 000
	<b>15 000</b>	292 000	13	87	350 000
	<b>20 000</b>	342 000	14	86	410 000
	<b>30 000</b>	442 000	14	86	530 000
	<b>40 000</b>	533 000	15	85	640 000
	<b>80 000</b>	1 030 000	15	85	1 230 000
<b>Civil Cost</b>	<b>4 000</b>	18 000			21 000
	<b>8 000</b>	24 000			29 000
	<b>12 000</b>	32 000			38 000
	<b>15 000</b>	38 000			45 000
	<b>20 000</b>	48 000			58 000
	<b>30 000</b>	62 000			74 000
	<b>40 000</b>	79 000			95 000
	<b>80 000</b>	154 000			185 000

**NOTES:**

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that increase in rates for UV Disinfection has been slightly below the capital cost inflation rate since 2003.
- Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
- The rate for UV sewage disinfection consists of:  
UV Disinfection Equipment + civil cost (for UV disinfection only, for other civil costs see siteworks below) + Siteworks (common to all treatment processes) +  
(Sludge Lagoons +/- Effluent Ponds +/- Filtration or Aeration)  
ie. select the relevant processes and add to Siteworks.  
Refer also to the examples on pages 42 and 43.  
Other treatment processes (sand filtration, chemical nutrient reduction etc.) should be estimated separately and also added.
- Excavation is in OTR.
- Land acquisition is not included.
- Operation and maintenance costs are not included.

**Table 16** MBR Sewage Treatment Works

Capacity (DWF) ML/d	7.9	7.2	4	1	0.34
Design wet weather	3xADWF	3xADWF	1.1xADWF	1xADWF	3xADWF
Inlet works	Fine screens only	Included	Fine screens only	Included	Included
No. of process trains	3	1	1	1	1
No. of MBR trains	3	4	2	2	2
Biosolids treatment included	Dewatering	Aerobic digester and onsite long term covered storage	No	No	No
Effluent facilities	UV	UV, chlorination, large storage tank, pumping	UV, chlorination, CCT, storage tank, pumping, elevated storage	UV	UV, chlorination, CCT, pumping
Wet weather management	Diversion to existing ponds	Balance tank, diversion to existing pond	No	No	Balance pond
Other features affecting price		Pile foundation, includes demolition of old plant, significant fill	Includes feed pumping station	Compact design (sewer mining), no site works, includes pumping from sewer	Low temperature
Contract Rate (\$M)	26	37	32	4	4
Reference Rate (\$M)	31	44	38	4.6	4.7

**NOTES:**

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Reference Rate = 1.20 x Contract Rate (ie. Contract Rate plus SID of 20%).
3. Costs include design and commissioning of membrane bioreactor (MBR) sewage treatment works.
4. Costs exclude land acquisition, fence, access road, but include internal roads and site services.
5. Excavation is in OTR.
6. Land acquisition is not included.
7. Operation and maintenance costs are not included.

**Table 17** Additional Costs for Construction Difficulty, Rock Excavation and Dewatering

	Dia	Contract Rate		Reference Rate		
		Min depth	Min depth	1.5m deep	3m deep	4.5m deep
		(\$/m) 2014	(\$/m) 2014	(\$/m) 2014	(\$/m) 2014	(\$/m) 2014
<b>Rock excavation</b>						
Trench excavation (10% rock)	<b>100</b>	5	6	16	33	48
	<b>150</b>	6	7	18	34	51
	<b>200</b>	7	8	18	37	54
	<b>250</b>	8	9	20	39	58
	<b>300</b>	11	12	20	42	63
	<b>375</b>	14	15	24	51	77
	<b>450</b>	17	19	27	57	86
	<b>500</b>	18	20	29	63	95
	<b>600</b>	23	25	34	66	102
	<b>750</b>	34	37	42	86	136
<b>900</b>	46	51	51	104	157	
<b>Construction Difficulty</b>						
<b>MODERATE</b>	<b>100</b>	37	42			
ie. suburban site with other services, residential roads and traffic control	<b>150</b>	56	61			
	<b>200</b>	74	81			
	<b>250</b>	93	102			
	<b>300</b>	111	122			
	<b>375</b>	148	162			
	<b>450</b>	184	203			
	<b>500</b>	210	231			
	<b>600</b>	247	271			
	<b>750</b>	321	353			
	<b>900</b>	380	407			
<b>HIGH</b>	<b>100</b>	74	81			
ie. suburban site with other services, residential roads and traffic control	<b>150</b>	119	131			
	<b>200</b>	148	162			
	<b>250</b>	184	203			
	<b>300</b>	222	244			
	<b>375</b>	296	326			
	<b>450</b>	380	407			
	<b>500</b>	413	457			
	<b>600</b>	487	535			
	<b>750</b>	641	705			
	<b>900</b>	740	814			
<b>Dewatering</b>						
Assuming well point Dewatering. Note this may only apply to part of the length	<b>150</b>	93	102			
	<b>300</b>	104	115			
	<b>500</b>	111	122			
	<b>600</b>	123	136			
	<b>900</b>	130	142			

**NOTES**

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
- Caution: These are additional costs which should be added to the rates determined from Table 1 on page 11, Table 2 on page 12, Table 3 on page 13, Table 9 on page 21 and Table 18 on page 36. These additional costs should be applied with judgement and care since they may represent a significant part of the total capital cost.



**Table 18** Stormwater Mains

(See also Table 17 on page 35 for additional costs)

	<i><b>Dia</b></i> <i>(mm)</i>	<i><b>Contract</b></i> <i><b>Rate</b></i> <i>(\$/m)</i> <i>2014</i>	<i><b>Reference</b></i> <i><b>Rate</b></i> <i>(\$/m)</i> <i>2014</i>
<b>uPVC</b>	<b>100</b>	62	68
	<b>150</b>	76	84
	<b>225</b>	125	137
	<b>300</b>	191	210
	<b>375</b>	236	260
<b>FRC</b>	<b>300</b>	164	180
	<b>375</b>	209	230
	<b>450</b>	273	300
	<b>525</b>	318	350
	<b>600</b>	364	400
	<b>750</b>	509	560
<b>RCP</b>	<b>300</b>	145	160
	<b>375</b>	200	220
	<b>450</b>	273	300
	<b>525</b>	327	360
	<b>600</b>	364	400
	<b>750</b>	482	530
	<b>900</b>	727	800
	<b>1 200</b>	1 180	1 300
	<b>1 500</b>	1 730	1 900
	<b>1 800</b>	2 590	2 850

## NOTES

- These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
- Review of recent contracts shows that rates for **uPVC** stormwater mains have **increased** by as much as **33%** above the capital cost inflation rate since 2003, while the rate for FRC stormwater mains has increased by up to 35% and the rate for RCP stormwater mains has increased by up to 25%. These increases are not uniform over all size ranges.
- Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
- The rates include clearing, supply, excavate, lay, backfill and restoration.
- Restoration is assumed to be in the ratio 20% footpath, 20% roadway and 60% lawn.
- The rates do not include stormwater pits (see Table 19 on page 37).
- The rates do not include tipping or disposal of spoil.
- Excavation is in OTR. For rock see Table 17 on page 35.
- Pipe materials in Table 18 above are uPVC Class SNB and Concrete Class 2.
- Caution: Additional costs apply for mains constructed in congested urban areas, in rock or where dewatering is required (refer Table 17 on page 35).

**Table 19** Stormwater Pits

	<b>SIZE W x B (mm)</b>	<b>Contract Rate (\$/m) 2014</b>	<b>Reference Rate (\$/m) 2014</b>
<b>Junction Pit Ungrated</b>	<b>600 x 600</b>	1 270	1 400
	<b>900 x 900</b>	1 550	1 700
<b>Grated</b>	<b>600 x 600</b>	1 820	2 000
	<b>900 x 900</b>	2 090	2 300
<b>Kerb Inlet Pit</b>	<b>Single Grate</b>	1 550	1 700
	<b>Double Grate</b> 1m Lintel	2 180	2 400
	<b>Double Grate</b> Extended Lintel	2 360	2 600

## NOTES

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that the increase in rates for stormwater junction pits has remained similar to the capital cost inflation rate since 2003.
3. Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
4. The rates include supply, excavate, construct, backfill and restoration.
5. Excavation is in OTR.

**Table 20** Stormwater Culverts

	<b>SIZE</b> (mm)	<b>Contract Rate</b> (\$/m) 2014	<b>Reference Rate</b> (\$/m) 2014
<b>Box Culvert</b>	<b>375 x 225</b>	227	250
	<b>600 x 450</b>	397	430
	<b>750 x 600</b>	645	710
	<b>1 050 x 450</b>	1 000	1 100
	<b>1 200 x 900</b>	1 090	1 200
<b>Precast Pipe Culvert</b> (diameter)	<b>300</b>	168	185
	<b>450</b>	336	370
	<b>600</b>	482	530
	<b>750</b>	727	800
	<b>900</b>	940	1 030
	<b>1200</b>	1 290	1 420
	<b>1500</b>	1 640	1 800
	<b>1800</b>	2 590	2 850
<b>Headwall (Single)</b> (diameter)	<b>300</b>	382	420
	<b>450</b>	382	420
	<b>600</b>	673	740
	<b>750</b>	1 050	1 150
	<b>900</b>	1 360	1 500
	<b>1 200</b>	3 090	3 400
	<b>1 500</b>	4 270	4 700
<b>Headwall (Double)</b> (diameter)	<b>300</b>	955	1 050
	<b>600</b>	1 450	1 600
	<b>1 200</b>	5 730	6 300
	<b>1 500</b>	8 180	9 000
	<b>1 800</b>	12 500	13 700

**NOTES**

1. These rates are for June 2014 valuation of the capital cost of existing assets and exclude contingencies and the GST. A suitable percentage for contingencies must be included (section 2.5 on page 8) for valuation of new works.
2. Review of recent contracts shows that the increase in rates for stormwater box culverts has remained similar to the capital cost inflation rate since 2003, while the rate for stormwater single headwalls has increased by up to 70% and the rate for stormwater double headwalls has increased by up to 30%. These increases are not uniform over all size ranges.
3. These rates are based on limited data and should be used with caution.
4. Reference Rate = 1.10 x Contract Rate (ie. Contract Rate plus SID of 10%).
5. The rates include supply, excavate and construct.

## 4. Applying the Reference Rates

**Water mains or sewer mains** – select the Reference Rate for the particular diameter and type of pipe from Table 1 on page 11, Table 2 on page 12, Table 3 on page 13 or Table 9 on page 21 and add to this rate any additional costs for rock excavation, dewatering or construction difficulty from Table 17 on page 35.

**Water pumping station (distribution), sewage pumping station, service reservoir or water treatment works** – select the appropriate table in section 3 on page 10 for the facility and extracting the Reference Rate for the particular facility characteristics (eg. installed power for a water pumping station).

**Sewage treatment works** – from Table 11 (on page 25) to Table 16 (on page 34). Select the Reference Rate for the particular type of facility and add the Reference Rate for the siteworks together with the Reference Rate for preliminary treatment, sludge lagoons or effluent ponds as appropriate.

**Stormwater assets** – select the Reference Rate for the particular diameter and type of main or culvert from Table 18 on page 36, Table 19 on page 37 and Table 20 on page 38 and add to this rate the cost of disposal of spoil and any additional costs for rock excavation, dewatering or construction difficulty from Table 17 on page 35.

The costs of land acquisition, access roads, power supply, data connection and fencing should also be included where appropriate as indicated in section 2.7 on page 8.

Examples of valuations are shown below.

### 4.1. Water Supply Mains

#### 4.1.1 Example 1: 150 Diameter AC Water Supply Reticulation Main

As AC is no longer current technology, existing AC mains should be valued at the replacement cost for current technology, which is uPVC mains.

The Total Rate (in \$/m) is required for a 150mm diameter uPVC water supply reticulation main, at minimum depth.

Reference Rate for 150mm uPVC Water Retic Main = \$140/m                      Refer Table 1 on page 11

#### 4.1.2 Example 2: 200 Diameter DICL Water Supply Trunk Main

The Total Rate (in \$/m) is required for a 200mm diameter DICL water supply trunk main, at minimum depth.

Reference Rate for 200mm DICL Water Trunk Main = \$190/m                      Refer Table 2 on page 12

#### 4.1.3 Example 3: 375 Diameter uPVC Water Supply Trunk Main

The Total Rate (in \$/m) is required for a 375mm diameter uPVC water supply trunk main, at minimum depth.

Reference Rate for 375mm uPVC Water Trunk Main = \$370/m                      Refer Table 1 on page 11

#### 4.1.4 Example 4: 600 Diameter Steel Water Supply Trunk Main

The Total Rate (in \$/m) is required for a 600mm diameter Steel water supply trunk main, at minimum depth. For this size of main it would be appropriate to use Ductile Iron as this is less costly than steel.

Reference Rate for 600mm DICTL Water Trunk Main = \$750/m Refer Table 2 on page 12

#### 4.1.5 Example 5: 200 Diameter DICTL Water Supply Trunk Main with 5% Rock

The Total Rate (in \$/m) is required for a 200mm diameter DICTL water supply trunk main, at minimum depth with 5% rock.

