Road Asset Valuation and Methodology

1 July 2019

Yorke Peninsula Council

12 August 2020
Ref: 20190317DRB

tonkin

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Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	Preliminary working document with tracked change methodology only issued for information prior to inserting actual valuation results	RKE			6/08/2020
B	Valuation results as shown in v9 of valuation spreadsheet prior to Conquest upload and final valuation results	RKE/TJF	LB	TJF	12/08/2020

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1 Introduction

As part of the comprehensive service to support the Yorke Peninsula Council develop and maintain its corporate asset management solution (Conquest), we are pleased to present the transport asset valuation and depreciation report as of 1 July 2019. This report has been developed based on a comprehensive field condition assessment program undertaken by Council over the last 18 months, which included a condition assessment by Downer for rural sealed roads.

A previous report (ref 20180245DR1A) was developed as an update of the 1 July 2015 road asset valuation (ref: 20160470DR01A) and 1 July 2017 airfield asset valuation (ref: 20170251FL1), and was a desktop revaluation of Council's road surface, road pavement, footpath, kerb and airfield assets. That report contained an overview of the AASB 116 and AASB 13 requirements, the methodology used for valuations and a summary of the replacement rates and useful lives adopted for each of the transport infrastructure assets.

Previously Yorke Peninsula Council and ARRB collected condition data for the surface, pavement, footpath and kerb assets in 2013 and Tonkin collected condition data for the airfield assets in 2017. The asset register has been updated annually with capital works and is current to 30 June 2019.

Tonkin Consulting together with Yorke Peninsula Council has conducted a detailed analysis of the parameters used to determine the valuation and depreciation. This report provides a summary of the methods used to value road assets and provides a summary of the results for:

- Road Surface (sealed and sheeted)
- Road Pavement (pavement under sealed surfaces)
- Kerb & Channel
- Footpaths
- Airfield Surface (sealed and sheeted)
- Airfield Pavement (pavement under sealed surfaces)

To assist in budgeting for 2019/2020 financial year, a depreciation forecast is also provided, this forecast is an estimate only and does not include and adjustments for 2019/2020 capital works and as such is not to be used for any actual financial reporting.

Valuation History

- 1 July 2013 transport valuation (ref: 20140062FR4B), full valuation for road surface, road pavement, footpath and kerb assets based on ARRB condition assessment and upload of register to Conquest.
- 1 July 2015 valuation (ref: 20160470DR01A), desktop revaluation with unit rate adjustments and road surfaces and pavement assets were componentised to avoid the use of residual value of assets.
- 1 July 2017 valuation (ref: 20170251DL1), full valuation for airfield assets based on Tonkin condition assessment and upload of register to Conquest.
- 1 July 2018 valuation (ref: 20180245DR1A), desktop revaluation of road surface, pavement, footpath, kerb and airfield

2 Accounting Standards and Terminology

2.1 Overview

The Australian Accounting Standard AASB 116 and Local Government (financial management) Regulations 1999 require assets be recorded at fair value. AASB 116 defines fair value as "The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". As there is no active liquid market for infrastructure assets, AASB 116 allows fair value to be estimated using a depreciated replacement cost basis. The basis of this valuation is fair value expressed as Current Replacement Cost (CRC) of an asset minus any accumulated depreciation and impairment losses.

With respect to AASB 13 the cost approach "reflects the amount that would be required currently to replace the service capacity of an asset (often referred to as current replacement cost)". This has been adopted as the valuation technique for the assets included in this valuation.

The Australian Accounting Standard AASB 13 Fair Value Measurement sets out the framework for measuring fair value and requirements for disclosures about fair value measurements. AASB 13 defines a hierarchy of inputs used to estimate fair value. The three input levels can be summarised as follows:

- Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at measurement date.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 inputs are unobservable inputs for the asset or liability.

Paragraph 2 of AASB 13 states that the objective of a fair value measurement is to "estimate the price at which an orderly transaction to sell the asset or to transfer the liability would take place between market participants at the measurement date under current market conditions".

AASB 13 requires that the hierarchy of the fair value measurement be categorised in its entirety as the lowest level input that is significant to the entire measurement.

As there is no market for Council to use to determine fair value of its Road assets, all assets have been valued as Level 3 inputs using a cost approach.

2.2 Terminology

Accounting Standards

A set of rules that govern the way in which financial statements are prepared to ensure that these statements are comparable through time for and entity across similar entities.

Asset – Property Plant & Equipment

A tangible item that is:

- Held for us in the production or supply of goods or services, for rental to others, or for administration purposes, and
- Expected to be used during more than one period

Asset Management Information System

An asset management information system is a combination of processes, data and software applied to provide the essential outputs for effective asset management such as reduced risk and optimum infrastructure investment.

Australian Accounting Standards Board (AASB)

The AASB is an independent agency of the Australian Government with responsibility to make accounting standards under section 334 of the Corporations Act, to formulate accounting standards for other purposes and to participate in and contribute to the development of a single set of international accounting standards for worldwide use. The Chairman of the AASB reports to the responsible Minister regarding the organisation's operations.

Carrying Amount

The Carrying Amount of an asset is the amount at which the asset is recognised after deducting any accumulated depreciation and accumulated impairment losses. This value is often referred to as the "Written Down Value (WDV)".

Component

Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Condition

The physical state of an infrastructure asset. Condition may be seen in some circumstances as a level of service proxy indicator of quality from the customer's view. Often though, other factors may be more or equally relevant.

Condition at End of Life (CEoL)

The condition to which an entity is allowed to deteriorate before renewal is required, this parameter is directly linked to the level of service for the particular asset.

Current Replacement Cost (CRC)

The cost required currently to replace the service capacity of an asset with a substitute asset of comparable utility and condition, i.e., the depreciated replacement cost of a new asset. It is based on the cost for a market participant buyer to acquire or construct a substitute asset of comparable utility or service capacity, adjusted for obsolescence. Obsolescence includes physical deterioration, as well as functional and economic obsolescence. The rational for this approach is that a market participant buyer would not pay more for an asset than the amount for which it could replace the service capacity of that asset.

Depreciable Amount

The cost of an asset, or other amount substituted for its cost, less its residual value. For assets with no residual value, the depreciable amount equals the current replacement cost (CRC).

Depreciation

Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life. The Conquest Asset Management System adopts a straight line method for depreciation.

Annual Depreciation = Carrying Amount / Remaining Life

Equation 1 Annual Depreciation

Fair Value

The Fair Value of an asset is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

International Financial Reporting Standards (IFRSs)

Are Standards and Interpretations adopted by the International Accounting Standards Board (IASB) (Refer to Australian equivalents to IFRS).

Levels of Service

The parameters or combination of parameters that reflect social, political, environmental and economic outcomes that the organisation delivers. The parameters can include safety, customer satisfaction, quality, capacity, reliability, responsiveness, environmental acceptability, cost and availability, etc. [ISO 55000:2014]. A level of service statement describes the outputs or objectives of an organisation or activity intents to deliver to customers [IIMM].

Market Value

The estimated amount for which an asset would be exchanged on the date of valuation, between a willing buyer and a willing seller, in an arm's length transaction and when the parties have each acted knowingly, prudently and without compulsion. Market value is based on highest and best use of the asset and not necessarily the existing uses.

Modern Equivalent Asset

Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing, it allows for technology changes and, improvements and efficiencies in production and installation techniques. The modern equivalent asset is evidenced by renewal strategies in asset management plans and financing in a long-term financial plan covering at least 10 years.

Remaining Useful Life

The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life provides an estimate of useful life.

Residual Value (RV)

The amount an entity would currently obtain from the disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life. Residual value reflects consideration receivable from an asset at the end of its useful life to the entity and accordingly would not include cost savings from the re-use of insitu materials.

