Appendix D: Roading Valuation 2015

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Waimakariri District Council

Roading Asset Valuation 2015

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1 Declaration of Valuation

MWH New Zealand Ltd was commissioned by Waimakariri District Council (WDC) to value its roading infrastructure assets as at 30 June 2015

We certify that the valuations summarised below have been completed in accordance with the following.

- NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0;
- Public Benefit Entities, International Sector Accounting Standards 5 and 17 (PBE IPSAS 5 and 17), and;
- The Local Government Act 2002.

1.1 Summary of Asset Valuation Results

Table 1-1 shows the total valuation results for all assets. This shows an Annual Depreciation cost of $7,638,245.

Table 1-1: Summary of the Asset Valuation as at 30 June 2015 – Unimpaired Value

Asset Description	Replacement Cost	Total Accumulated Depreciation	Depreciated Replacement Cost	Annual Depreciation
Formation	$ 325,484,100	$ -	$ 325,484,100	$ -
Sealed Pavement Surface	$ 33,915,005	$ 15,053,651	$ 18,861,353	$ 1,772,012
Sealed Pavement Layers	$ 178,785,651	$ 53,909,393	$ 124,876,258	$ 1,504,625
Unsealed Pavement Layers	$ 19,926,798	$ 1,414,604	$ 18,512,194	$ 317,483
Drainage	$ 45,105,908	$ 15,971,449	$ 29,134,459	$ 571,800
Surface Water Channels	$ 81,075,064	$ 16,728,046	$ 64,347,018	$ 1,119,007
Footpath	$ 36,309,709	$ 10,535,331	$ 25,774,378	$ 810,347
Traffic Facilities	$ 943,718	$ 308,194	$ 635,524	$ 47,475
Signs	$ 5,773,601	$ 2,349,852	$ 3,423,749	$ 476,868
Railings	$ 630,485	$ 219,830	$ 410,655	$ 16,685
Street Lights	$ 8,663,417	$ 3,128,287	$ 5,535,130	$ 195,557
Minor Structures	$ 1,156,069	$ 387,693	$ 768,376	$ 25,525
Islands	$ 2,984,619	$ 399,689	$ 2,584,930	$ 37,308
Bridges and Bridge Culverts	$ 105,240,573	$ 46,051,769	$ 59,188,804	$ 782,598
Traffic Signals	$ 222,122	$ 7,404	$ 214,718	$ 7,404
Total	**$ 846,216,839**	**$ 166,465,192**	**$ 679,751,647**	**$ 7,684,694**

We are not aware of any reason why WDC auditors should not place reliance in the valuation prepared.

The valuations are based on accurate and substantially complete asset registers and appropriate replacement costs and effective lives. The basis of the data inputs used is described in detail in the report.

a) The lives are generally based upon NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0. In specific cases these have been modified where in the opinion of MWH and the Council a different life is appropriate. The changes are justified in the valuation report.

b) The component level of the data used for the valuation is sufficient to calculate depreciation separately for those assets that have different useful lives.

The following personnel with relevant experience in road engineering completed this valuation.

Name/Role	Qualifications	Years of Relevant Experience
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Signatures of Valuers:

....
Brian Smith

....
Nigel Lister

2 Disclosure Requirements

Consistent with NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0 Section 6.2.1, it is prohibited to publish any of the following without the written approval of the valuer as to the form and context in which it is to appear:

- The report in whole, in part, or any reference thereto.
- The valuation figures contained within the report.
- The names and professional affiliations of the valuer's.

The valuation has been prepared in accordance with appropriate guidelines and standards, that the engagement was performed independently and without bias towards the clients or others.

3 Comparison

3.1 Introduction

This section shows the comparison between the 30 June 2014 and 30 June 2015 valuations with a summary comparison and individual asset type comparisons with explanations for the differences.

Table 3-1 shows the results from the 30 June 2014 valuation for all assets.