Reference Rate for 200mm DICTL Water Trunk Main = \$190/m Refer Table 2 on page 12

Reference Rate for 5% rock excavation (5/10 x \$8/m) = \$ 4/m Refer Table 17 on page 35

Total Rate = \$194/m

#### 4.1.6 Example 6: 200 Diameter DICTL Water Supply Trunk Main with Moderate Construction Difficulty

The Total Rate (in \$/m) is required for a 200mm diameter DICTL water supply trunk main, at minimum depth with moderate construction difficulty.

Reference Rate for 200mm DICTL Water Trunk Main = \$190/m Refer Table 2 on page 12

Reference Rate for moderate construction difficulty = \$ 81/m Refer Table 17 on page 35

Total Rate = \$271/m

### 4.2. Sewer Mains

#### 4.2.1 Example 7: 150 Diameter VC Sewer Reticulation Main at Minimum Depth

The Total Rate (in \$/m) is required for a 150mm diameter VC sewer reticulation main, at minimum depth.

Reference Rate for 150mm VC Sewer Retic Main = \$175/m Refer Table 9 on page 21

#### 4.2.2 Example 8: 225 Diameter uPVC Sewer Trunk Main at Minimum Depth

The Total Rate (in \$/m) is required for a 225mm diameter uPVC sewer trunk main, at minimum depth.

Reference Rate for 225mm uPVC Sewer Trunk Main = \$220/m Refer Table 9 on page 21

#### 4.2.3 Example 9: 100 Diameter uPVC Sewer Rising Main at Minimum Depth

The Total Rate (in \$/m) is required for a 100mm diameter uPVC sewer rising main, at minimum depth.

As indicated in note 9 on page 21, use the value in Table 1 for a 100 uPVC trunk main, ie. \$80/m.

Reference Rate for 100mm uPVC Sewer Rising Main = \$ 85/m Refer Table 1 on page 11



#### 4.2.4 Example 10: 300 Diameter VC Sewer Reticulation Main - 3m Depth

The Total Rate (in \$/m) is required for a 300mm diameter VC sewer reticulation main, at 3m depth.

Reference Rate for 300mm VC Sewer Retic Main = \$ 430/m

Refer Table 9 on page 21

#### 4.2.5 Example 11: 300 Diameter VC Sewer Reticulation Main - 4m Depth, 15% Rock

The Total Rate (in \$/m) is required for a 300mm diameter VC sewer reticulation main, at 4m depth with 15% rock.

Reference Rate for 300mm VC Sewer Retic Main = \$ 570/m

Refer Table 9 on page 21

Reference Rate for 15% rock is:

$$15/10 \times [\$42 + 1/1.5 * (\$63 - \$42)] = \$ 84/m$$

Refer Table 17 on page 35

$$\text{Total Rate} = \$ 654/m$$

#### 4.2.6 Example 12: 300 Diameter VC Sewer Reticulation Main - 3m Depth with High Construction Difficulty

The Total Rate (in \$/m) is required for a 300mm diameter VC sewer reticulation main, at 3m depth with high construction difficulty.

Reference Rate for 300mm VC Sewer Retic Main = \$ 430/m

Refer Table 9 on page 21

Reference Rate for high construction difficulty = \$ 244/m

Refer Table 17 on page 35

$$\text{Total Rate} = \$ 674/m$$

### 4.3. Water Pumping Stations

#### 4.3.1 Example 13: Water Pumping Station (1200 kW)

The cost is required for a water distribution pumping station with installed power of 1200 kW.

Reference Rate for Civil Cost = \$ 756 000

Refer Table 4 on page 14

Reference Rate for M & E Cost = \$1 944 000

Refer Table 4 on page 14

$$\text{Total Cost} = \$2 700 000$$

Note: Costs for land acquisition, access road and power supply must be added (section 2.6 on page 8).

## 4.4. Water Treatment Works

### 4.4.1 Example 14: Water Treatment Works of 10 ML/d Capacity

The cost is required for a water treatment works of 10 ML/d capacity.

Reference Rate for Lagoon Sedimentation = \$9 700 000 Refer Table 5 on page 16

or

Reference Rate for Conventional Water Treatment = \$14 000 000 Refer Table 5 on page 16

Note: Costs for land acquisition, access road and power supply must be added (section 2.6 on page 8).

## 4.5. Service Reservoirs

### 4.5.1 Example 15: Service Reservoir (4ML Storage Capacity)

The cost is required for a service reservoir of 4 ML capacity.

Reference Rate for a Steel Reservoir = \$1 150 000 Refer Table 8 on page 20

Reference Rate for a Concrete Reservoir = \$1 900 000 Refer Table 8 on page 20

Reference Rate for a Steel Standpipe Reservoir = \$1 480 000 Refer Table 8 on page 20

Note: Costs for control valves, land acquisition and access road must be added (section 2.6 on page 8).

## 4.6. Sewage Pumping Stations

### 4.6.1 Example 16: Sewage Pumping Station (Peak Wet Weather Flow 30 L/s at 30m head)

The cost is required for a sewage pumping station with a Peak Wet Weather Flow of 30 L/s at a head of 30m.

Reference Rate for Pumping Station = \$ 530 000 Refer Table 10 on page 23

Note: Costs for land acquisition, access road and power supply must be added (section 2.6 on page 8).

## 4.7. Sewage Treatment Works

### 4.7.1 Example 17: Double Unit Biological Trickling Filtration Plant for 8,000 EP

The cost is required for a sewage treatment works for 8,000 EP consisting of a double unit biological trickling filtration plant with mechanised preliminary treatment, a sludge lagoon with no mechanical dewatering and an effluent pond.

As a trickling filter is no longer current technology, use the reference rate for an Aeration Tank (Table 14 on page 31)

Reference Rate for Siteworks	= \$ 700 000	Refer Table 11 on page 25
Reference Rate for Preliminary Treatment	= \$1 250 000	Refer Table 12 on page 26
Reference Rate for a Sludge lagoon	= \$ 580 000	Refer Table 13 on page 29
Reference Rate for Effluent Pond	= \$ 580 000	Refer Table 13 on page 29
Reference Rate for Aeration Tank	= <u>\$3 700 000</u>	Refer Table 14 on page 31
Total Cost	= \$6 810 000	

Note: Costs for land acquisition, access road and power supply must be added (section 2.6 on page 8).

#### 4.7.2 Example 18: Double Unit Extended Aeration Tank for 12,000 EP

The cost is required for a sewage treatment works for 12,000 EP consisting of a double unit extended aeration tank with mechanised preliminary treatment, a sludge lagoon with mechanical dewatering, an effluent pond and UV disinfection.

Reference Rate for Siteworks	= \$ 820 000	Refer Table 11 on page 25
Reference Rate for Preliminary Treatment	= \$ 1 550 000	Refer Table 12 on page 26
Reference Rate for a Sludge lagoon	= \$ 1 370 000	Refer Table 13 on page 29
Reference Rate for Effluent Pond	= \$ 790 000	Refer Table 13 on page 29
Reference Rate for Aeration Tank	= \$ 5 400 000	Refer Table 14 on page 31
Reference Rate for UV Disinfection	= <u>\$ 320 000</u>	Refer Table 15 on page 33
Total Cost	= \$10 250 000	

Note: Costs for land acquisition, access road and power supply must be added (section 2.6 on page 8).

#### 4.7.3 Example 19: B4000 Extended Aeration Box for 4,000 EP

The cost is required for a sewage treatment works for 4000 EP consisting of a B4000 extended aeration box with preliminary treatment (non-mechanised), a sludge lagoon with no mechanical dewatering and no effluent pond.

Reference Rate for Siteworks	= \$ 480 000	Refer Table 11 on page 25
Reference Rate for Preliminary Treatment	= \$ 120 000	Refer Table 12 on page 26
Reference Rate for a Sludge lagoon	= \$ 350 000	Refer Table 13 on page 29
Reference Rate for B4000 Extended Aeration Box	= <u>\$2 800 000</u>	Refer Table 14 on page 31
Total Cost	= \$3 750 000	

Note: Costs for land acquisition, access road and power supply must be added (section 2.6 on page 8).

## 4.8. Stormwater

### 4.8.1 Example 20: 450 Diameter RCP Stormwater Main

The Total Rate (in \$/m) is required for a 450mm diameter RC stormwater main at minimum depth.

Reference Rate for 450mm RCP Stormwater Main = \$ 300/m Refer Table 18 on page 36

Note: Costs for spoil disposal must be added where appropriate.

### 4.8.2 Example 21: Kerb Inlet Pit (Double Grate with Extended Lintel)

The Cost (in \$) is required for a Kerb Inlet Pit with Double Grate and 1m extended lintel.

Reference Rate for Kerb Inlet Pit = \$2 600 Refer Table 19 on page 37

Note: Costs for spoil disposal must be added where appropriate.

### 4.8.3 Example 22: 600 Diameter RCP Stormwater Culvert beneath Road Embankment

The Cost (in \$) is required for a 600mm diameter RCP stormwater main 20m long, beneath a road embankment with precast headwalls at each end.

Reference Rate for 600mm RCP Stormwater Main

(\$400/m x 20m) = \$8 000 Refer Table 18 on page 36

Reference Rate for double headwalls

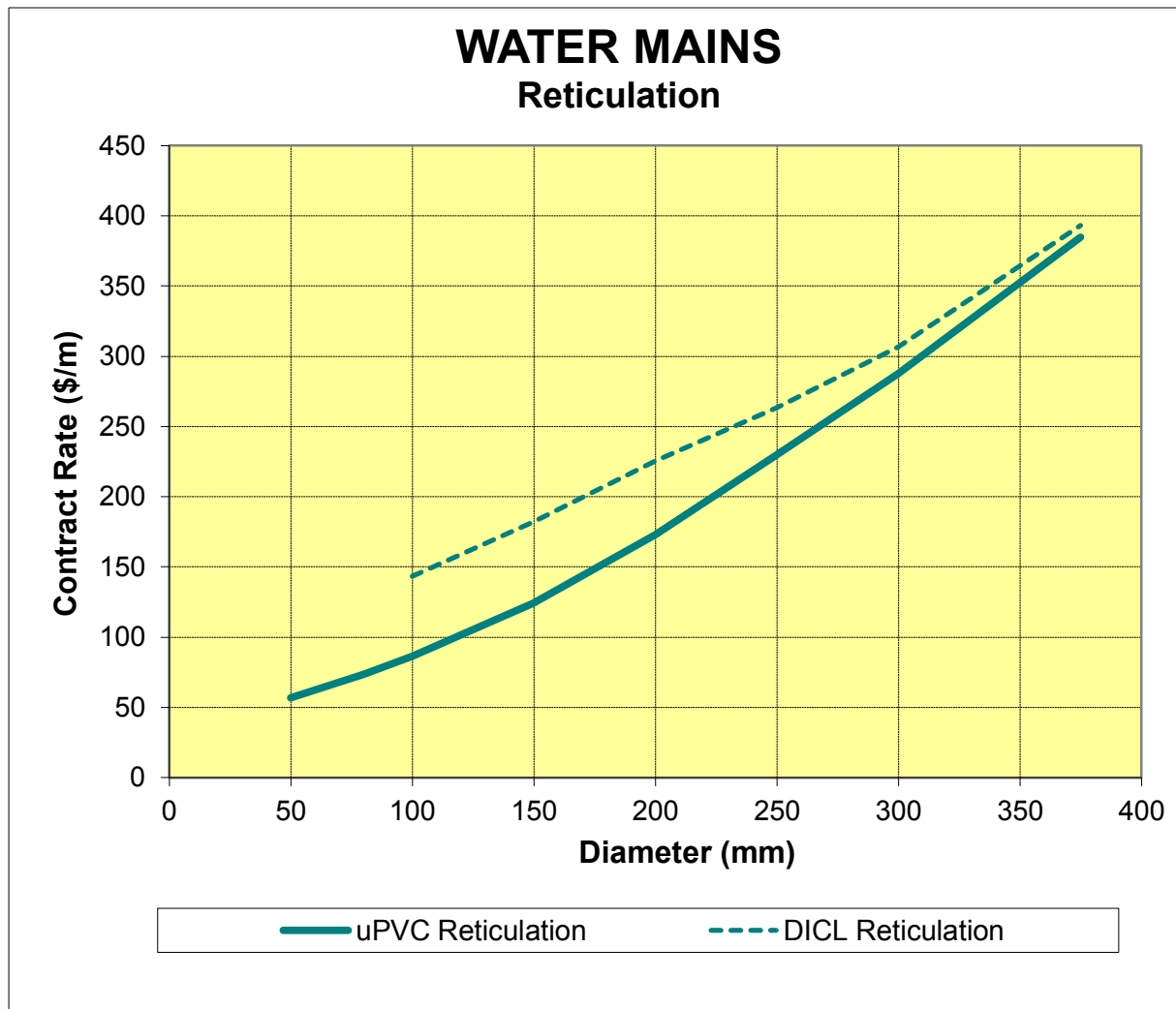
= \$1 600 Refer Table 20 on page 38

Total Cost = \$9 600

The above cost this does not include an amount for the road surface.