Revaluation Model

An item of property, plant and equipment is carried at its revalued amount when is fair value can be reliably measured. The revalued amount is the fair value at date of revaluation less any subsequent accumulated depreciation and subsequent impairment losses.

Service Potential

The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Useful Life

The period over which an asset is expected to be available for use by an entity. It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the entity.

Valuation

The process of determining the worth of an asset or liability. Different methods may be appropriate indifferent circumstances (see also Fair Value).

3 Valuation and Depreciation Methodology

3.1 Valuation Overview

Yorke Peninsula Council has undertaken a comprehensive field assessment of town seal, kerb and footpath and rural sheeted roads. Rural sealed roads were assessed by Downers in 2018.

Yorke Peninsula Council and ARRB conducted a condition assessment for the surface, pavement, footpath and kerb assets in 2013 and Tonkin conducted a condition assessment for the airfield assets in 2017. The data has since been held in Conquest and updated annually with capital works.

The asset data and unit rates and standard lives have been updated in Conquest to give a Current Replacement Cost (CRC) and Written Down Value (WDV) as at 1 July 2019. The road register in Conquest includes capital works completed up to 30 June 2019.

This chapter will explain the methods used by Conquest to perform the valuations and the method for determining the CRC for each asset type will be explained later in this report.

3.2 Carrying Amount

The carrying amount for each road asset will be given by the Current Replacement Cost minus the Accumulated Depreciation.

Carrying Amount = CRC – Accumulated Depreciation

Equation 2 Carrying Amount

3.3 Depreciation

Conquest recalculates the Accumulated Depreciation every time a revaluation is performed. The Accumulated Depreciation of an asset is determined using the expiry date and useful life of the asset. The expiry date can be estimated using one of two methods:

1. Condition score – this document will refer to this as “Depreciation Using a Condition Score”
2. Age of the asset – this document will refer to this as “Depreciation Using Age”

Depreciation Using a Condition Score

For depreciation using a condition score it is assumed that the consumption of the economic benefit of an asset will be proportional to its condition. This results in the Accumulated Depreciation for assets with no residual value being calculated by:

Accumulated Depreciation = ((CRC) x (Condition Score / End of Life Condition Score))

Equation 3 Accumulated Depreciation at Revaluation (Using Condition Score)

When an asset is new it will have a condition score of 0 and its Accumulated Depreciation will

be 0. As the asset ages and its condition deteriorates the Accumulated Depreciation will increase accordingly. When an asset reaches the condition at which Council establishes that the asset has no further use the Accumulated Depreciation will equal the Depreciable Amount (Current Replacement Cost).

To perform depreciation using the condition score the assets will require regular condition assessment. For the periods between surveys, which will vary depending on the asset, it is assumed that the consumption of the economic benefits of the asset is appropriately modelled using straight line depreciation. In the period between surveys Conquest calculates the change in depreciation based on the carrying value and dates. In the absence of capital works and taken over the period of a year the depreciation would be calculated by:

Accumulated Depreciation = Previous Accumulated Depreciation + ((CRC) x (1 / Useful Life)

Equation 4 Accumulated Depreciation Between Valuations (Using Condition Score)

Any changes in consumption patterns are picked up when the asset register is updated with new data. It is not planned to attempt to adopt a curve for this purpose.

Depreciation Using Age

For depreciation using age, it is assumed that the consumption of the economic benefit of an asset will be proportional to its age and therefore the assets value will be depreciated by comparing its age with its useful life. Using this method the accumulated depreciation for assets with no residual value will be given by:

Accumulated Depreciation = ((CRC) x (Age / Useful Life))

Equation 5 Accumulated Depreciation (Depreciation Using Age)

3.4 Acquisition, Valuation and Disposal

When most assets are replaced with a new asset council receives no proceeds from the salvage of the old asset, consequently the carrying amount of the existing asset will be written-off at disposal and the replacement asset will be added in as a new asset. It is assumed therefore that for most assets the residual value of the existing asset is zero as it cannot be capitalised (or re-used) into the new asset and is therefore written off.

When as asset is first acquired it is valued at its acquisition cost or its current replacement cost for vested assets. It is then depreciated until the next revaluation occurs. Council will also periodically conduct condition assessments where the condition scores will be updated picking up any changes in consumption patterns.

The cost to replace the asset will be the depreciable amount until the next valuation. When an asset's service can be preserved by partial replacement, the cost of the works will be added to the asset and the remaining life will be extended.

3.5 Programmed / Low Service Level (Expired) Assets

Some assets held within the register are reported as expired assets as they have zero remaining life and as such fully depreciated. These assets operating at below standard serviceability have been identified through the valuation process and have been reviewed by Council.

Council has advised Tonkin that many of these assets will be renewed through capital works in the next few years and/or will be addressed through post processing of the condition assessment currently being undertaken. The post processing will include a review of the road category and standard useful lives.

As advised by Council the remaining life of these assets have not been adjusted, in future the only time an asset is classified as an expired asset is when the road asset type itself is no longer needed and used by the public and is planned for disposal.

4 Road Surfaces

4.1 Road Surface Overview

Yorke Peninsula Council has an extensive rural sheeted road network (approx. 2,566 km), together with a smaller rural sealed network (approx. 322 km). In addition to this there is a township road network that consists of numerous towns with mainly sealed (approx. 206 km) and some sheeted roads surfaces (approx. 458 km). Only sealed and sheeted roads are treated as capital expenditure with formed roads funded entirely under maintenance. This report will therefore address only the value of the sealed and sheeted roads.

In terms of valuation the network has been classified in a number of ways. At the highest level there are rural roads that are outside the 50km/h area where road users require service levels to suit through traffic and local vehicular requirements. There are also township roads within the 50km/h environment where the predominant service level is for local traffic, with through traffic on the major collector roads.

For both rural and township roads there are two main surface types, namely sealed and sheeted. For each surface type there are a number of factors that impact on both the replacement cost and the useful life. In addition, assets have been componentised where appropriate.

Sealed Surface

For sealed surfaces the type of seal, whether it be hotmix, spray seal or cold overlay, the speed environment and traffic loading are the predominate factors affecting useful life. The area of sealed road surface is determined from road segment lengths and measured seal width. Yorke Peninsula Council's sealed roads are predominantly spray sealed with some hotmix bitumen surfaces within townships.

The sealed road network has been categorised as follows:

- Township Spray Seal Upper Surface
- Township Spray Seal Lower Surface
- Township Hotmix Bitumen Upper Surface
- Township Hotmix Bitumen Lower Surface
- Rural Sealed High Use Upper Surface
- Rural Sealed High Use Lower Surface
- Rural Sealed Normal Use Upper Surface
- Rural Sealed Normal Use Lower Surface

Sheeted Surface

The sheeted road network has been categorised with Council staff based on the following classifications:

- Township Sheeted Wearing Surface (incl. Lower Base & Earthworks)
- Rural Sheeted High Use – Wearing Surface
- Rural Sheeted High Use – Lower Base & Earthworks
- Rural Sheeted Medium Use - Wearing Surface
- Rural Sheeted Medium Use - Lower Base & Earthworks
- Rural Sheeted Low Use High Wear Rate - Wearing Surface
- Rural Sheeted Low Use High Wear Rate - Lower Base & Earthworks
- Rural Sheeted Low Use Medium Wear Rate - Wearing Surface

- Rural Sheeted Low Use Medium Wear Rate - Lower Base & Earthworks
- Rural Sheeted Low Use Low Wear Rate - Wearing Surface
- Rural Sheeted Low Use Low Wear Rate - Lower Base & Earthworks

Each of the classifications is then categorised into zones (North/Northern, Central and Southern).

For each category the useful life has been defined based on the response to material quality and drainage.

Formed Graded Roads (not sheeted)

Formed graded roads require no road base material to provide a surface. Hence there are no recurring capital works costs. There is however regular maintenance costs.