Table 3-1: Summary of 30 June 2014 Asset Valuation

Asset Description	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Formation	$ 327,381,074	$ 327,381,074	$ -
Sealed Pavement Surface	$ 36,417,649	$ 19,944,013	$ 1,901,436
Sealed Pavement Layers	$ 142,158,918	$ 95,218,977	$ 1,314,710
Unsealed Pavement Layers	$ 12,958,531	$ 11,537,049	$ 316,339
Drainage	$ 34,697,485	$ 21,095,583	$ 449,281
Surface Water Channels	$ 72,728,163	$ 58,479,648	$ 1,021,559
Footpath	$ 27,790,326	$ 20,170,907	$ 592,927
Traffic Facilities	$ 826,914	$ 584,246	$ 38,828
Signs	$ 5,643,490	$ 3,417,903	$ 466,835
Railings	$ 512,078	$ 338,789	$ 14,148
Street Lights	$ 8,466,789	$ 5,346,077	$ 192,537
Minor Structures	$ 1,151,604	$ 781,250	$ 25,133
Islands	$ 2,509,573	$ 2,175,926	$ 31,370
Bridges and Bridge Culverts	$ 84,383,936	$ 45,249,411	$ 633,175
Traffic Signals	$ -	$ -	$ -
Total	**$ 757,626,530**	**$ 611,720,852**	**$ 6,998,277**

Table 3-2: 30 June 2014 and 30 June 2015 Valuation Comparison

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 757,626,530	$ 611,720,852	$ 6,998,277
30 June 2015	$ 846,216,839	$ 679,751,647	$ 7,684,694
% Change	**12%**	**11%**	**10%**

The changes in Replacement Cost, Depreciated Replacement Cost, and Annual Depreciation are due to:

- Changes in current Contract Rates. Old contract rates (> 5 years old) removed from the valuation and new rates included.
- Escalation/Inflation.
- An increase in asset quantities due to new construction and/or vested assets.
- Updates/Correction to the asset records.
- Exclusion of closed residential redzone roads and related assets from the valuation.

3.2 Comparison by Asset Type

3.2.1 Formation

Table 3-3: 30 June 2014 and 30 June 2015 Formation Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 327,381,074	$ 327,381,074	$ -
30 June 2015	$ 325,484,100	$ 325,484,100	$ -
% Change	**-1%**	**-1%**	

The changes in Replacement Cost and Depreciated Replacement Cost are due to the following:

- A 0.7% (increase in formation area due to vested assets.
- A decrease in unit rates from current escalation figures.

3.2.2 Sealed Pavement Surface

Table 3-4: 30 June 2014 and 30 June 2015 Sealed Pavement Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 36,417,649	$ 19,944,013	$ 1,901,436
30 June 2015	$ 33,915,005	$ 18,861,353	$ 1,772,012
% Change	**-7%**	**-5%**	**-7%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A decrease in unit rates based on current contracts.
- A decrease in unit rates based on current escalation figures.
- A 0.6% increase in sealed pavement area due to vested assets and seal extensions.

3.2.3 Sealed Pavement Layers

Table 3-5: 30 June 2014 and 30 June 2015 Sealed Pavement Layers Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 142,158,918	$ 95,218,977	$ 1,314,710
30 June 2015	$ 178,785,651	$ 124,876,258	$ 1,504,625
% Change	**26%**	**31%**	**14%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A significant increase in unit rates for first coat seals, basecourse and subbase due to the exclusion of contracts with low unit rate values from 5+ years ago.
- A 0.6% increase in first coat seal area due to vested assets and seal extensions.
- A 1.1% increase in pavement basecourse layer volume due to vested assets, seal extensions, and changes in pavement use categories.
- A 1.2% increase in pavement subbase layer volume due to vested assets, seal extensions, and changes in pavement use categories.

3.2.4 Unsealed Pavement Layers

Table 3-6: 30 June 2014 and 30 June 2015 Unsealed Pavement Layers

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 12,958,531	$ 11,537,049	$ 316,339
30 June 2015	$ 19,926,798	$ 18,512,194	$ 317,483
% Change	**54%**	**60%**	**0%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A significant increase in unit rates for subbase due to the exclusion of contracts with low unit rate values from 5+ years ago.
- A 0.9% increase in the volume of Unsealed Wearing Course.
- A 0.9% increase in the volume of Unsealed Subbase.
- Changes in traffic patterns on the network, moving carriageway sections into different pavement use categories.
- Increase in unsealed network length due to vested assets.