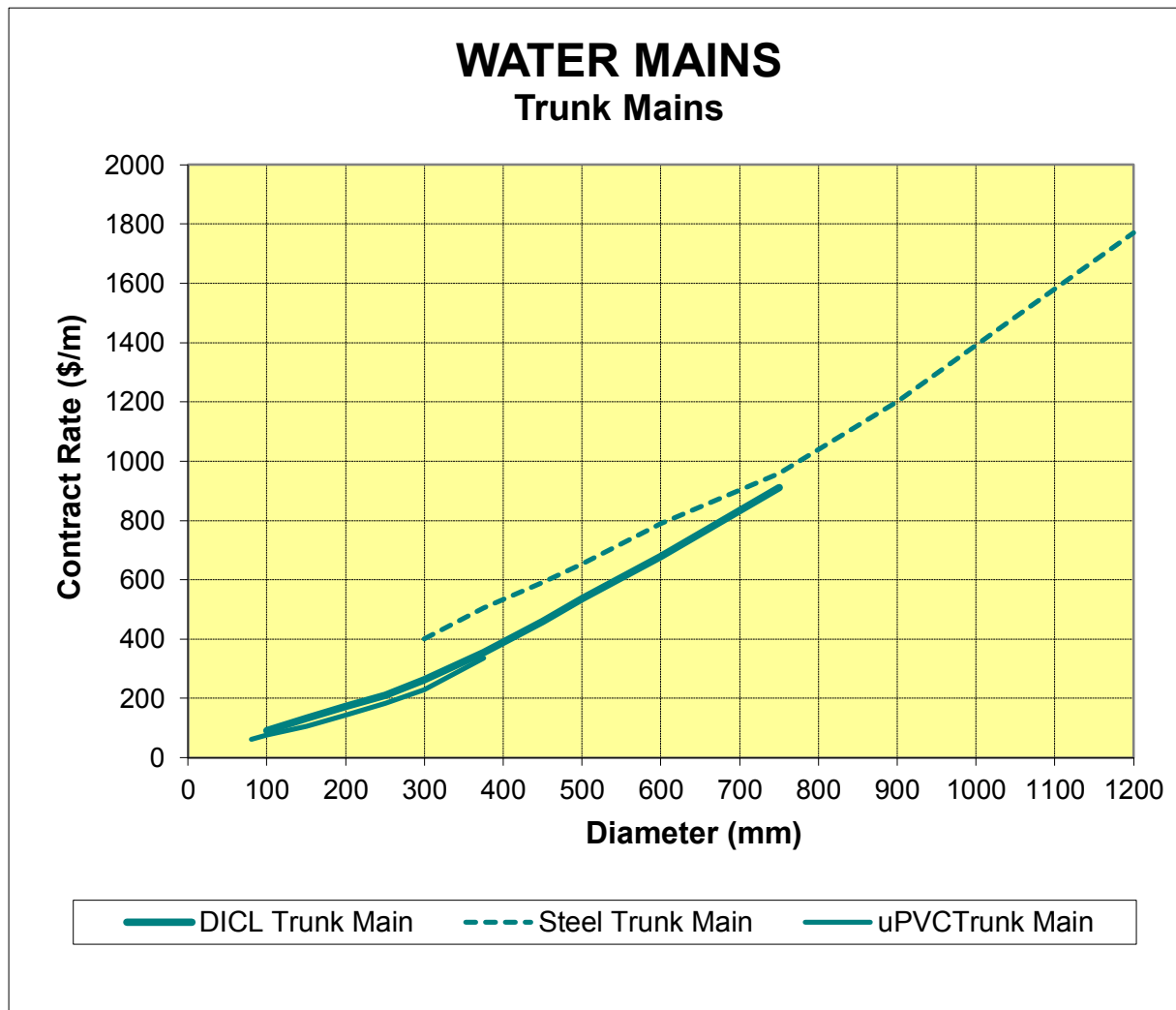
Note: Costs for spoil disposal must be added where appropriate.