The original cost of creating the road is not considered relevant given once created it will never be renewed by capital works only expensed through maintenance activities.

Accordingly, these roads are excluded from the valuation. However, these roads are contained in the asset register.

Unformed / Unmade Roads

Unformed roads are categorised by Council as roads that carry public traffic and those that are not trafficable by the general public. In both cases there is no road base material used in providing a service to road users (hence there is no reoccurring capital works needed to continue to provide the service). The origins of these roads goes back several generations when the land parcels where originally created, and in many cases before automobiles where used (i.e. late 19th Century and first half of the 20th century). Within the Yorke Peninsula Council, many of these roads are access tracks and road reserves that are not maintained.

The original cost of creating the road is not considered relevant given once created it will never be renewed by capital works only expensed through maintenance activities.

Accordingly, these roads are excluded from the valuation. However, these roads are contained in the asset register.

4.2 Fair Value Hierarchy

The valuation for road surfaces has been undertaken in accordance with the Fair Value Hierarchy “Level 3” as outlined in AASB 13 81-85.

All roads have been visually inspected by Council (unsealed roads) and ARRB (sealed roads) and an inspection date is recorded in order to project the asset condition at the valuation date.

Unit rates for unsealed roads have been methodically developed using known material, plant and labour rates supplied by Council taking into account haulage distance. The sealed road rates reflect known contract rates supplied by Council.

An area for further improvement is the classification assigned to each road, which can be further developed over time.

4.3 Road Surface Types

Yorke Peninsula Council contains approximately 528 km of sealed roads and 2,624 km of sheeted roads. At the time of reporting approximately 523 km of unmaintained tracks and road reserves have been identified however it is anticipated that there will be further adjustments to the unmaintained roads as further information becomes available.

Formed and unformed roads are not included in the valuation. Formed roads will only receive an occasional grading which is treated as maintenance expenditure and unformed roads will not be treated at all.

4.3.1 Sealed Roads

Table 4.1 provides a breakdown of the sealed surfaces contained in the network. Rural sealed surfaces are divided into high use and normal use whilst the township surfaces have all been assigned as normal use.

Table 4.1 Approximate Breakdown of Sealed Road Surfaces in Network

Surface Type	Length (m)	Surface Area (m²)	Approximate % of Sealed Network (Area)
Township Spray Seal	197,216	1,404,976	41%
Township Hotmix Bitumen	8,681	55,571	2%
Township Cold Overlay	448	3,810	<0.1%
Rural High Use Spray Seal	210,510	1,324,996	38%
Rural Normal Use Spray Seal	111,435	665,890	19%
Total Sealed Surfaces	528,291	3,455,242	100%

4.3.2 Sheeted Roads

Table 4.2 provides a breakdown of the township and rural sheeted surfaces contained in the network, which has undergone a significant review of road categories since the 2013 valuation.

The rural sheeted roads were divided into high, medium and low use roads and the low use sheeted roads were further divided into high, medium and low wear rates. During determination of the sheeted roads types a priority index for each road segment was calculated based on a social score, a freight score and a tourist score. Review of the priority index for each road assisted with the assigning of road types for the rural sheeted roads.

Due to the varying availability of sheeting material within the Yorke Peninsula, the six sheeted surface types have been further divided by zone North, Central or South. These zones are defined by Black Bobs Rd and Cutline Rd. All roads to the north of Black Bobs Rd are defined as North and all roads to the south of Cutline Rd are defined as South. The Central area is that area between Black Bobs Rd and Cutline Rd.

Table 4.2 Approximate High Level Breakdown of Sheeted Road Surfaces in Network

Surface Type	Length (m)	Surface Area (m²)	Approximate % of Sheeted Network (Area)
Township Sheeted	45,855	328,525	2%
Rural Sheeted High Use	209,002	1,902,002	9%
Rural Sheeted Medium Use	304,410	2,541,956	12%
Rural Sheeted Low Use High Wear	698,825	5,421,017	27%
Rural Sheeted Low Use Medium Wear	974,021	7,314,916	36%
Rural Sheeted Low Use Low Wear	392,201	2,833,593	14%
Total Sheeted Surface	2,624,313	20,342,009	100%

4.4 Road Surface Current Replacement Costs

To provide a current replacement cost for the various types of road surfaces, the following summary of costs is included for each surface type together with the assumptions used.

4.4.1 Sealed Road Surface Replacement Costs

Sealed road surfaces have been separated into upper surface and lower surface asset components for both township and rural sealed roads. The summary of costs for each sealed surface component together with the assumptions used are as follows:

Hotmix Bitumen Surface Upper Layer

The cost includes the cost to supply and lay a hotmix overlay over an existing hotmix surface as follows:

- Preparation of existing surface for overlay
- Edge profile
- Supply and place 30mm thickness of AC10 Hotmix overlay

Hotmix Bitumen Surface Lower Layer

The cost includes the cost to remove and dispose of old hotmix surface and supply and lay a hotmix overlay minus the cost to supply and lay a hotmix overlay over existing hotmix layer as follows.

- Full width profile of old hotmix surface
- Supply and place 45mm thickness of AC10 hotmix overlay
- Minus the replacement cost of the upper (short life) layer

Spray Seal Upper Seal Surface

The cost includes a single spray seal coat.

- Spray seal 10mm single coat including spraying, aggregate, crack seal and extra binder for township and rural roads.

Spray Seal Lower Seal Layer

The cost includes a double spray seal coat minus the cost of the single spray seal coat as follows.

- Preparation of existing surface for resurfacing
- Spray seal double coat including spraying, aggregate, crack seal and extra binder
  - 14/7mm spray seal for rural and township roads
- Minus the replacement cost of the single spray seal coat.

Council identified one segment (448m) of cold overlay sealed surface and this surface will be replaced with spray seal surfaces as described above.

Table 4.3 provides a list of the replacement rates, minimum service standard and useful life used for each sealed surface.

Table 4.3 Sealed Road Surface Valuation Parameters

Surface Type	Current Replacement Cost (CRC) $/m²	Minimum Service Standard (CEoL)	Useful Life for Service Standard
Township Hotmix Bitumen – Upper Seal Layer	$22.30	40	30
Township Hotmix Bitumen – Lower Seal Layer	$10.03	N/A	80
Township Spray Sealed – Upper Seal Layer	$5.50	40	25
Township Spray Sealed – Lower Seal Layer	$2.50	N/A	80
Township Cold Overlay	$8.00	40	25
Rural Sealed High Use – Upper Seal Layer	$5.50	40	17
Rural Sealed High Use – Lower Seal Layer	$2.50	N/A	90
Rural Sealed Normal Use – Upper Seal Layer	$5.50	40	22
Rural Sealed Normal Use – Lower Seal Layer	$2.50	N/A	90

4.4.2 Sheeted Road Surface Replacement Costs

The sheeted roads have been defined as follows:

- High Use Roads – These are main roads that are not sealed. These will be maintained serviceable through resheeting the full length of the segment
- Medium Use Roads – These are link roads from high use to low use. These will be maintained serviceable through resheeting the full length of the segment
- Low Use Road (high wear) - These are low use in nature and servicing 2-5 or over 5 residential properties, or medium or high use servicing single residential properties or high use farm vehicle use on the section of road and may be routes frequented to commute to main roads. These will be maintained serviceable through resheeting the full length of the segment
- Low Use Road (medium wear) - These are low use in nature and servicing single residential property access or medium use farm vehicle use on the section of road with limited through traffic. These will be maintained serviceable through patch resheeting of clay sections of the road at a time.
- Low Use Road (low wear) – These are low use in nature and generally used by farm vehicles and do not have residential dwellings on the section of road or use for through traffic. These will be maintained serviceable through patch resheeting of isolated clay sections

The allocation of wear rates for this revaluation has not been modified since last valuation, however, is something for consideration in the future.