3.2.5 Drainage

Table 3-7: 30 June 2014 and 30 June 2015 Drainage Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 34,697,485	$ 21,095,583	$ 449,281
30 June 2015	$ 45,105,908	$ 29,134,459	$ 571,800
% Change	**30%**	**38%**	**27%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A significant increase in unit rates for drainage assets due to the exclusion of contracts with low unit rate values from 5+ years ago.
- A 24.8% increase in drainage assets due to vested assets, new construction and found assets.

3.2.6 Surface Water Channels

Table 3-8: 30 June 2014 and 30 June 2015 Surface Water Channel Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 72,728,163	$ 58,479,648	$ 1,021,559
30 June 2015	$ 81,075,064	$ 64,347,018	$ 1,119,007
% Change	**11%**	**10%**	**10%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- An increase in unit rates based on current contracts.
- An increase in unit rates for surface water channel assets due to the exclusion of contracts with low unit rate values from 5+ years ago

3.2.7 Footpaths

Table 3-9: 30 June 2014 and 30 June 2015 Footpath Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 27,790,326	$ 20,170,907	$ 592,927
30 June 2015	$ 36,309,709	$ 25,774,378	$ 810,347
% Change	**31%**	**28%**	**37%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A significant increase in unit rates based on current contracts.
- A significant increase in unit rates for footpaths due to the exclusion of contracts with low unit rate values from 5+ years ago
- An overall 3.1% increase in total footpath area, from vested assets, new construction, and updated asset records.

3.2.8 Traffic Facilities

Table 3-10: 30 June 2014 and 30 June 2015 Traffic Facility Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 826,914	$ 584,246	$ 38,828
30 June 2015	$ 943,718	$ 635,524	$ 47,475
% Change	**14%**	**9%**	**22%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- An increase in unit rates based on current contracts.
- An increase in quantities due to new construction.

3.2.9 Signs

Table 3-11: 30 June 2014 and 30 June 2015 Signs Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 5,643,490	$ 3,417,903	$ 466,835
30 June 2015	$ 5,773,601	$ 3,423,749	$ 476,868
% Change	**2%**	**0%**	**2%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A decrease in unit rates based on current contracts for all classes except Regulatory General signs.
- A significant increase in the unit rate for Regulatory General signs based on current contracts.
- A 1.2% increase in signs due to new construction and vested assets.

3.2.10 Railings

Table 3-12: 30 June 2014 and 30 June 2015 Railing Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 512,078	$ 338,789	$ 14,148
30 June 2015	$ 630,485	$ 410,655	$ 16,685
% Change	**23%**	**21%**	**18%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A significant increase in the unit rate for W-Section Guardrail from current contracts.
- A 2.5% increase in railings due to new construction, and found assets.

3.2.11 Street Lights

Table 3-13: 30 June 2014 and 30 June 2015 Streetlights Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 8,466,789	$ 5,346,077	$ 192,537
30 June 2015	$ 8,663,417	$ 5,535,130	$ 195,557
% Change	**2%**	**4%**	**2%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- An decrease in unit rates for streetlight poles, brackets and lamps due do current escalation rates
- A 5.1% increase in the number of street light poles due to found and vested assets.
- A 0.9% increase in street light brackets due to found and vested assets.
- A 0.6% increase in street light lamps due to found and vested assets.

3.2.12 Minor Structures

Table 3-14: 30 June 2014 and 30 June 2015 Minor Structures

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 1,151,604	$ 781,250	$ 25,133
30 June 2015	$ 1,156,069	$ 768,376	$ 25,525
% Change	**0%**	**-2%**	**2%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- A decrease in unit rates based on current contracts for all classes except Seats.
- A significant increase in the unit rate for Seats based on current contracts.
- A 4.3% increase in retaining wall assets due to found assets.

3.2.13 Islands

Table 3-15: 30 June 2014 and 30 June 2015 Islands

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 2,509,573	$ 2,175,926	$ 31,370
30 June 2015	$ 2,984,619	$ 2,584,930	$ 37,308
% Change	**19%**	**19%**	**19%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- An increase in unit rates based on current contracts.
- A 3.1% increase in islands due to newly constructed, vested and found assets.