## 5. Contract Rates – Figures 18 to 34

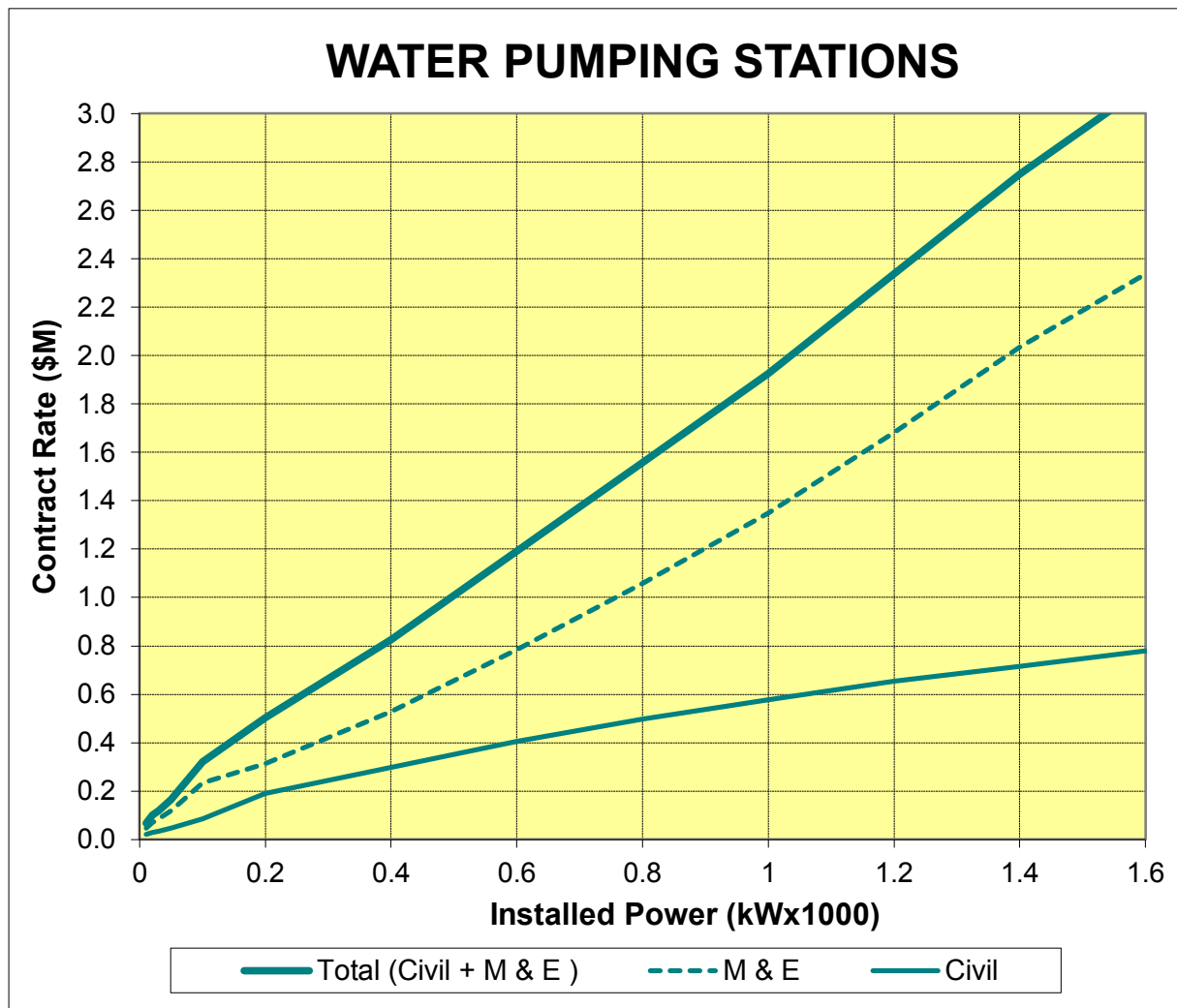


**Figure 18** Water Mains – Reticulation (June 2014\$)

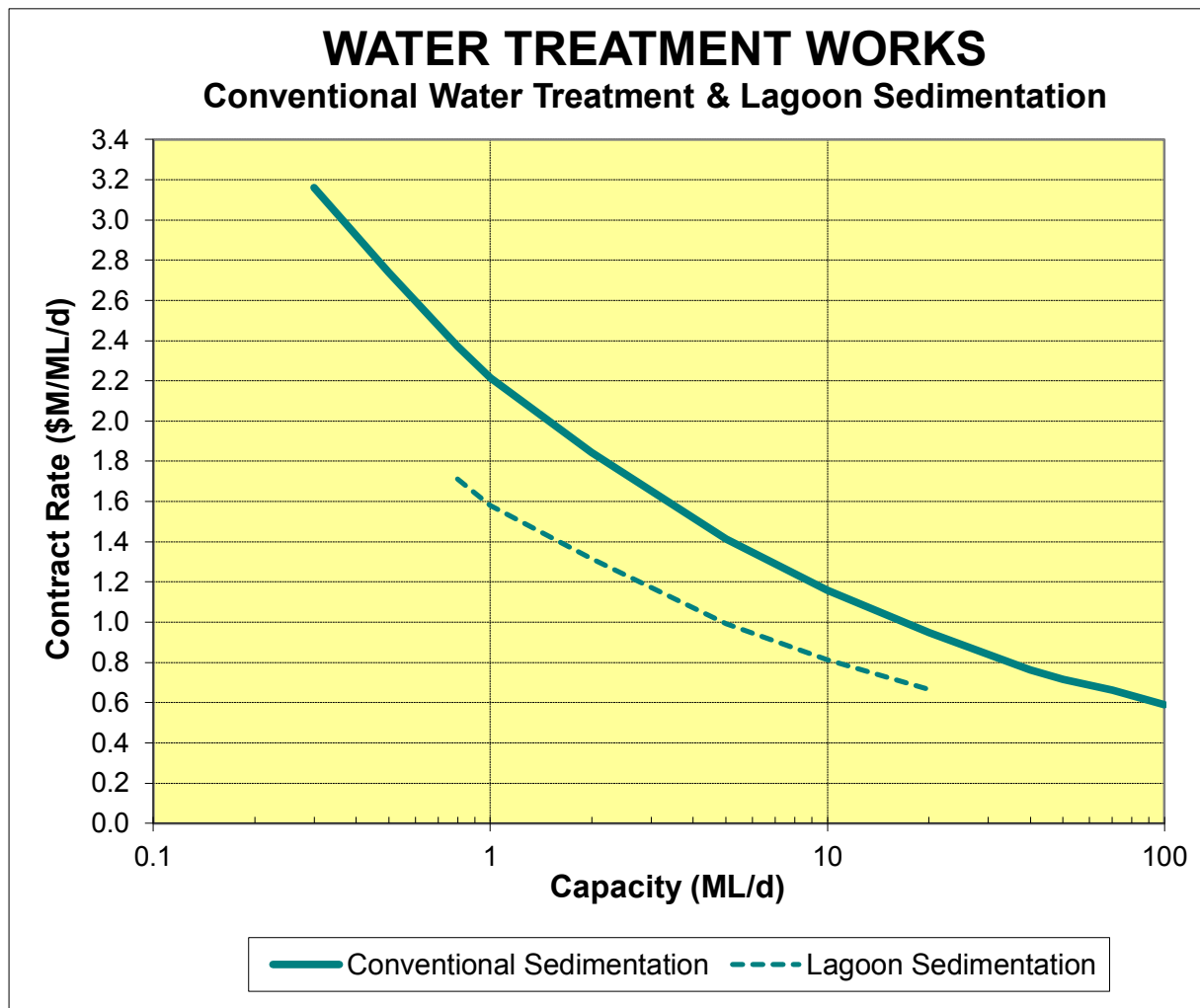




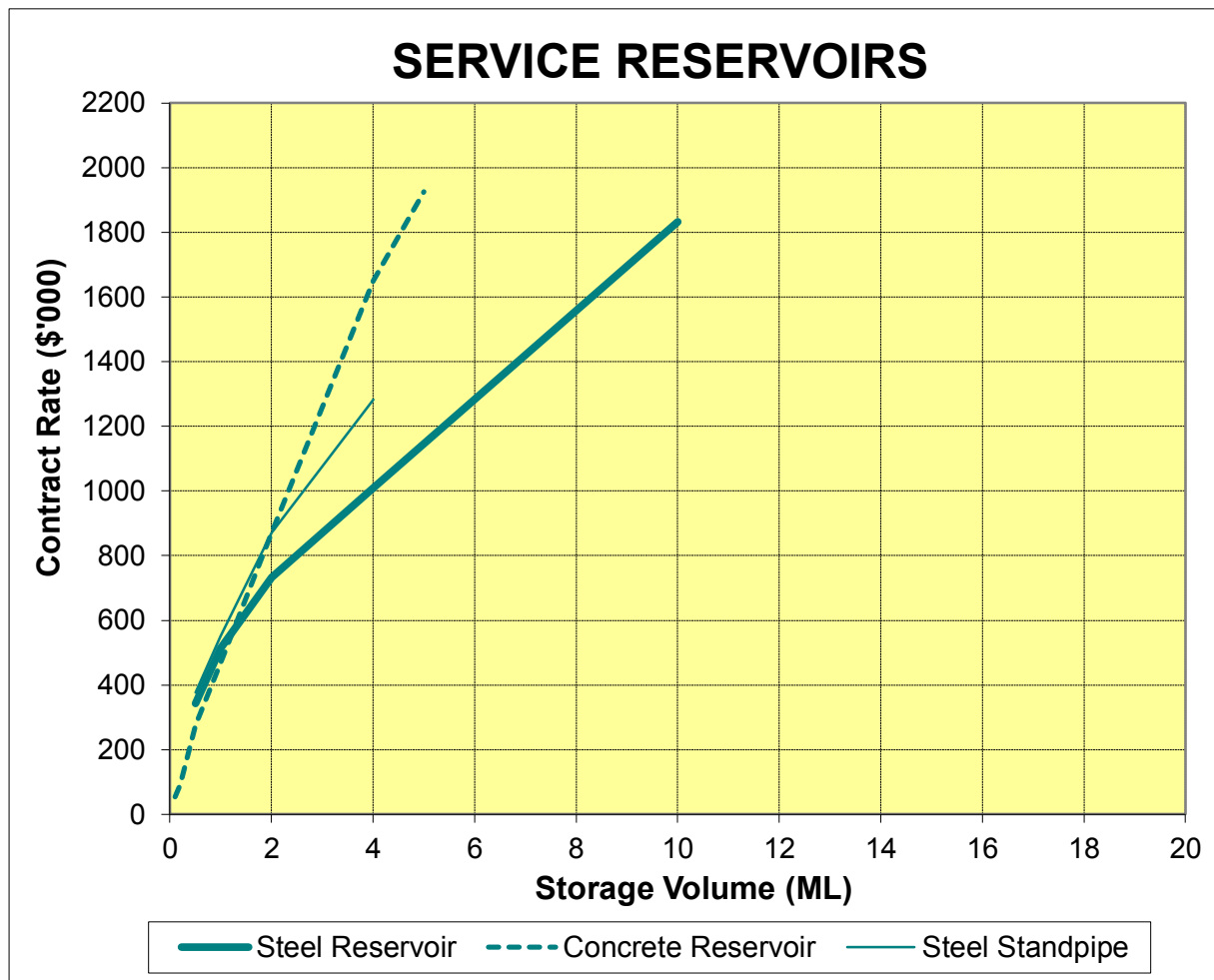
**Figure 19** Water Mains - Trunk Mains (June 2014\$)



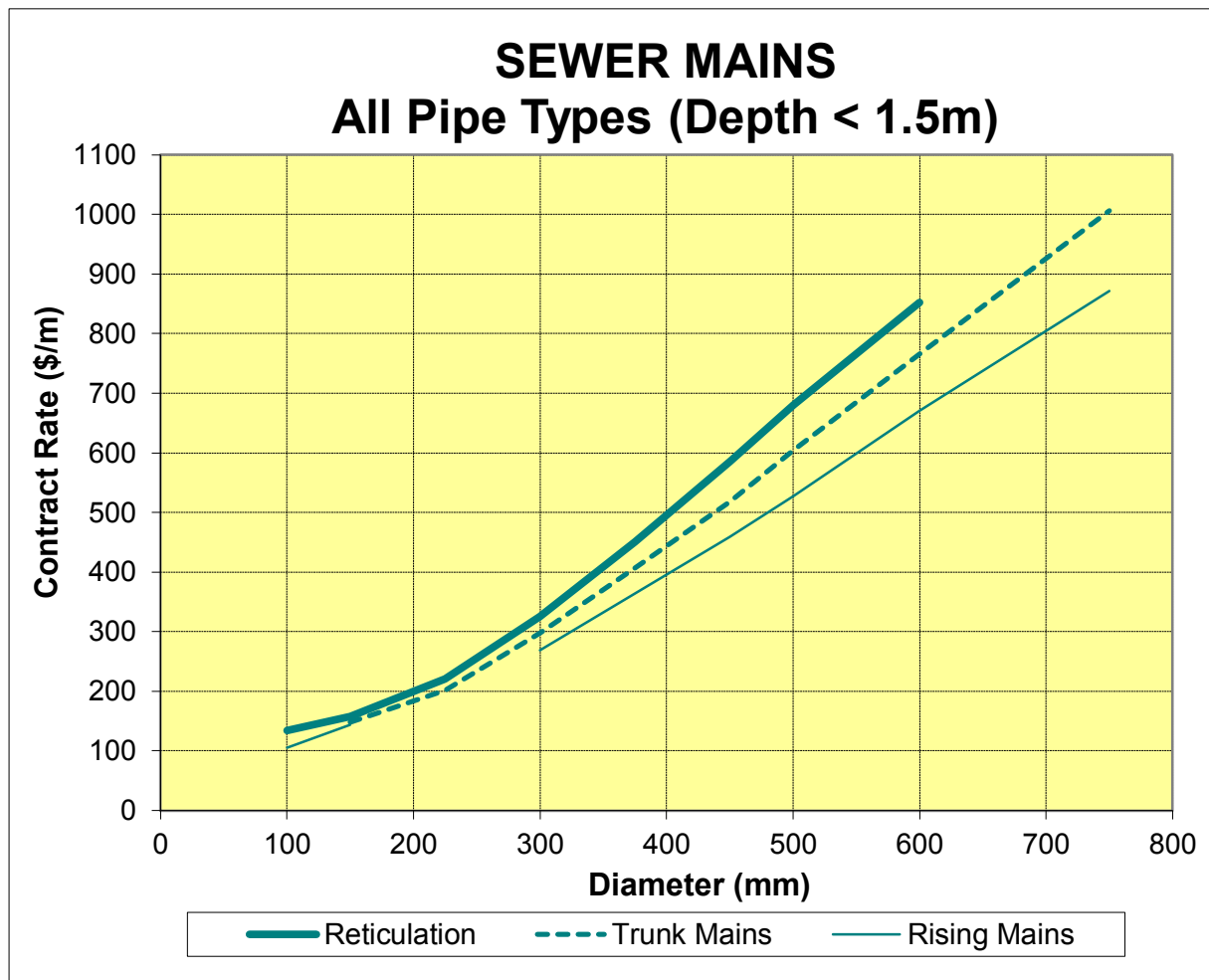
**Figure 20** Water Pumping Stations (June 2014\$)