The sheeted roads replacement costs are based on the following parameters for sheeting depth and widths:

Table 4.4 Sheeted Road Depth and Width Parameters

Surface Type	As New Asset Depth (mm)	Renewal depth (mm	Average Width (m)
Township Sheeted Roads	100	100	Varies (6 assumed)
Rural Sheeted High Use Roads	200	150	9
Rural Sheeted Medium Use Roads	130	100	8.5
Rural Sheeted Low Use High Wear Roads	100	100	8
Rural Sheeted Low Use Medium Wear Roads	100	100mm (30% segment) and reform 100%	7.5
Rural Sheeted Low Use Low Wear Roads	100	100mm (20% segment) and reform 100%	7

For rural sheeted roads the surface asset has been separated into two component assets to allow for a shorter life wearing surface component and a longer life lower base and earthworks component.

For township sheeted roads the surface asset has been calculated as a single component for sheeted wearing surface (including lower base & earthworks).

The summary of costs for each sheeted surface type together with the assumptions used are as follows.

Sheeted Wearing Surface

For rural sheeted roads the cost to replace the wearing surface includes the following:

- Supply, place and compact 150mm of new sheeted surface material for high use, and 100mm on medium use, low use high wear
- 30% patch sheeting and reforming of full length of sheeting for low use medium wear sheeted roads
- 20% patch sheeting and reforming of full length of sheeting for low use low wear sheeted roads

Sheeted Lower Base & Earthworks

For rural sheeted roads the cost to replace the lower base & earthworks is based on the cost to replace the full depth of sheeting material and road formation minus the cost to replace the wearing surface only as follows:

- Supply, place and compact sheeting material:
  - 200 mm for high use rural roads
  - 130mm for medium use rural roads
  - 100mm for low use high wear rural roads
  - 30% patching and reforming of full length for low use medium wear roads
  - 20% patching and reforming of full length for low use medium wear roads

- Earthworks to reform the lower base material
- Minus the cost to replace the sheeted wearing surface only

Town Sheeted Wearing Surface (incl. Lower Base and Earthworks)

For township sheeted roads a single asset component which includes the cost to replace the sheeted wearing surface (including the lower base and earthworks) has been costed. The replacement cost includes allowance for the following:

- Supply, place and compact 100mm sheeting material
- Earthworks to reform the lower base material

Within the Yorke Peninsula from time to time there is a slightly higher cost to load and cart material to the northern and southern zones of the Peninsula. To address this discrepancy in material cost, the road network has been divided into three areas North, Central and South. For this valuation however, Council procured a flat rate in the contract to crush and deliver material to anywhere. . For purposes of this valuation one rate is used for replacement costs and renewal costs (depreciable amounts) for Central Sheeted Roads and North South Sheeted Roads.

Table 4.5 provides a list of the replacement rates, minimum service standard and useful life used for each sheeted surface.

Table 4.5 Sheeted Road Surface Valuation Parameters

Surface Type	Current Replacement Cost CRC $/m²	Minimum Service Standard (CEoL)	Useful Life for Service Standard
Township Sheeted (North Zone) Wearing Surface (incl. Lower Base & Earthworks)	$6.79	70	30
Township Sheeted (Central Zone) Wearing Surface (incl. Lower Base & Earthworks)	$6.79	70	30
Township Sheeted (South Zone) Wearing Surface (incl. Lower Base & Earthworks)	$6.79	70	30
Rural Sheeted High Use (Northern Zone) Wearing Surface	$9.42	82	15
Rural Sheeted High Use (Southern Zone) Wearing Surface	$9.42	82	15
Rural Sheeted Medium Use (Northern Zone) Wearing Surface	$6.28	85	25
Rural Sheeted Medium Use (Central Zone) Wearing Surface	$6.28	85	25
Rural Sheeted Medium Use (Southern Zone) Wearing Surface	$6.28	85	25
Rural Sheeted Low Use High Wear (Northern Zone) Wearing Surface	$6.28	85	30

Surface Type	Current Replacement Cost CRC $/m²	Minimum Service Standard (CEoL)	Useful Life for Service Standard
Rural Sheeted Low Use High Wear (Central Zone) Wearing Surface	$6.28	85	30
Rural Sheeted Low Use High Wear (Southern Zone) Wearing Surface	$6.28	85	30
Rural Sheeted Low Use Medium Wear (Northern Zone) Wearing Surface	$2.83	90	30
Rural Sheeted Low Use Medium Wear (Central Zone) Wearing Surface	$2.83	90	30
Rural Sheeted Low Use Medium Wear (Southern Zone) Wearing Surface	$2.83	90	30
Rural Sheeted Low Use Low Wear (Northern Zone) Wearing Surface	$1.76	90	30
Rural Sheeted Low Use Low Wear (Central Zone) Wearing Surface	$1.76	90	30
Rural Sheeted Low Use Low Wear (Southern Zone) Wearing Surface	$1.76	90	30
Rural Sheeted High Use (Northern Zone) Lower Base & Earthworks	$3.60	90	90
Rural Sheeted High Use (Southern Zone) Lower Base & Earthworks	$3.60	90	90
Rural Sheeted Medium Use (Northern Zone) Lower Base & Earthworks	$2.28	95	150
Rural Sheeted Medium Use (Central Zone) Lower Base & Earthworks	$2.28	95	150
Rural Sheeted Medium Use (Southern Zone) Lower Base & Earthworks	$2.28	95	150
Rural Sheeted Low Use High Wear (Northern Zone) Lower Base & Earthworks	$1.28	100	210
Rural Sheeted Low Use High Wear (Central Zone) Lower Base & Earthworks	$1.28	100	210
Rural Sheeted Low Use High Wear (Southern Zone) Lower Base & Earthworks	$1.28	100	210
Rural Sheeted Low Use Medium Wear (Northern Zone) Lower Base & Earthworks	$0.94	100	240

Surface Type	Current Replacement Cost CRC $/m²	Minimum Service Standard (CEoL)	Useful Life for Service Standard
Rural Sheeted Low Use Medium Wear (Central Zone) Lower Base & Earthworks	$0.94	100	240
Rural Sheeted Low Use Medium Wear (Southern Zone) Lower Base & Earthworks	$0.94	100	240
Rural Sheeted Low Use Low Wear (Northern Zone) Lower Base & Earthworks	$0.51	100	240
Rural Sheeted Low Use Low Wear (Central Zone) Lower Base & Earthworks	$0.51	100	240
Rural Sheeted Low Use Low Wear (Southern Zone) Lower Base & Earthworks	$0.51	100	240

4.5 Road Surface Useful Life for Service Standard

Yorke Peninsula Council values their road surfaces at a road segment level. It is therefore necessary to determine the average useful life for a surface over a road segment.

The useful life of a surface is assumed to be the time that a road surface is expected to last before a resurfacing of the whole segment is required. It is likely that during its useful life a surface may undergo some maintenance such as crack sealing or patching however this is treated as maintenance rather than capital expenditure.

Sealed Surface Asset Lives

The useful lives of sealed surfaces will vary depending on whether a road is a rural or township road and the level of traffic it experiences. Useful lives for sealed surfaces are provided in Table 4.3.

The useful lives of spray sealed surface components are based on usually requiring a single coat reseal each time the road surface is renewed and requiring a two coat reseal only when the road requires full reconstruction. Therefore, the useful life of the lower spray seal surface is assumed to be the same useful life as the underlying road pavement unless, the suggested treatment provided by Downer is a two coat reseal, then the useful life of the lower spray seal surface is equal to the upper surface layre.

The useful life of hotmix bitumen surfaces is based on edge profiling and overlaying a hotmix surface on the existing surface each time the road surface is renewed and only undertaking a full profile and removal of old hotmix surface when the road requires full reconstruction. Therefore, the useful life of the hotmix bitumen lower layer is assumed to be the same useful life as the underlying road pavement.