3.2.14 Bridges and Bridge Culverts

Table 3-16: 30 June 2014 and 30 June 2015 Bridge and Bridge Culvert Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ 84,383,936	$ 45,249,411	$ 633,175
30 June 2015	$ 105,240,573	$ 59,188,804	$ 782,598
% Change	**25%**	**31%**	**24%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- An increase in unit rates based on current contracts.
- Increase in assumed widths of replacement bridges to 6.0m for single lane and 12.0m for dual lane bridges.
- A 0.8% decrease of bridge/bridge culvert length due to updated asset record information, and removal of duplicates.
- Adjustment of Bridge 602 C – SKEWBRIDGE total useful life due to programmed replacement.
- Update in asset descriptions to evaluate the construction age of bridges where a null value had previously existed.

3.2.15 Traffic Signals

Table 3-17: 30 June 2014 and 30 June 2015 Traffic Signals Results

Valuation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
30 June 2014	$ -	$ -	$ -
30 June 2015	$ 222,122	$ 214,718	$ 7,404
% Change	**100%**	**100%**	**100%**

The changes in Replacement Cost, Depreciated Replacement Cost and Annual Depreciation are due to the following:

- New asset class due to the first installation of traffic signals within the WDC area

3.3 Vested Assets

A summary of assets vested in the Council to the year ending 30 June 2015 is presented in Table 3-18.

Table 3-18: Summary of Valuation of Vested Assets

Asset Description	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Formation	$ 5,033,579	$ 5,033,579	$ -
Sealed Pavement Surface	$ 1,801,554	$ 1,578,597	$ 73,069
Sealed Pavement Layers	$ 2,516,443	$ 2,469,291	$ 3,742
Unsealed Pavement Layers	$ 480,952	$ 458,494	$ 6,279
Drainage	$ 596,446	$ 535,129	$ 13,009
Surface Water Channels	$ 4,178,792	$ 3,944,020	$ 58,959
Footpath	$ 1,685,342	$ 1,630,727	$ 18,104
Traffic Facilities	$ -	$ -	$ -
Signs	$ 66,876	$ 52,339	$ 5,573
Railings	$ 4,731	$ 3,217	$ 189
Street Lights	$ 392,762	$ 363,264	$ 8,722
Minor Structures	$ 22,039	$ 6,887	$ 275
Islands	$ 259,648	$ 247,113	$ 3,246
Bridges and Bridge Culverts	$ 95,985	$ 90,226	$ 960
Traffic Signals	$ -	$ -	$ -
Total	**$ 17,135,149**	**$ 16,412,884**	**$ 192,127**
All Assets 30 June 2015	$ 846,216,839	$ 679,751,647	$ 7,684,694
% Vested Assets	**2.0%**	**2.4%**	**2.5%**

4 Valuation Methodology

4.1 Network Statistics

The following statistics summarise the Council's roading network as at 30 June 2015. This information has been obtained from the treatment length table of the RAMM database.

The lengths are calculated as the sum of the end displacement minus the start displacement (rather than the sum of the lengths). While this effectively double counts the areas at intersections it is considered to be offset by the intersection flares, which are not included.

Network statistics are based on this method to allow for direct comparison with the treatment length table, which also uses the end displacements minus the start displacements. These statistics can then be used to confirm the lengths in the Formation, Surfacing and Pavement valuations.

Table 4-1: Network Statistics

	Urban (km)	Rural (km)	Total (km)
Sealed	241.7	672.3	914.0
Unsealed	3.1	617.9	621.1
Major Bridges	0.4	1.9	2.4
Total	**245.2**	**1,292.2**	**1,537.4**

Table 4-2: 30 June 2014 and 30 June 2015 Change in Network Statistics

	Urban (km)	Rural (km)	Total (km)
Sealed	4.8	0.8	5.7
Unsealed	0.0	4.2	4.2
Major Bridges	-0.1	0.0	-0.1
Total	**2.0%**	**0.4%**	**0.6%**

Table 4-3: Network Summary Statistics

Pavement Use	Urban (km)	Rural (km)	Total (km)
ADT < 100	98.4	614.6	713.0
ADT 100-500	51.9	391.5	443.4
ADT 500-2,000	52.7	158.8	211.5
ADT 2,000-4,000	21.0	98.0	119.0
ADT 4,000-10,000	16.6	25.1	41.8
ADT 10,000-20,000	3.8	4.2	8.0
ADT > 20,000	0.8		0.8
Total	**245.2**	**1,292.2**	**1,537.4**