**Figure 21** Water Treatment Works – Conventional Water Treatment and Lagoon Sedimentation (June 2014\$)

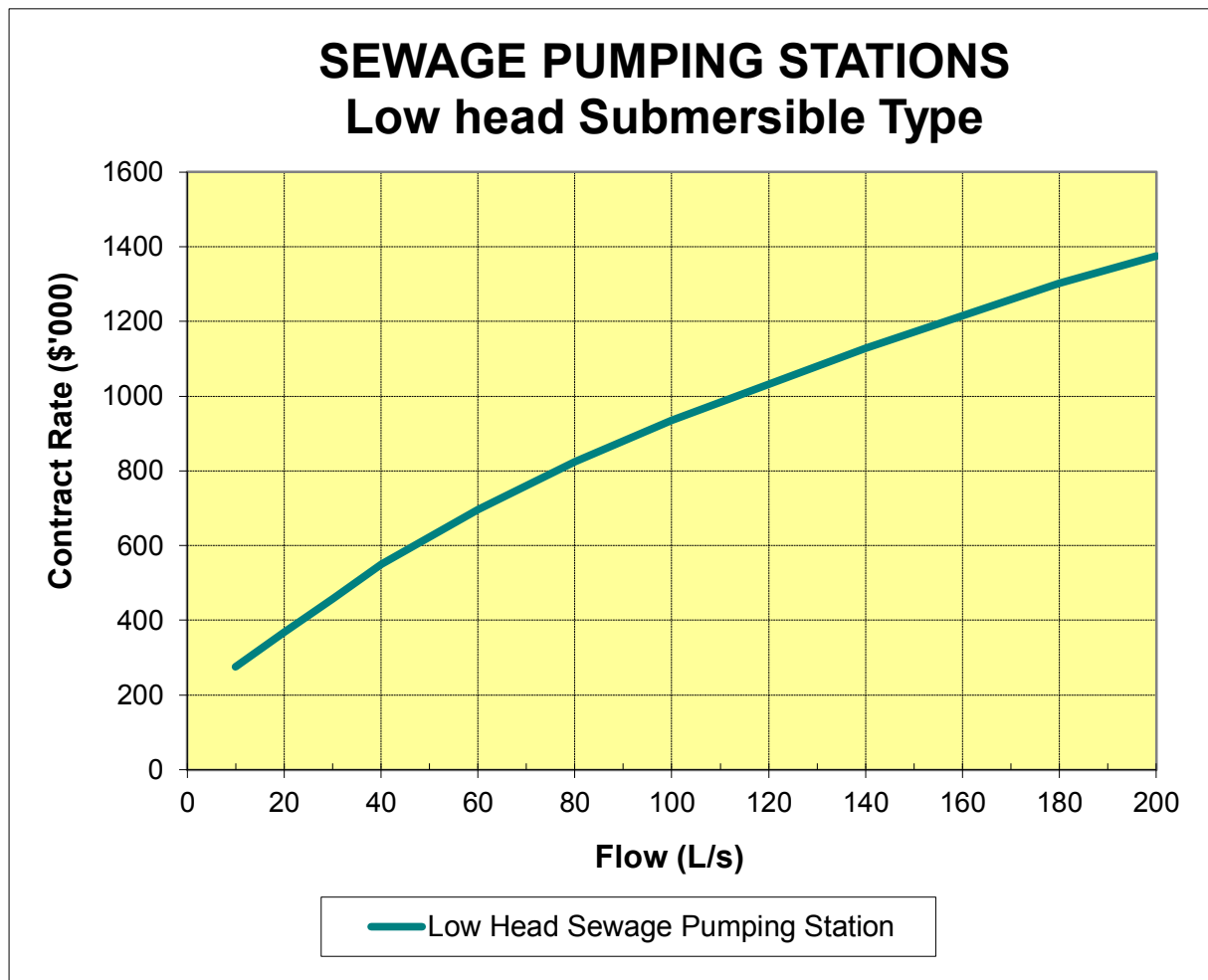


**Figure 22** Service Reservoirs (June 2014\$)

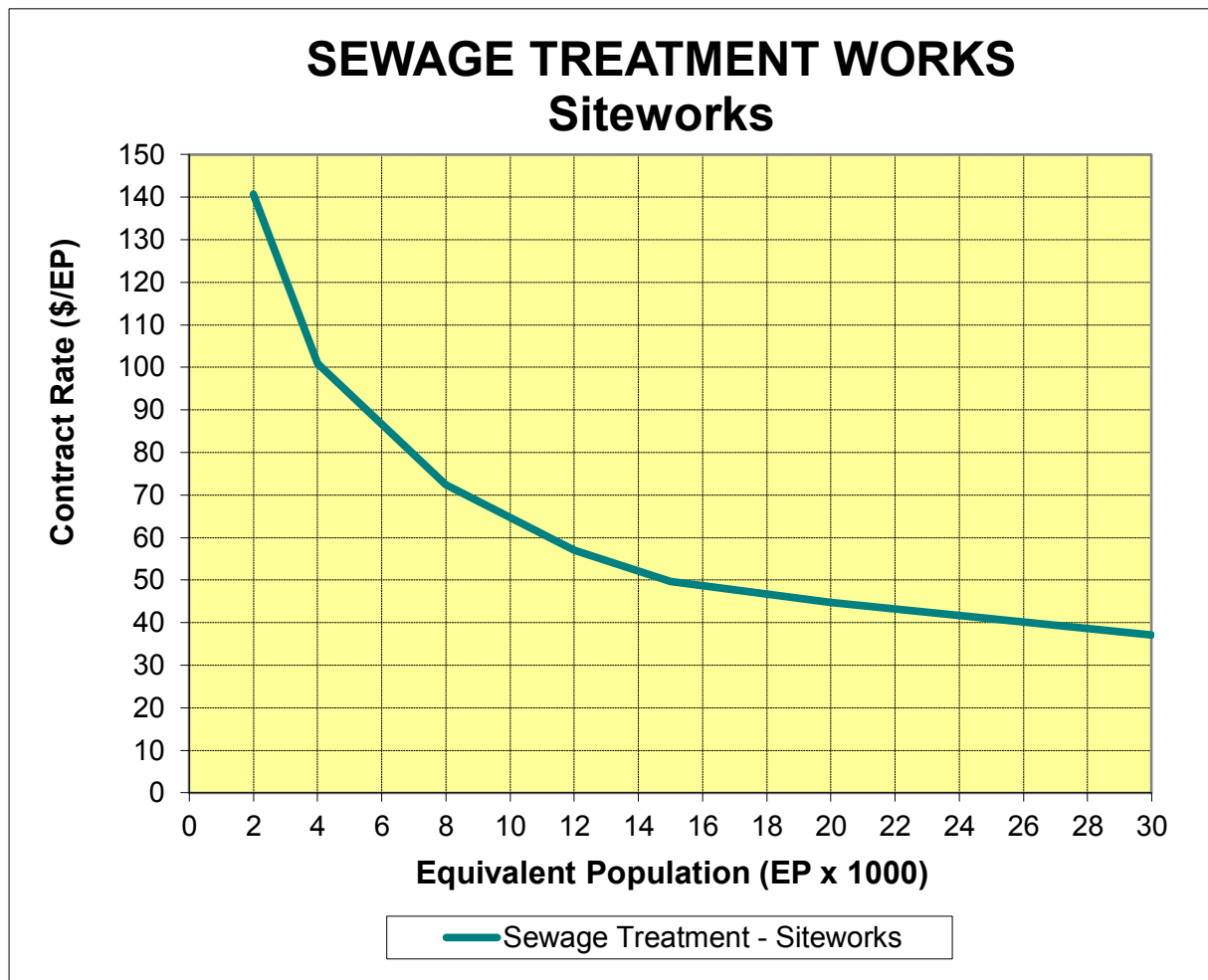


**Figure 23** Sewer Mains (June 2014\$)

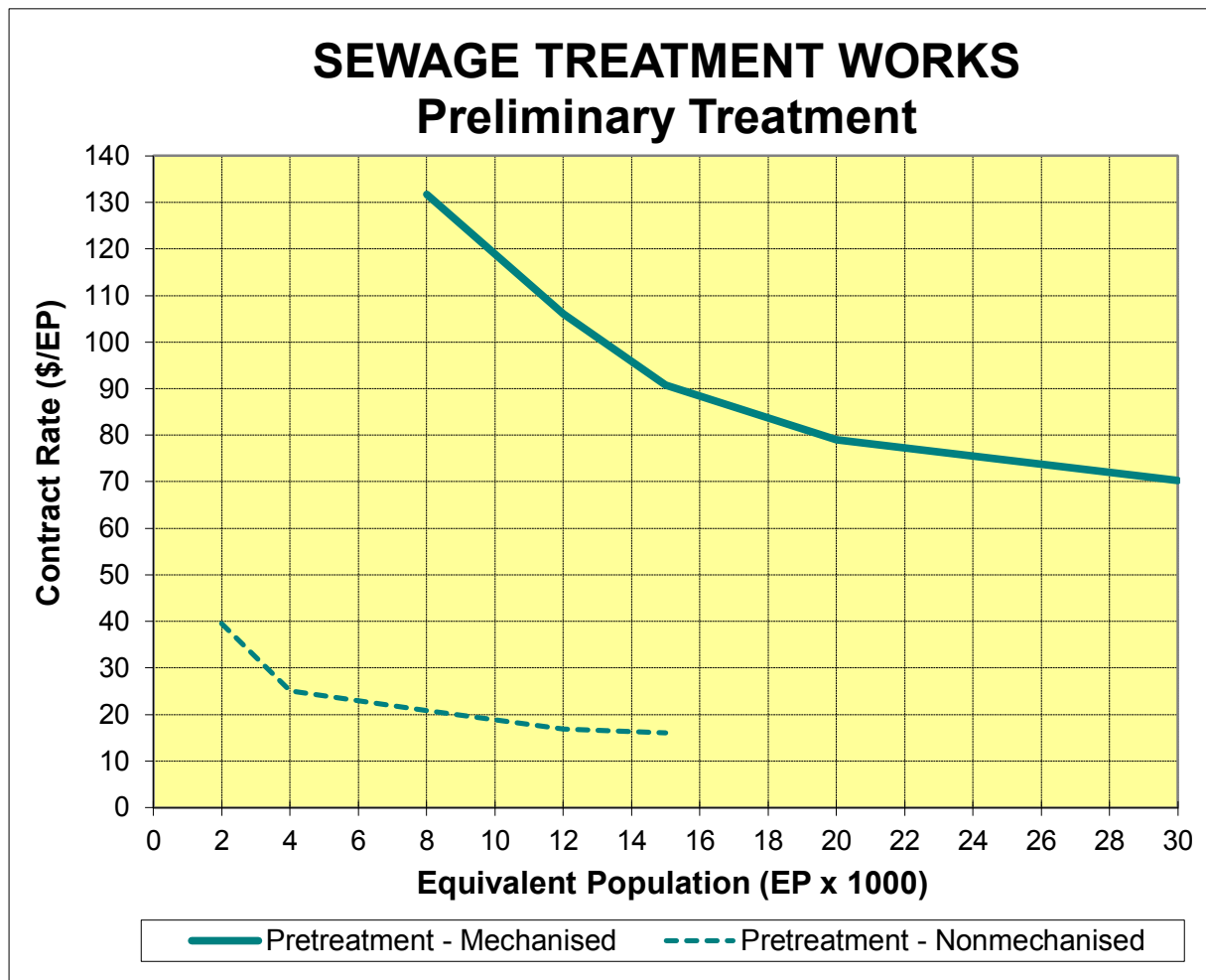




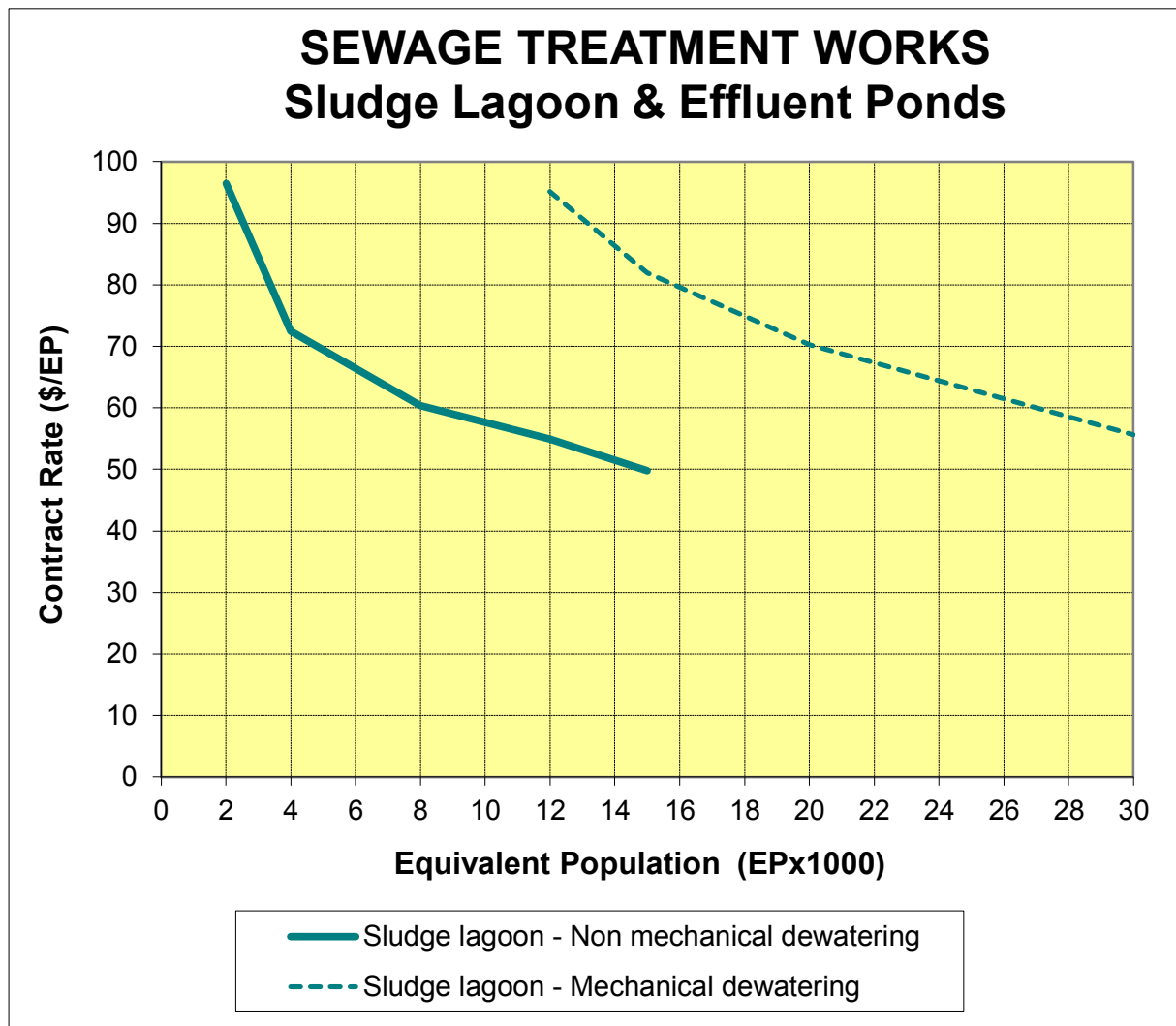
**Figure 24** Sewage Pumping Stations – Low Head (up to 50m) Submersible Type (June 2014\$)



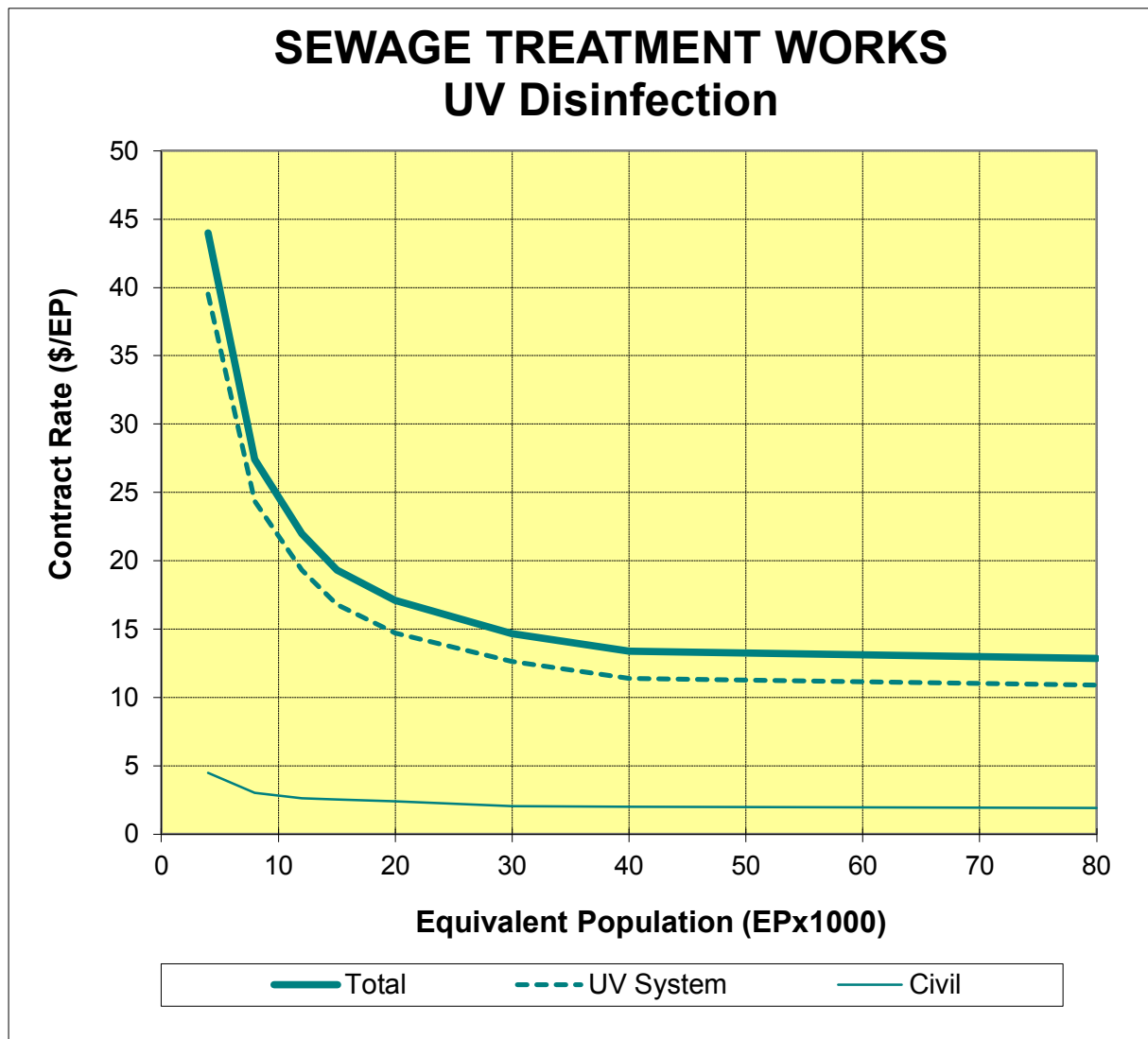
**Figure 25** Sewage Treatment Works – Siteworks (June 2014\$)