Useful lives of sealed surface assets are outlined in Table 4.3.

Sheeted Surface Asset Lives

The useful lives of unsealed roads are influenced by:

- Quality of the sheeting material (i.e. PI and stone content) and drainage ability which affects the wear rate;
- Amount of traffic carried by the road.

All township sheeted roads in the north, south and central zones were assigned a useful life of 30 years for the minimum service standard of 70. The township sheeted roads surfaces were not componentised.

The rural sheeted roads were divided into five types based on the level of usage and wear rates and each road type was assigned a useful life for the minimum service standard as outlined in Table 4.5.

The useful lives of rural sheeted wearing surfaces and sheeted lower base and earthworks layers is based on resheeting the surface several times before reforming of road cross fall is required. Thus, the useful life of the lower base and earthworks asset component is several times the useful life of the associated sheeted surface as summarised below:

- 6 times for rural sheeted high use and medium use roads;
- 7 times for rural sheeted low use high wear roads;
- 8 times for rural sheeted low use medium wear roads and low use low wear roads

Useful lives of sheeted surface assets are outlined in Table 4.5.

4.6 Road Surface Condition Assessment

The consumption of road seals for the previous valuation undertaken in 2015 was based on ARRB data collection organised by Council staff and included roughness, rutting, texture together with visual assessment on cracking, flushing, stripping and patching. This data did not include any age data and binder condition.

Town Seals

For this valuation Council staff developed the asset register to provide a seal age based on corporate knowledge of when each road segment was last sealed. In addition, some roads were inspected with a condition rating methodology developed with Tonkin and photographs were available on most roads that have no recent capital works history

Given the variation in data available each segment was inspected from a desktop perspective and a remaining life was assign based on age of seal or any specific observable factors that would result in remaining life that was either shorter or longer than standard life. The majority of segments had sufficient data to make a valued judgement. A consumption score based on age over useful life was calculated.

It is assumed Council will typically reseal with a single seal, which is the upper surface. For the lower surface an assumption has been made on the remaining life of the lower surface to fit into the cycle adopted for double seals. Where available the condition of the underlying pavement (e.g. cracking, rutting, patching, shape and potholes) has been taken into consideration for the timing of the double coat renewal.

Rural Seals

For rural seals Downer was commissioned by Council staff in 2018 to collect condition data and advise of next renewal treatment. For the purpose of upper seal surface remaining life, the Downer year of treatment was used. For the lower surface where the suggested next treatment is a double coat seal this was used to determine the remaining life for both the upper and lower layers. For others an assumption was made based on defects (e.g. cracking, rutting, patching, shape and potholes) collected to predict the cycle for lower seal renewal. For the purposes of valuation, the condition data was not used for determining remaining life, rather the year nominated by Downer was selected.

Rural and Township Unsealed Sheeted Roads

A condition assessment was undertaken during 2019 and early 2020 by Council based on an unseal road collection procedure V6.

The factors collected included estimate of rubble depth (visual only not measured), extent of subgrade exposed, cross fall and drainage.

A separate matrix was developed considering depth of rubble and extent of subgrade breakthrough and a condition score out of 100 was assigned to each combination of depth and subgrade score as outlined below for high use, medium use and low use roads.

Rural Sheeted High Use (150mm)

		>150 mm 0	126–150 mm 1	101–125 mm 2	76–100 mm 3	51–75 mm 4	<50 mm 5
No subgrade breakthrough	1	0	0	10	20	30	40
Slight to Moderate subgrade breakthrough (5-20% of area)	2	20	30	40	50	60	70
Moderate to Extensive subgrade breakthrough (20-50% of area)	3	40	40	50	60	70	80
Total subgrade breakthrough (>50% of area)	4	60	60	60	70	80	100

Rural Sheeted Medium Use (130mm)

		>150 mm 0	126–150 mm 1	101–125 mm 2	76–100 mm 3	51–75 mm 4	<50 mm 5
No subgrade breakthrough	1	0	0	10	20	30	40
Slight to Moderate subgrade breakthrough (5-20% of area)	2	20	30	40	50	60	70
Moderate to Extensive subgrade breakthrough (20-50% of area)	3	40	40	50	60	70	80
Total subgrade breakthrough (>50% of area)	4	60	60	60	70	80	100

Rural Sheeted Low Use (100mm)

		>100 mm 0	76–100 mm 1	51–75 mm 2	26–50 mm 3	<25 mm 4	0 mm 5
No subgrade breakthrough	1	0	0	0	0	20	40
Slight to Moderate subgrade breakthrough (5-20% of area)	2	0	10	20	30	40	60
Moderate to Extensive subgrade breakthrough (20-50% of area)	3	10	20	30	40	60	80
Total subgrade breakthrough (>50% of area)	4	20	30	40	60	80	100

In addition to the sheeting condition a formation condition was determined by considering drainage and cross fall as follows, each scored out of 100.

$$Formation\ Score(\max 100) = (0.7 \times Drainage + 0.3 \times Cross\ fall)$$

Equation 6 Rural Sheeted and Township Sheeted Formation Score

An overall road surface score out of 100 was assigned using formation and depth/subgrade exposure as follows:

$$Road\ surface\ Score(\max 100) = (0.7 \times (Depth\ \&\ SG) + 0.3 \times Formation)$$

Equation 7 Rural Sheeted and Township Sheeted Surface Condition Score

4.7 Road Surface Level of Service

The service level of a surface is measured by the ability of the surface to provide a smooth and safe ride at the design speed level for its road segment and also to protect the underlying pavement asset. In order to protect the underlying pavement, it will be necessary maintain a waterproof surface.

The sheeted service level represents the acceptance of Council to allow sheeted surfaces to wear down before resheeting. Grading activity will manage expectations on rideability.

The condition scores at end of life (i.e. replacement) are shown in Table 4.3 and Table 4.5.

5 Road Pavements

5.1 Road Pavement Overview

This section of the report details the rates and lives that have been assigned for pavements and how Yorke Peninsula Council's method of renewing pavements has been incorporated into the valuation methodology.

Pavements

As is the case for sealed surfaces the type of construction, speed environment and traffic loading are the predominate factors affecting useful life. The area of pavement is determined from road segment lengths and widths.

Formations

The formation is the earthworks below the granular pavement sub-base and has been addressed within the pavement asset for each road segment rather than as a separate asset.

5.2 Fair Value Hierarchy

The valuation for road pavement has been undertaken in accordance with the Fair Value Hierarchy "Level 3" as outlined in AASB 13 81-85.

All sealed roads have been visually inspected by ARRB and an inspection date is recorded in order to project the asset condition at the valuation date.

Unit rates have been developed using typical industry rates as limited sealed pavement renewal has been undertaken in recent years. There is limited information on date of construction of pavements and the WDV is based on condition data only.

5.3 Road Pavement Types

The Yorke Peninsula Council contains approximately 528 km of sealed roads with road pavements. Table 5.1 provides a breakdown of the road pavements contained in the network.

Table 5.1 Approximate High Level Breakdown of Pavements in Network

Pavement Type	Length (m)	Pavement Area (m^2)	Approximate % of Pavement Network (Area)
Township Pavement	206,345	1,464,356	42%
Rural High Use Pavement	210,510	1,324,996	38%
Rural Normal Use Pavement	111,435	665,890	19%
Total Pavements	528,291	3,455,242	100%

5.4 Road Pavement Replacement Costs

For township pavement the current replacement cost (CRC) includes allowance for the following:

- Removal of 100mm of existing base material
- Pulverising the sub base
- Placement of 100mm granular overlay
- Trim prior to seal

For rural pavement the current replacement cost (CRC) includes allowance for the following:

- Pulverising the sub base
- Placement of 100mm granular overlay
- Trim prior to seal

Due to the nature of the large number of towns with low populations, it is assumed the service level based on the original construction of pavements can be preserved indefinitely by thin base layer replacements.