Table 4-4 : 30 June 2014 and 30 June 2015 Change in Network Statistics

Pavement Use	Urban Change (km)	Rural Change (km)	Total Change (km)
ADT < 100	0.3	0.1	0.4
ADT 100-500	2.1	-9.8	-7.7
ADT 500-2,000	-2.8	7.8	5.1
ADT 2,000-4,000	6.1	1.5	7.7
ADT 4,000-10,000	-0.6	4.4	3.8
ADT 10,000-20,000	-0.4	0.9	0.5
ADT > 20,000	0.0		0.0
Total	**2.0%**	**0.4%**	**0.6%**

Table 4-5: Footpath Length Summary

Footpath Type	Length (km)
Asphaltic Concrete	132.5
Concrete – Exposed Aggregate	3.9
Concrete – Plain	152.7
Covacrete Cobblestone Paving	0.7
Interlocking Blocks	1.0
Metal (Unsealed)	14.1
Seal (Typ. Chipseal)	7.0
Timber	0.2
Total	**312.0**

Table 4-6: Bridge Number and Length Summary

Bridge Description	Length* (m)	Number
Long Bridges > 20m Length	2,779	36
Small Bridges < 20m Length	901	114
Bridge Culverts	1,262	123
Total	**4,942**	**273**

* Bridge Length is measures as Abutment to Abutment, along the carriageway centreline. Bridge Culvert Length is measured from waterway inlet to outlet, typically perpendicular to the carriageway centreline.

4.2 Valuation Process

These values have been calculated to define this roading asset valuation; *Optimised Replacement Cost, Depreciated Replacement Cost and Annual Depreciation*. These terms are defined in the Glossary.

4.2.1 Data Sources

The general categories under which the road components are to be valued are:

Table 4-7: Assets to be Valued

Component	RAMM Table	Data Source
Formation	Treatment Length	RAMM
Pavements		
Sealed Pavement Structure	Treatment Length	RAMM
Unsealed Pavement Structure	Treatment Length	RAMM
Sealed Surfaces	Treatment Length	RAMM
Drainage		
Culverts, Sumps and Subsoil Drains	Drainage	RAMM
Under Channel Pipes	N/A	**Council Supplied Data**
Surface Water Channels	Surface Water Channel	RAMM
Footpaths	Footpath	RAMM
Traffic Facilities		
Edge Marker Posts	N/A	**Council Supplied Data**
Raised Pavement Markers	N/A	**Council Supplied Data**
Markings	N/A	**Council Supplied Data**
Tactile Indicators	Tactile Indicators	RAMM
Signs	Signs	RAMM
Railings	Railings	RAMM
Streetlights	Street Light	RAMM
Minor Structures	Minor Structures	RAMM
Islands	Islands	RAMM

Component	RAMM Table	Data Source
Bridges and Bridge Culverts	Bridge	RAMM
Traffic Signals	N/A	**Council Supplied Data**

The Formation, Pavement Surfacing, Sealed Pavement Structure, and Unsealed Pavement Structure have all been valued in RAVM based on their treatment lengths. Drainage (Culverts, Sumps and Subsoil Drains), Surface Water Channels, Footpaths, Railings, Traffic Facilities (as noted above), Streetlights, Signs, Minor Structures, Islands, Bridges, and Bridge Culverts have been valued individually within RAVM. Unformed Roads, Traffic Facilities (as noted above), Traffic Signals, and Drainage (Under Channel Pipes) have been valued in spreadsheets from data supplied by the Council.

4.2.2 Data Verification

The RAMM database has been checked and any issues, errors, or missing data that need to be addressed before the valuation could run were identified and passed onto the RAMM team for updating.

4.2.2.1 Traffic Counts

A change in the method that RAVM used to handle traffic count data within RAMM resulted in the previous methodology, used for some Treatment Length asset classes, to not be available.

These asset categories were consolidated into the closest related asset that remained.

4.2.3 Data Confidence

Data confidence assessments have been based on NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0, Table 4.3.1: Data confidence grading system.