**Figure 26** Sewage Treatment Works – Preliminary Treatment (June 2014\$)

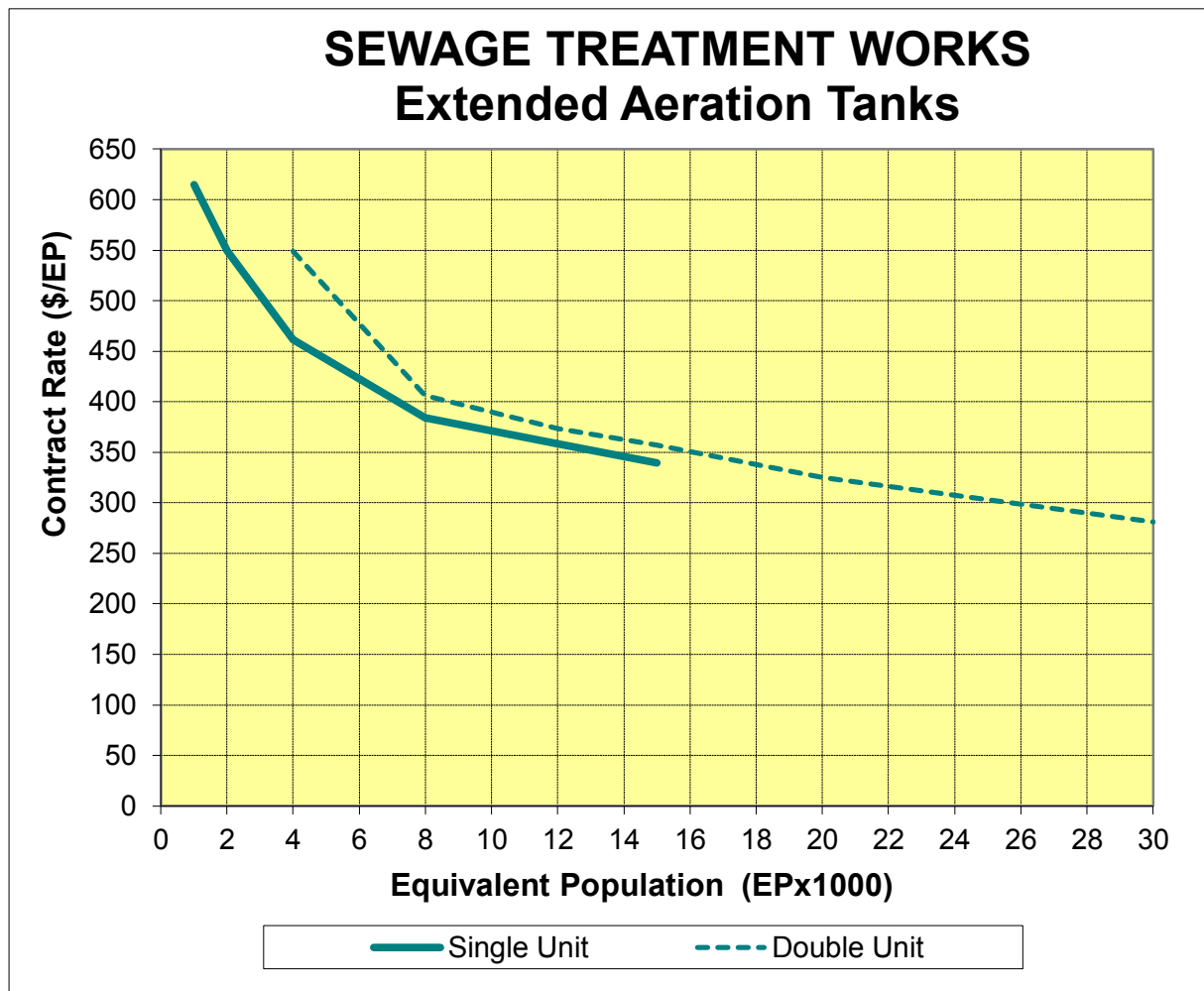


**Figure 27** Sewage Treatment Works – Sludge Lagoon and Effluent Ponds (June 2014\$)

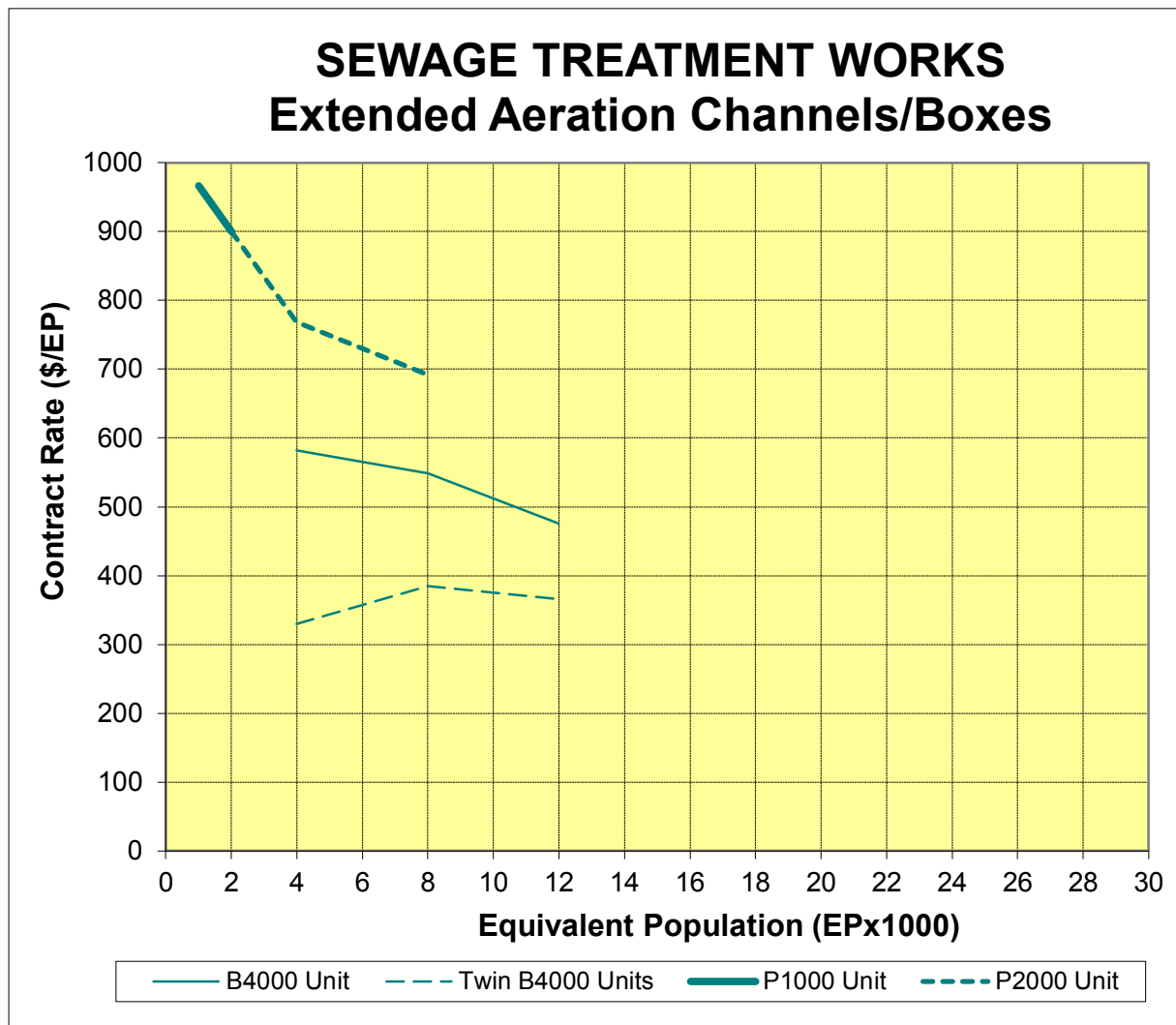


**Figure 28** Sewage Treatment Works – UV Disinfection (June 2014\$)

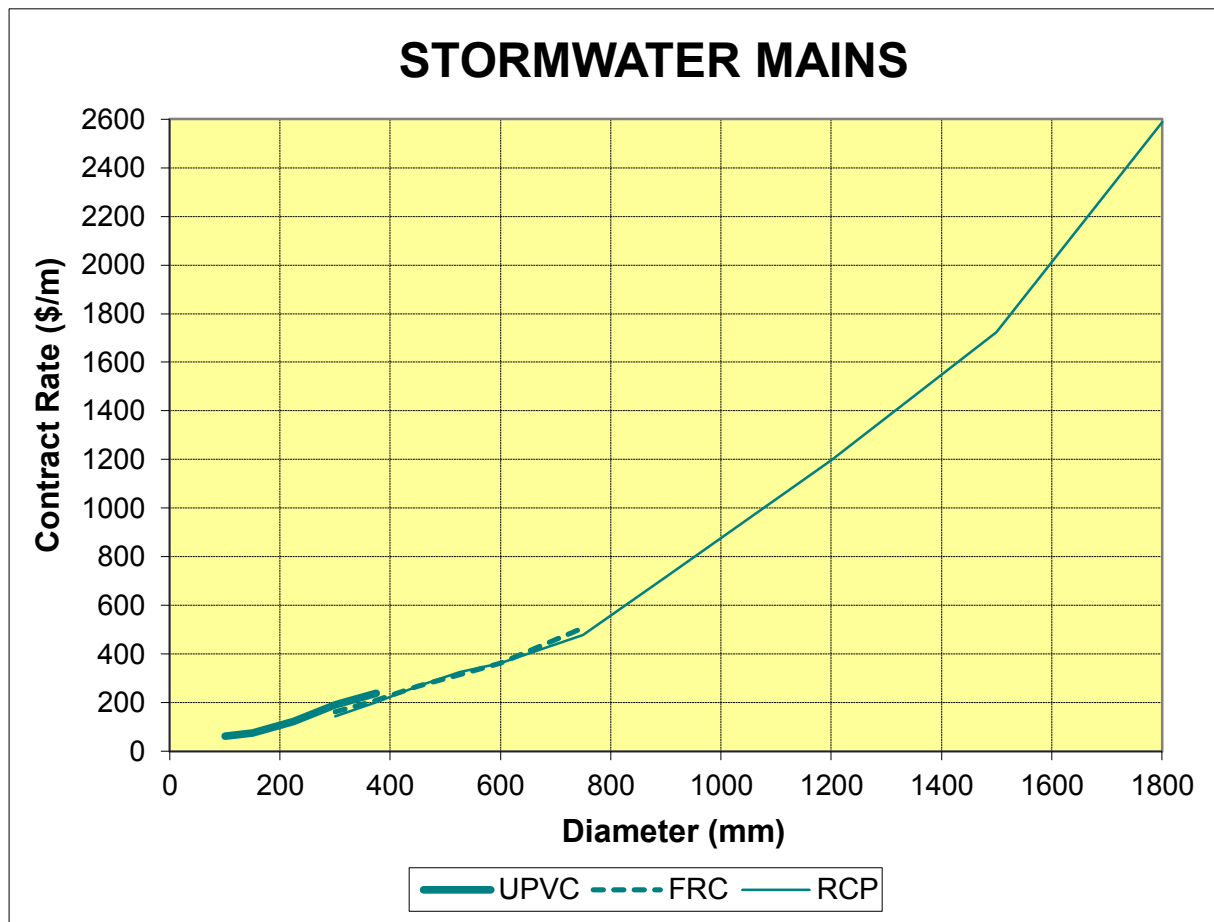




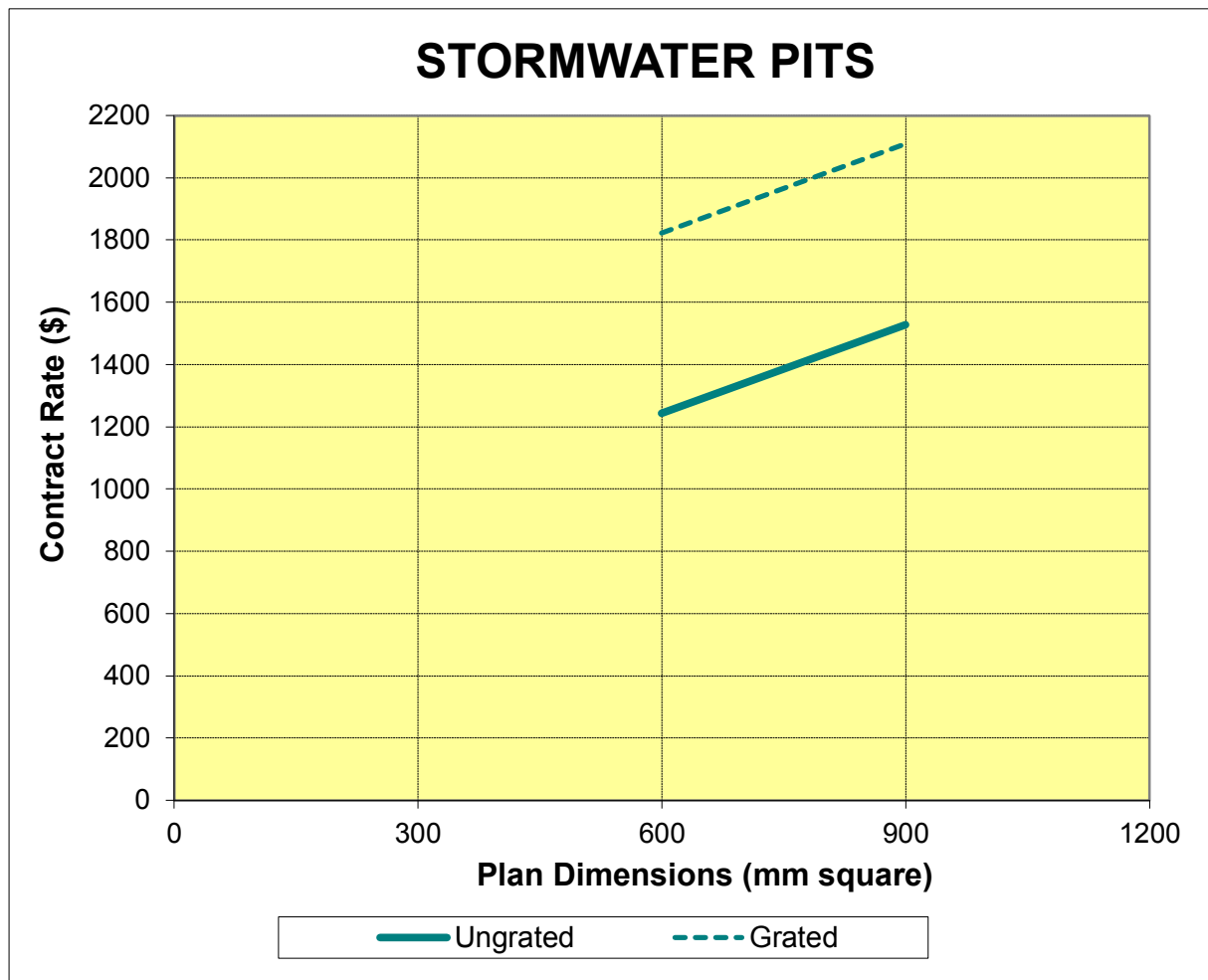
**Figure 29** Sewage Treatment Works – Extended Aeration Tanks (June 2014\$)



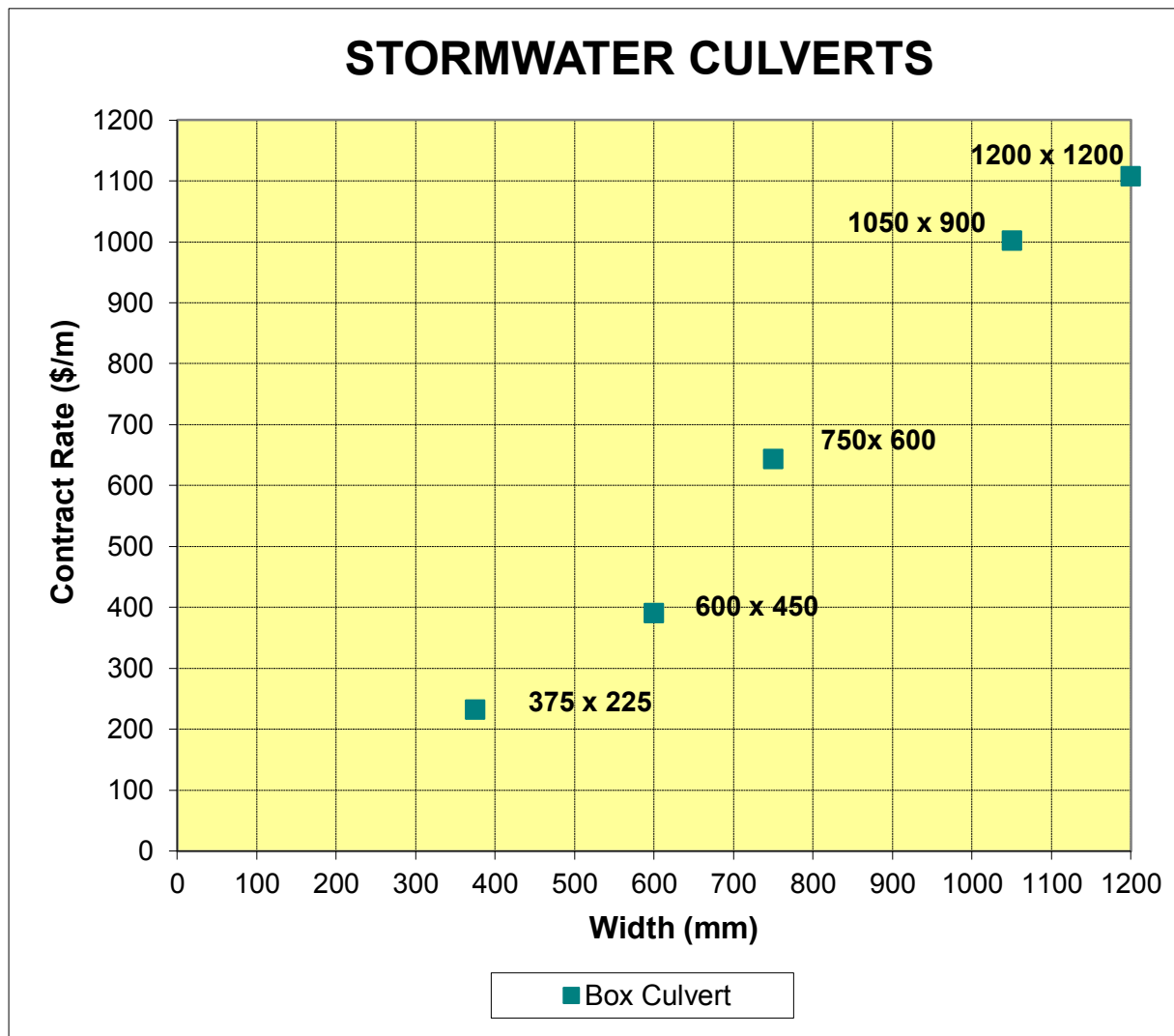
**Figure 30** Sewage Treatment Works – Extended Aeration Channels/Boxes (June 2014\$)



**Figure 31** Stormwater Mains (June 2014\$)

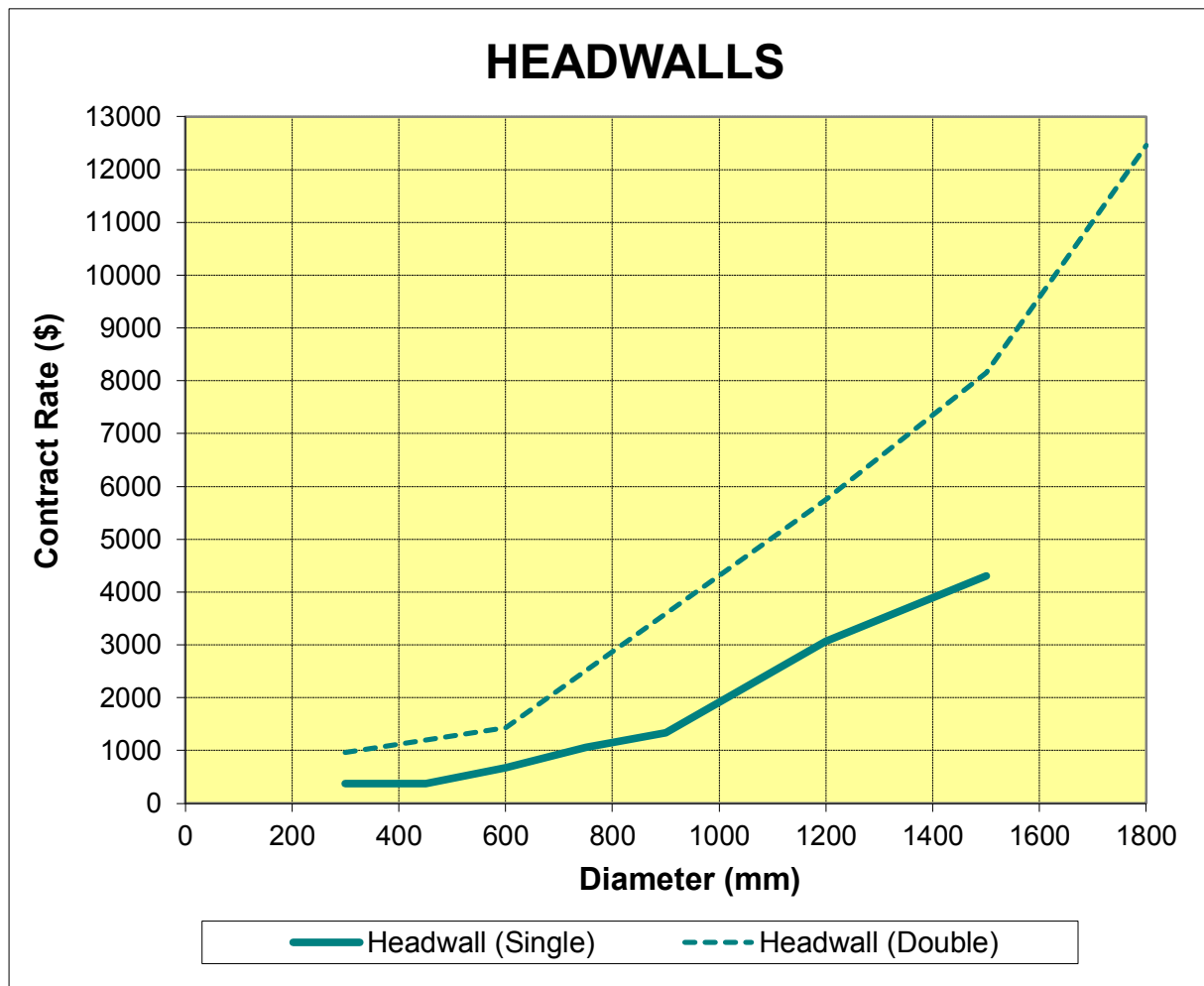


**Figure 32** Stormwater Pits (June 2014\$)



**Figure 33** Stormwater Culverts (June 2014\$)





**Figure 34** Headwalls (June 2014\$)

# Attachment 1

## NSW Water Supply & Sewerage Construction Cost Indices

### June 2014 Update - NSW Water Supply and Sewerage Construction Cost Indices

(based on indices at June of each year)

Year	Capital Cost Factor	Construction Cost Index (%pa) (excl. GST)
2014	1.00	
2013	1.028	2.8%
2012	1.054	2.5%
2011	1.08	2.5%
2010	1.11	3.2%
2009	1.15	3.0%
2008	1.18	3.0%
2007	1.24	5.0%
2006	1.31	5.9%
2005	1.42	8.1%
2004	1.50	5.3%
2003	1.56	4.2%
2002	1.64	5.0%
2001	1.72	5.1%
2000	1.74	1.0%
1999	1.80	3.3%
1998	1.82	1.3%
1997	1.84	1.0%
1996	1.84	0.3%
1995	1.91	3.9%