Replacement rates, minimum service standards and useful lives for township and rural pavements are provided in Table 5.2.

Within the Yorke Peninsula there is a slightly higher cost to load and cart material to the northern and southern zones of the peninsula. The cost of pavement in the northern and southern zones is therefore higher than the central zone.

Table 5.2 Road Pavement Valuation Parameters

Pavement Type	Current Replacement Cost (CRC) $/m²	Minimum Service Standard (CEoL)	Useful Life for Service Standard
Township (Northern Zone) Pavement	$17.05	80	80
Township (Central Zone) Pavement	$17.05	80	80
Township (Southern Zone) Pavement	$17.05	80	80
Rural High Use (Northern Zone) Pavement	$12.04	60	90
Rural High Use (Central Zone) Pavement	$12.04	60	90
Rural High Use (Southern Zone) Pavement	$12.04	60	90
Rural Normal Use (Northern Zone) Pavement	$12.04	60	90
Rural Normal Use (Central Zone) Pavement	$12.04	60	90
Rural Normal Use (Southern Zone) Pavement	$12.04	60	90

5.5 Road Pavement Useful Lives

Yorke Peninsula Council values their pavements at a road segment level. It is therefore necessary to determine the average useful life for a pavement over a road segment.

Whilst some minor pavement rehabilitation may be done as part of a reseal it is expected that the roads will be resealed several times without the pavements requiring reconstruction. The useful life of the pavement is said to be the period a pavement is expected to last before replacement work needs to be performed on the pavement in its entirety.

The period of time before pavement reconstruction is required is influenced by the volume of traffic carried by the pavement, particularly the number and type of commercial vehicles. It is also dependant on the level of service that Council is willing to accept from the pavement. Accordingly, separate useful lives have been assigned for rural and township pavements. The useful lives assigned to the different pavement types has been provided in Table 5.2.

5.6 Road Pavement Condition Assessment

Pavement (Township)

The previous valuation in 2015 used ARRB data to estimate remaining life based on condition data collected including rutting, cracking, patches, and roughness. For this revaluation there was no reinspection undertaken to determine pavement remaining life, however date of construction was added to the asset register. The date of construction was used as the primary source of remaining life determination. Where date of construction was not available then the expiry date determined from the previous valuation was used.

Pavement (Rural)

The previous valuation in 2015 used ARRB data to estimate remaining life based on condition data collected including rutting, cracking, patches, and roughness. For this revaluation in addition to the previous condition survey, Downer undertook a field condition assessment and rutting cracking and patching score were reviewed to determine roads that have deteriorated. While construction age was also available this was not used.

For purposes of consumption the expiry dates in Conquest were used as a default where the Downer data did not show increased deterioration. However, where there was poor pavement defects highlighted in the Downer data the remaining life was reduced in anticipation of earlier renewal. For Clinton Road segments 0170165 and 1070170 a 5 year remaining life was assumed due to rutting and increase traffic which was the subject of a separate pavement report (20190335FR3A).

5.7 Road Pavement Level of Service

The service level of pavements is measured by the ability of the pavement to provide a smooth and safe ride at the design speed level for its road segment and provide a solid base for the sealed surface. The point at which a pavement no longer provides an appropriate level of service and needs to be replaced will depend on community expectations which will vary from council to council. For the Yorke Peninsula Council, a minimum service level of 80 for township pavements and 60 for rural pavements has been adopted as the condition score where a pavement no longer provides an acceptable level of service (Table 5.2).

6 Kerb & Channel

6.1 Kerb & Channel Overview

Yorke Peninsula Council is responsible for maintaining the kerb & channel on council roads as well as DPTI roads. Like most rural councils the majority of the roads in Yorke Peninsula Council's network are un-kerbed, there is however approximately 218km of kerb & channel assets contained within the townships.

Table 6.1 provides a breakdown of the kerb & channel assets contained in the network.

Table 6.1 Approximate Breakdown of Kerb & Channel in Network

Kerb & Channel Type	Length (m)	Approximate % of Network (Length)
Upright kerb & channel	97,683	45%
Rollover Kerb & channel	112,588	52%
Median kerb	6,895	3%
Upright kerb only	322	0%
Spoon Drain	620	0%
Total	218,107	100%

6.2 Fair Value Hierarchy

The valuation for kerbs has been undertaken in accordance with the Fair Value Hierarchy "Level 3" as outlined in AASB 13 81-85.

All kerbs have been visually inspected by ARRB and an inspection date is recorded to project the asset condition at the valuation date.

Unit rates have been derived from Rawlinsons as Council has undertaken limited kerb construction or replacement within recent years.

6.3 Kerb & Channel Replacement Costs

Tonkin Consulting has used Rawlinson's to derive unit rates for the various kerb & channel types. Table 6.2 provides a list of the replacement rates, minimum service standard and useful life used for each type.

Table 6.2 Kerb & Channel Valuation Parameters

Kerbing Type	Current Replacement Cost (CRC) $/m	Minimum Service Standard (CEOL)	Useful Life for Service Standard
Upright kerb & channel	$113.02	100	80
Rollover Kerb & channel	$113.02	100	80
Median kerb	$113.02	100	80
Upright kerb only	$113.02	100	80

Kerbing Type	Current Replacement Cost (CRC) $/m	Minimum Service Standard (CEOL)	Useful Life for Service Standard
Spoon Drain	$203.44	100	80

The rates adopted for concrete kerb & channel make allowance for:

- Removal and disposal of the existing kerb and preparation of base
- Supply and laying of the new kerb
- Reinstatement of adjacent nature strip with base material.

6.4 Kerb & Channel Useful Lives

Yorke Peninsula Council values their kerb & channel at a road segment level (with left and right sides being treated as separate assets). It is therefore necessary to determine the average useful life for kerb & channel over a road segment.

Whilst a section of kerb & channel may be damaged by vehicular impacts or tree roots, these sections can usually be patched in isolation without requiring the entire kerb & channel to be replaced. This work is likely to be treated as a maintenance expense. The useful life of kerb & channel assets will therefore be defined as the period when the majority of the kerb & channel will be due for replacement. A useful life of 80 years has been assigned for all kerb & channel assets as shown in Table 6.2.

6.5 Kerb & Channel Condition Rating

When a road segment is assessed the left and right kerb & channel is assessed and assigned rating for:

- Physical condition
- Operational performance
- Displacement

An overall condition score (0-100) for each kerb is calculated as follows:

$$Score = \frac{1}{10} \times (0.4 \times Physical + 0.3 \times Operational + 0.3 \times Displacement)$$

Equation 8 Kerb & Channel Condition Score

6.6 Kerb & Channel Level of Service

The service level provided by kerb & channel is determined mainly on its ability to remove stormwater. Provided that isolated areas of damage that create ponding are replaced kerb & channel can provide an acceptable level of service even once its physical condition has deteriorated significantly. For this reason, kerb & channel will continue to be used until it reaches a condition of 80.

7 Footpaths & Walking Trails

7.1 Footpath Asset Overview

Yorke Peninsula Council is responsible for maintaining the footpaths on Council roads as well as DPTI roads. The Yorke Peninsula Council contains approximately 29.5km of footpaths (incl 3.3km of walking trail). The majority of the footpaths are concrete or concrete block paved whilst approximately 12% are hotmix bitumen. Table 7.1 provides a breakdown of the footpaths in the network.

Table 7.1 Approximate Breakdown of Footpaths in Network

Footpath Type	Length (m)	Approximate Percentage of Network
Hotmix Bitumen	1,666	8%
Concrete	3,109	14%
Concrete Block Paved	13,087	59%
Clay Paved	20	<0.1%
Hotmix Bitumen Walking Trail	2,800	13%
Spray Seal Walking Trail	1,400	6%
Total Footpaths	22,082	100%

7.2 Fair Value Hierarchy

The valuation for footpaths has been undertaken in accordance with the Fair Value Hierarchy “Level 3” as outlined in AASB 13 81-85.

All footpaths have been visually inspected by ARRB and an inspection date is recorded in order to project the asset condition at the valuation date.

Unit rates have been derived from Rawlinsons as Council has undertaken limited footpath construction or replacement within recent years.

7.3 Footpath Replacement Costs

Tonkin Consulting has worked with Council to determine unit rates that are appropriate for the various footpath types. Table 7.2 provides a list of the replacement rates, minimum service standard and useful life used for each type.

Table 7.2 Footpath Valuation Parameters

Footpath Type	Current Replacement Cost (CRC) $/m	Minimum Service Standard (CEOL)	Useful Life for Service Standard
Hotmix Bitumen Footpath	$67.50	70	30
Concrete Footpath	$124.19	70	60
Concrete Block Paved Footpath	$106.87	70	40

Footpath Type	Current Replacement Cost (CRC) $/m	Minimum Service Standard (CEOL)	Useful Life for Service Standard
Clay Paved	$106.87	70	40
Hotmix Bitumen Walking Trail	$67.50	70	30
Spray Seal Walking Trail	$33.75	70	30

There are costs involved in footpath construction and reconstruction other than the footpath itself. In order to account for these costs a typical footpath segment was considered. Within a typical segment of footpath a typical number of domestic and commercial property crossings and pram ramps was assumed and built into the replacement rate for each footpath type.

A summary for the costs included for each footpath type is provided below.

Hotmix Bitumen (Asphalt) and Spray Seal Footpath

The rates adopted for hotmix bitumen (asphalt) and spray seal footpaths are based on assumed industry rates and Rawlinsons rates and include allowances for:

- Base preparation
- Supply and laying of 30mm asphalt overlay or spray seal
- Reconstruction of pram ramps.

Concrete Block Pavers

The rates for concrete block pavers were calculated using rates from Rawlinsons and assumed industry rates and include allowances for:

- Removal and disposal of the existing footpath
- Base preparation with quarry rubble
- Supply and laying of the new footpath with 60mm thick pavers
- Supply and laying of 80mm thick pavers for driveways
- Allowance for reconstruction of pram ramps.

Concrete Footpath

The rates adopted for insitu concrete footpaths were based on Rawlinsons rates and factored to reflect Council costs, making allowance for:

- Removal and disposal of existing concrete footpath
- Base preparation with quarry rubble
- Supply and place 100mm concrete footpath
- Supply and place 150mm concrete for driveways
- Allowance for reconstruction of pram ramps.

7.4 Footpath Useful Lives

Yorke Peninsula Council values their Footpaths at a road segment level. It is therefore necessary to determine the average useful life for a footpath over a road segment.

The useful life of a footpath is assumed to be the time that a footpath is expected to last before replacement of the whole segment is required. It is likely that during its useful life a footpath will undergo some maintenance such as grinding of trip hazards and replacement of sections lifted by tree roots.

The useful life of footpaths will depend on the material they are constructed from and a summary of the useful lives adopted is provided in Table 7.2.

7.5 Footpath Condition Rating

The Yorke Peninsula Council value their footpaths at a segment level (with left and right sides being treated as separate assets). It is therefore necessary to determine the average useful life for a footpath over a segment.

Hotmix Footpaths

For hotmix bitumen footpath and shared pathway assets the defects assessed were:

- Cracking
- Ravelling
- Displacement
- Crossfall

These defect scores were used to calculate a condition score as follows:

Score = 1/10 x (2.0 x Cracking + 3.0 x Ravelling + 3.0 x Displacement + 2.0 x Crossfall)

Equation 9 Hotmix Bitumen Footpath Condition Score

Paved Footpath

For paved footpaths the defects assessed were:

- Services
- Displacement
- Crossfall
- Gaps/Chips
- Surface Wear

These defect scores were used to calculate a condition score as follows:

Score = 1/10 x (2.0 x Services + 2.0 x Displacement + 2.0 x Crossfall + 2.0 x Gaps/Chips + 2.0 x Surface Wear)

Equation 10 Paved Footpath Condition Score

Concrete Footpath

For insitu concrete footpath assets the defects assessed were:

- Cracking
- Displacement
- Fretting

- Crossfall
- Surface Wear

These defect scores were used to calculate a condition score as follows:

Score = 1/10 x (2.0 x Cracking + 2.0 x Displacement + 2.0 x Fretting + 2.0 x Crossfall + 2.0 x Surface Wear)

Equation 11 Block Paved Footpath Condition Score

Walking trails were constructed during 2015/2016 and have not been reassessed as part of this revaluation.

7.6 Footpath Level of Service

The service level of footpaths is determined by a footpath's ability to provide a safe pedestrian thoroughfare. Factors affecting the service level of a footpath are:

- Presence of trip hazards
- Uniformity of grade and crossfall
- Surface Texture

In order to maintain an acceptable level of service it will be necessary to replace footpaths before total physical deterioration occurs therefore a condition of life of 70 has been adopted for footpaths.

8 Airfield Assets

8.1 Airfield Asset Overview

Yorke Peninsula Council is responsible for maintaining the assets at three Airfield sites at Maitland, Minlaton and Yorketown. The surface types include sealed and unsealed for runways, taxiways, aprons and hardstands. Table 8.1 provides a breakdown of the airfield assets.

Table 8.1 Approximate Breakdown of Airfield Assets

Asset Type	Area (m²)
Sealed Runway Surface	18,765
Sealed Taxi Way Surface	1,610
Sealed Apron Surface	1,078
Sheeted Runway	51,440
Sheeted Taxi Way	2,475
Concrete Hardstand	465

8.2 Fair Value Hierarchy

The valuation for airfield assets has been undertaken in accordance with the Fair Value Hierarchy "Level 3" as outlined in AASB 13 81-85.

All airfield assets have been visually inspected by Tonkin and an inspection date is recorded to project the asset condition at the valuation date.

8.3 Airfield Asset Replacement Costs

Tonkin has worked with Council to determine unit rates that are appropriate for the various airfield asset types.

The airfield asset types were separated into asset components as required to reflect asset replacement patterns. Unit rates for the replacement costs of each of the asset types were developed using rates from Rawlinsons Australian Construction Handbook – Edition 37 (2019) and contract rates supplied by Council Table 8.2 provides a list of the replacement rates, minimum service standard and useful life used for each type.

Table 8.2 Airfield Asset Valuation Parameters

Asset Type	Current Replacement Cost (CRC) $/m²	Minimum Service Standard (CEOL)	Useful Life for Service Standard
Sealed Runway Types			
Sealed Runway Surface (Upper Seal Layer)	$5.50	100	20
Sealed Runway Surface (Lower Seal Layer)	$2.50	100	40
Sealed Runway Base	$23.34	100	80
Sealed Taxi Way Types			
Sealed Taxi Way Surface (Upper Seal Layer)	$5.50	100	20
Sealed Taxi Way Surface (Lower Seal Layer)	$2.50	100	40
Sealed Taxi Way Base	$23.34	100	80
Sealed Apron Types			
Sealed Apron Surface (Single Layer)	$8.00	100	20
Sealed Apron Surface (Upper Seal Layer)	$5.50	100	20
Sealed Apron Surface (Lower Seal Layer)	$2.50	100	40
Sealed Apron Base	$23.34	100	80
Concrete Hardstand Types	$/per item		
Concrete Hardstand - Maitland	$14,078.97	100	80
Concrete Hardstand - Yorketown West	$20,210.10	100	80
Concrete Hardstand - Yorketown East	$17,006.37	100	80
Concrete Hardstand - Minlaton	$14,620.32	100	80
Sheeted Runway Types	$/m²		
Sheeted Runway Wearing Surface	$6.50	100	20
Sheeted Runway Lower Base & Earthworks - Minlaton	$2.07	100	40
Sheeted Runway Lower Base & Earthworks - Yorketown	$1.62	100	40
Sheeted Taxi Way Types			
Sheeted Taxi Way Wearing Surface	$6.50	100	20
Sheeted Taxiway Lower Base & Earthworks - Minlaton	$1.38	100	40

Asset Type	Current Replacement Cost (CRC) $/m²	Minimum Service Standard (CEOL)	Useful Life for Service Standard
Sheeted Taxiway North Lower Base & Earthworks - Yorketown	$0.65	100	40
Sheeted Taxiway Centre Lower Base & Earthworks - Yorketown	$0.97	100	40
Sheeted Taxiway South Lower Base & Earthworks - Yorketown	$1.01	100	40
Sheeted Apron Types			
Sheeted Apron Wearing Surface	$6.50	100	20
Sheeted Apron Lower Base & Earthworks	$1.62	100	40

A summary for the costs included for each airfield asset type is provided below.