1994	1.97	3.0%
1993	2.01	1.9%
1992	2.05	1.8%
1991	2.07	1.0%
1990	2.12	2.8%
1989	2.30	8.1%
1988	2.48	8.0%
1987	2.71	9.2%
1986	2.92	7.9%
1985	3.13	7.1%
1984	3.36	7.5%
1983	3.61	7.2%
1982	3.89	8.0%
1981	4.63	18.8%
1980	5.01	8.2%
1979	5.38	7.4%
1978	5.72	6.3%
1977	6.20	8.4%
1976	6.95	12.2%
1975	8.09	16.4%
1974	9.72	20.1%

Year	Capital Cost Factor	Construction Cost Index (%pa) (excl. GST)
1973	11.4	17.2%
1972	12.6	10.4%
1971	13.8	9.8%
1970	14.7	6.6%
1969	15.5	5.0%
1968	16.4	6.3%
1967	17.0	3.6%
1966	17.5	3.0%
1965	18.2	3.9%
1964	18.6	2.4%
1963	18.7	0.4%
1962	18.9	1.0%
1961	19.2	1.4%
1960	19.8	3.4%
1959	20.2	1.7%
1958	20.5	1.8%
1957	21.0	2.2%
1956	22.3	6.2%
1955	22.8	2.4%
1954	22.9	0.5%
1953	24.0	4.6%
1952	28.2	17.4%
1951	33.6	19.3%
1950	36.7	9.4%
1949	40.2	9.4%
1948	44.4	10.4%
1947	46.1	3.9%
1946	47.0	2.0%
1945	47.0	0.0%
1944	47.1	0.2%
1943	48.5	2.9%
1942	52.9	9.0%
1941	55.3	4.7%
1940	57.4	3.7%
1939	58.8	2.5%
1938	60.4	2.6%
1937	62.8	4.0%
1936	63.6	1.4%
1935	64.5	1.4%

#### Note

To update a June 2009 capital cost to June 2014, multiply by 1.15, which is the capital cost factor shown in the above table for 2009.

The NSW Office of Water provides annual updates of this Attachment 1 of the NSW Reference Rates Manual to facilitate asset valuations using an index based on the capital cost factor derived from various sources including data published by the Australian Bureau of Statistics (ABS).