Sealed Surface

The sealed runway, taxi way and apron surface assets have been componentised into upper and lower seal surfaces to reflect the actual replacement methods. Unit rates include allowance for the following:

- Single layer surface - cost to supply and lay two coat 14mm/7mm C170 spray seal
- Upper seal surface – cost to supply and lay single 7mm spray seal
- Lower seal surface – cost to supply and lay two coat 14mm/7mm C170 spray seal minus cost of single 7mm spray seal coat.

Sheeted Surface

The sheeted runway, taxiway and apron surface assets have been componentised into two components for sheeted surface and lower base and earthworks to reflect replacement methods. Unit rates include allowance for the following:

- Sheeted surface – supply, delivery placement, form and compaction of 100mm sheeting material
- Lower base and earthworks – formation and reinstatement of the cross slope of the lower base including allowance for regional and contractor overhead.

Lower base and earthworks rates have been calculated separately on a per m2 basis for the Minlaton and Yorketown runway, taxiway and apron assets based on the widths of the assets.

Pavement

The unit rate for the pavement base underlying the spray seal surfaces includes allowance for the following:

- Excavation and levelling of pavement base
- Trimming and compaction of the subgrade
- Supply and placement of 150mm base material including grading, rolling and compaction.

Concrete Hardstand

The concrete hardstand assets have been valued separately per item and include allowance for the following:

- Removal and disposal of the old concrete slab
- Compaction of the subgrade
- Supply and placement of 200mm of base material
- Construction of reinforced concrete slab
- Reinstatement of shoulder material.

8.4 Airfield Asset Useful Lives

Yorke Peninsula Council values their airfield assets at an individual asset level. The useful life of an airfield assets is assumed to be the time that an asset is expected to last before replacement of the whole asset is required. It is likely that during its useful life an airfield asset will undergo some maintenance such as crack sealing or patching however this is treated as maintenance rather than capital expenditure.

The useful life of airfield assets will depend on the material they are constructed from and a summary of the useful lives adopted is provided in Table 8.2..

8.5 Airfield Asset Consumption

The 29 airfield assets at the three airfield sites were each assigned a condition score between 0 and 100 where 0 represents a newly constructed asset and 100 represents a fully consumed asset that requires replacement. These condition scores were used to calculate the consumption of each asset and measure the accumulated depreciation and written down value of each asset.

Table 8.3 Airfield Visual Assessment Condition Scores

Score	Condition
0	As New / Excellent condition 0-5% needs replacing
10	Good Condition (10% consumption)
15	Good Condition (15% consumption)
25	Minor Deterioration (25% consumption)
37.5	Some Deterioration (37.5% consumption)
50	Fair (50% consumption)
60	Fair (60% consumption)
75	Poor (75% consumption)
100	Immediate Replacement Renewal (100% consumption)

8.6 Airfield Asset Level of Service

The service level of an airfield asset is measured by the ability of the surface to provide a smooth and safe ride at the design speed level for its function and for sealed surfaces to protect the underlying pavement asset. To protect the underlying pavement, it will be necessary maintain a waterproof surface.

The consumption score assigned to each airfield asset has been based on a visual assessment which reflects the appropriate level at which the asset is consumed and therefore remaining life. For this reason, the condition at end of life for airfield assets is set at 100 and is to be reviewed at future condition assessments.

9 Valuation Summary

Table 9.1 details a summary of the valuation as of 1 July 2019 for the various road assets presented by asset type (i.e. surface, pavement, etc). A detailed spreadsheet is provided via email.

Table 9.1 Valuation as at 1 July 2019

Asset Type	Current Replacement Cost	Accumulated Depreciation	Written Down Value	Remaining %
Sealed Roads				
Township Sealed Surface	$13,066,890	$5,533,842	$7,533,049	58%
Rural Sealed Surface	$15,927,088	$8,328,123	$7,598,966	48%
Township Pavement	$24,967,275	$7,678,577	$17,288,697	69%
Rural Pavement	$23,970,268	$5,705,479	$18,264,790	76%
Sealed Sub Total	$77,931,522	$27,246,021	$50,685,501	65%
Unsealed Roads				
Unsealed Surface	$95,843,349	$67,957,915	$27,885,434	29%
Unsealed Lower Base & Earthworks	$27,858,894	$17,612,589	$10,246,305	37%
Unsealed Sub Total	$123,702,243	$85,570,504	$38,131,738	31%
Kerbing & Footpaths				
Kerb & Channel	$24,706,534	$5,912,535	$18,793,999	76%
Footpaths (incl. Walking Trail)	$2,136,275	$483,412	$1,652,863	77%
Airfield Assets				
Maitland Airfield	$749,989	$105,612	$644,377	86%
Minlaton Airfield	$344,235	$241,793	$102,442	30%
Yorketown Airfield	$254,871	$43,857	$211,014	83%
Airfield Asset Sub Total	$1,349,095	$391,262	$957,832	71%
Total	$229,825,668	$119,603,733	$110,221,934	48%

The Written Down Value (WDV) is the depreciated replacement cost and is the “carrying amount” of the assets as of 1 July 2019 as per AASB 116. Together the table illustrates the total fair value of the asset (CRC), the amount consumed (accumulated depreciation) and the amount remaining (WDV) for each asset.

Road surface, pavement, kerb & gutter and footpath assets were visually inspected in 2019/2020 and airfields in 2017, it includes capital works up to 30 June 2019. The inspected condition and condition at the end of useful life has been used to determine accumulated depreciation and WDV.

10 Depreciation Forecast

Table 10.1 details a summary forecast of infrastructure asset depreciation for the 2019/2020 financial year has been calculated using Conquest. A detailed spreadsheet is provided via email.

Table 10.1 Depreciation Forecast for 2019/2020

Asset Type	Annual Depreciation Forecast	Annual Consumption Forecast
Sealed Roads		
Town Sealed Surface	$422,786	3.2%
Rural Sealed Surface	$649,620	4.1%
Township Pavement	$312,732	1.3%
Rural Pavement	$266,883	1.1%
Sealed Sub Total	$1,652,020	2.1%
Unsealed Roads		
Unsealed Surface	$3,843,763	4.0%
Unsealed Lower Base & Earthworks	$181,831	0.7%
Unsealed Sub Total	$4,025,594	3.3%
Kerbing & Footpaths		
Kerb & Channel	$309,466	1.3%
Footpaths (incl. Walking Trail)	$53,210	2.5%
Airfield Assets		
Maitland Airfield	$14,309	1.9%
Minlaton Airfield	$14,288	4.2%
Yorketown Airfield	$9,845	3.9%
Airfield Asset Sub Total	$38,442	2.8%
Total	$6,078,732	2.6%