Year	Capital Cost Factor	Construction Cost Index (%pa) (excl. GST)
1934	66.3	2.8%
1933	63.6	-4.1%
1932	60.4	-5.1%
1931	54.2	-10.3%
1930	51.8	-4.4%
1929	52.9	2.2%
1928	52.9	0.0%
1927	52.3	-1.1%
1926	53.5	2.3%
1925	53.5	0.0%
1924	53.0	-1.1%
1923	54.2	2.3%
1922	52.4	-3.3%
1921	52.6	0.4%
1920	51.8	-1.5%
1919	58.9	13.7%
1918	62.8	6.7%
1917	66.4	5.6%
1916	67.3	1.4%
1915	77.2	14.7%
1914	79.8	3.4%
1913	79.8	0.0%
1912	88.8	11.3%
1911	90.5	1.9%
1910	92.3	2.0%
1909	92.3	0.0%
1908	98.1	6.3%
1907	98.1	0.0%
1906	98.1	0.0%
1905	102.4	4.3%
1904	96.1	-6.1%
1903	94.2	-2.0%
1902	100.2	6.4%
1901	100.8	0.6%
1900	104.3	3.4%
1899	106	2.0%
1898	108	2.0%
1897	111	2.0%
1896	113	2.1%
1895	115	1.9%
1894	117	2.0%
1893	120	2.0%
1892	122	2.0%
1891	125	2.0%
1890	127	2.0%
1889	130	2.0%
1888	132	2.0%
1887	135	2.0%
1886	131	-2.8%

## Attachment 2

### Indicative Useful Lives of Assets

#### Water Supply and Sewerage Assets

<b>WATER SUPPLY</b>			
Dams	-	structure	100 years
	-	mechanical & electrical	25 years
Bores	-		30 years
Treatment Works	-	structure	70 years
	-	mechanical & electrical	30 years
Pumping Stations	-	structure	50 years
	-	mechanical & electrical	25 years
Mains	-	new	80 years
	-	relined mains	50 years
River Intakes	-		20 years
Reservoirs	-	structure	100 years
	-	roof	40 years
<b>SEWERAGE</b>			
Treatment Works	-	structure	50 years
	-	mechanical & electrical	20 years
Pumping Stations	-	structure	70 years
	-	mechanical & electrical	25 years
Access Chambers	-	structure	70 years
	-	ladder	25 years
Mains	-	AC pipes	45 years
	-	VC pipes	70 years
	-	UPVC pipes	70 years
	-	concrete pipes	45 years
	-	DI pipes	40 years
	-	relined pipes	50 years
Others	-	odour control	20 years

#### Stormwater Assets

Channels	30 years
Culverts	60 years
Flood Control Structure	100 years
Pits	30 years
Retarding Basins	100 years

## Index

- 30-Year Capital Works Program, 2
- Action Plan, 1
- Additional Costs for Construction Difficulty, Rock Excavation and Dewatering, 35
- Additional Costs for Rock Excavation and Construction Difficulty, 8
- Aerated Lagoon, 28
- Aeration Box, 30
- Aeration Channel, 30
- Aeration Tank, 30
- Annual Performance Monitoring, 1
- Applying the Reference Rates, 39
- Asset Register, 2
- Asset Useful Life, 64
- Basis of Reference Rates, 5
- Best-Practice Management of Water Supply and Sewerage Framework, 1, 3
- Box Intermittent Extended Aeration Tanks, 28
- Capital Cost of Works, 2
- Capital Works Plan, 2
- Competitive Contract Prices, 2
- Construction Difficulty, 8
- Contingencies, 7, 8
- Continuous EA Process, 30
- Contract Rates, 5, 6, 45
- Conventional Water Treatment, 15
- Cost-effective, 1
- Demand Management, 1
- Deprival Value, 2
- Determining the Fair Value of Water Supply, Sewerage and Stormwater Drainage Assets, 2
- Dewatering, 9
- DICL Water Mains, 12
- Division of Local Government's Planning and Reporting Manual 2010, 2
- Drought Management, 1
- Elements of Preliminary Treatment, 24
- Environmental Requirements, 9
- Estimating the Capital Cost of Future Works, 3
- Executive Overview, 1
- Extended Aeration Process, 30
- Extended Aeration Tank, 30
- Fair Value, 1, 2
- Fair Value of Water Supply, Sewerage and Stormwater Assets, 1, 2
- 'Gold Plating', 1
- Grit Channel and Flume, 24
- Ground Level Service Reservoir, 19
- Headwalls, 61
- IDEA Process, 30
- Indicative Useful Lives of Assets, 64
- In-ground Pumping Station, 22
- In-ground Submersible Pumping Station, 22
- Integrated Water Cycle Management, 1
- Intermittent Decanted Extended Aeration, 30
- Intermittent Extended Aeration Tanks, 28
- Lagoon Sedimentation, 15
- Maintenance Plan, 2
- MBR Sewage Treatment Works, 34
- Mechanically Raked Bar Screen, 24
- MEERA, 2
- NSW Best Practice Management of Water Supply and Sewerage Framework, 3
- NSW Water Supply & Sewerage Construction Cost Indices, 62
- Operation Plan, 2
- Physical Non-Current Assets, 2
- Pricing and Regulation of Water Supply, Sewerage and Trade Waste, 1
- Pumping Stations - Sewage, 23, 42, 51
- Pumping Stations - Water, 14, 41, 47
- Purpose of Reference Rates Manual, 1
- Reference Rates, 5
- Reference Rates Tables, 10
- Related Publications, 3
- Reservoirs, 20, 42, 49



- Reticulation - Water, 45
- Rock Excavation, 8
- Service Reservoirs, **20**, 42, 49
- Sewage Pumping Stations, **23**, 42, 51
- Sewage Pumping Stations - Low Head Submersible Type, 51
- Sewage Treatment Works, **25**, 42
- Sewage Treatment Works - Extended Aeration Channels, 57
- Sewage Treatment Works - Extended Aeration Tanks, 56
- Sewage Treatment Works - Intermittent Decanted Extended Aeration (IDEA), 31
- Sewage Treatment Works - Preliminary Treatment, **26**, 53
- Sewage Treatment Works - Siteworks, **25**, 52
- Sewage Treatment Works - Sludge Lagoons & Effluent Ponds, **29**, 54
- Sewage Treatment Works - UV Disinfection, **33**, 55
- Sewer Mains, **21**, 40, 50
- SID, 5
- Site-Specific Works, 9
- Sludge Lagoon, 30
- Standpipe Service Reservoir, 19
- Steel Water Mains, 13
- Stormwater, 44
- Stormwater Culverts, **38**, 60
- Stormwater Mains, **36**, 58
- Stormwater Pits, **37**, 59
- Strategic Business Planning, 1
- Survey, Investigation, Design & Project Management (SID), 6
- Treatment Works - Sewage, **25**, 42, 52, 53, 54, 55, 56, 57
- Treatment Works - Water, **16**, 42, 48
- Trunk Mains - Water, 46
- Typical Intermittently Decanted Extended Aeration Tank, 30
- Typical Sludge Lagoon, 27
- uPVC Water Mains, 11
- Use of Reference Rates for Existing Assets, 3
- Use of Reference Rates for Future Works, 3
- Useful Lives for Assets, 64
- Valuation of Physical Non-Current Assets, 2
- Water Conservation, 1
- Water Mains - DICL, 12
- Water Mains - Reticulation, 45
- Water Mains - Steel, 13
- Water Mains - Trunk Mains, 46
- Water Mains - uPVC, 11
- Water Pumping Stations, **14**, 41, 47
- Water Pumping Stations and Bores, 14
- Water Supply Mains, 39
- Water Supply Reservoirs, 20
- Water Treatment Works, **16**, 42, 48
- Water Treatment Works - Conventional Water Treatment and Lagoon Sedimentation, 48



# Attachment 1

## NSW Water Supply & Sewerage Construction Cost Indices

### June 2020 Update - NSW Water Supply and Sewerage Construction Cost Indices

(based on indices at June of each year)

Year	Capital Cost Factor	Construction Cost Index (%pa) (excl. GST)	Year	Capital Cost Factor	Construction Cost Index (%pa) (excl. GST)
<b>2020</b>	<b>1</b>				
2019	1.010	<b>0.95%</b>	1976	7.5	12.2%
2018	1.026	1.6%	1975	8.8	16.4%
2017	1.047	2.1%	1974	10.5	20.1%
2016	1.062	1.4%	1973	12.4	17.2%
2015	1.069	0.7%	1972	13.6	10.4%
2014	1.085	1.5%	1971	15.0	9.8%
2013	1.12	2.8%	1970	16.0	6.6%
2012	1.14	2.5%	1969	16.8	5.0%
2011	1.17	2.5%	1968	17.8	6.3%
2010	1.21	3.2%	1967	18.5	3.6%
2009	1.25	3.0%	1966	19.0	3.0%
2008	1.28	3.0%	1965	19.8	3.9%
2007	1.35	5.0%	1964	20.2	2.4%
2006	1.43	5.9%	1963	20.3	0.4%
2005	1.54	8.1%	1962	20.5	1.0%
2004	1.62	5.3%	1961	20.8	1.4%
2003	1.69	4.2%	1960	21.5	3.4%
2002	1.78	5.0%	1959	21.9	1.7%
2001	1.87	5.1%	1958	22.3	1.8%
2000	1.89	1.0%	1957	22.8	2.2%
1999	1.95	3.3%	1956	24.2	6.2%
1998	1.97	1.3%	1955	24.8	2.4%
1997	1.99	1.0%	1954	24.9	0.5%
1996	2.00	0.3%	1953	26.0	4.6%
1995	2.08	3.9%	1952	30.6	17.4%
1994	2.14	3.0%	1951	36.5	19.3%
1993	2.18	1.9%	1950	39.9	9.4%
1992	2.22	1.8%	1949	43.6	9.4%
1991	2.24	1.0%	1948	48.2	10.4%
1990	2.31	2.8%	1947	50.0	3.9%
1989	2.49	8.1%	1946	51.0	2.0%
1988	2.69	8.0%	1945	51.0	0.0%
1987	2.94	9.2%	1944	51.2	0.2%
1986	3.17	7.9%	1943	52.6	2.9%
1985	3.40	7.1%	1942	57.4	9.0%
1984	3.65	7.5%	1941	60.1	4.7%
1983	3.91	7.2%	1940	62.3	3.7%
1982	4.23	8.0%	1939	63.8	2.5%
1981	5.02	18.8%	1938	65.5	2.6%
1980	5.43	8.2%	1937	68.1	4.0%
1979	5.84	7.4%	1936	69.1	1.4%
1978	6.20	6.3%	1935	70.0	1.4%
1977	6.72	8.4%			

#### Note

To estimate the current capital costs of new works (June 2020), use the rates shown in the *NSW Reference Rates Tables June 2014* multiplied by a Capital Cost Factor of 1.085 for year 2014. Eg. a 250mm diameter uPVC water trunk main has a 2014 Reference Rate of \$200/m. Multiply the 2014 rate by 1.085 to obtain the 2020 Reference Rate of \$217/m.

To update earlier Capital Costs, multiply by the appropriate Capital Cost Factor shown in the above table. Eg. To update a June 2010 capital cost, multiply by 1.21, which is the Capital Cost Factor shown in the above table for 2010.

The *NSW Reference Rates Tables* were prepared in 2014. DPIE Water provides annual updates of this Attachment 1 to facilitate asset valuations using an index based on the Capital Cost Factor derived from various sources including data published by the Australian Bureau of Statistics (ABS).

## NSW Reference Rates Manual

Year	Capital Cost Factor	Construction Cost Index (%pa) (excl. GST)
1934	72.0	2.8%
1933	69.1	-4.1%
1932	65.5	-5.1%
1931	58.8	-10.3%
1930	56.2	-4.4%
1929	57.4	2.2%
1928	57.4	0.0%
1927	56.8	-1.1%
1926	58.1	2.3%
1925	58.1	0.0%
1924	57.5	-1.1%
1923	58.8	2.3%
1922	56.9	-3.3%
1921	57.1	0.4%
1920	56.2	-1.5%
1919	63.9	13.7%
1918	68.2	6.7%
1917	72.0	5.6%
1916	73.0	1.4%
1915	83.8	14.7%
1914	86.6	3.4%
1913	86.6	0.0%
1912	96.4	11.3%
1911	98.2	1.9%
1910	100.2	2.0%
1909	100.2	0.0%
1908	106.5	6.3%
1907	106.5	0.0%
1906	106.5	0.0%
1905	111.1	4.3%
1904	104.3	-6.1%
1903	102.2	-2.0%
1902	108.8	6.4%
1901	109.4	0.6%
1900	113	3.4%
1899	115	2.0%
1898	118	2.0%
1897	120	2.0%
1896	123	2.1%
1895	125	1.9%
1894	127	2.0%
1893	130	2.0%
1892	133	2.0%
1891	135	2.0%
1890	138	2.0%
1889	141	2.0%
1888	144	2.0%
1887	146	2.0%
1886	142	-2.8%