A – Highly Reliable Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment.

B – Reliable Data based on sound records, procedures, investigations and analysis which is properly documented but has minor shortcomings.

C – Uncertain Data based on sound records, procedures, investigation and analysis which is incomplete or unsupported, or extrapolation from limited sample for which grade A or B data is available.

D – Very Uncertain Data based on unconfirmed verbal report and/or cursory inspection and analysis.

Table 4-8: Data Confidence

Asset Description	Confidence	Comments
Formation	B – Reliable	The formation valuation uses assumed extra width allowances that have been calculated based on local engineering judgement.
Sealed Pavement Surface	A – Highly Reliable	1.2% of the sealed pavement surfaces use the default construction date (50% of TUL) as they have no construction date information. 1.1% of sealed pavement surfaces do not have the surface material recorded and use the default "catch all" of a two chip G3/5 chipseal
Sealed Pavement Layers	A – Highly Reliable	The sealed pavement valuation uses assumed pavement depth allowances that have been calculated based on local engineering judgement. 4.3% of the sealed pavement layers use the default construction date (50% of TUL) as they have no construction date information.

Asset Description	Confidence	Comments
Unsealed Pavements	B – Reliable	The unsealed pavement valuation uses assumed pavement depth allowances that have been calculated based on local engineering judgement. 87.0 % of the unsealed pavements use the default construction date (50% of TUL) as they have no reliable construction date information.
Drainage (Culverts, Sumps and Subsoil Drains)	B – Reliable	7.3% of the drainage assets use the default construction date (50% of TUL) as they have no reliable construction date information.
Drainage (Under Channel Pipes)	A – Highly Reliable	No assumptions have been made.
Surface Water Channels	A – Highly Reliable	4.3% of the SWC assets use the default construction date (50% of TUL) as they have no reliable construction date information.
Footpath	A – Highly Reliable	0.3% of the footpath assets use the default construction date (50% of TUL) as they have no reliable construction date information.
Traffic Facilities – Tactile Indicators	A – Highly Reliable	No assumptions have been made.
Traffic Facilities – Other	C – Uncertain	Quantities have been estimated based on local engineering judgement.
Signs	C – Uncertain	58.8% of the signs use the default construction date (50% of TUL) as they have no reliable construction date information. Each sign is assumed to have one post/pole due to 26% of the database having no post/pole information.
Railings	C – Uncertain	55.4% of railings use the default construction date (50% of TUL) as they have no reliable construction date information.
Street Lights	B – Reliable	3.3% of poles, 20.0% of brackets, and 2.0% of light assets use the default construction date (50% of TUL) as they have no reliable construction date information.
Minor Structures	B – Reliable	27.6% of minor structure assets use the default construction date (50% of TUL) as they have no reliable construction date information.
Islands	B – Reliable	9.3% of island assets use the default construction date (50% of TUL) as they have no reliable construction date information
Bridges and Bridge Culverts	B – Reliable	3.9% of bridges and 11.7% of bridge culverts use the default construction date (50% of TUL) as they have no reliable construction date information.
Traffic Signals	A – Highly Reliable	No assumptions have been made

4.2.4 Significant Assumptions

The default construction date will be 50% of the Total Useful Life (TUL) – unless it is otherwise stated – and only used where there is no construction date contained in RAMM. Default dates are calculated as the first of January of the year that would make the asset halfway through its life

All assets that have been valued in RAVM have been identified as asset owner "L" (or "LA" for signs) for Local Authority in the RAMM database.

All significant assumptions have been reviewed by Council and confirmed as appropriate for the purposes of running the 30 June 2015 valuation.

4.2.5 Optimisation/Obsolescence

Potetnail physical, functional and external obsolescence has been considered in terms of the Application Guidance in PBE IPSAS 17.

In particular the replacement cost of bridges and culverts are calculated as the cost of building it "today". It is assumed that modern equivalent construction techniques and materials are used but that the physical result replaces the asset as it exists. For this valuation we have assumed that all bridges and culverts will be replaced with a similar dimensioned concrete bridge / culvert.

4.2.6 Impairment

A significant amount of impairment, caused by the September 2010 and February 2011 earthquakes, has occurred to roading infrastructure within the Kaiapoi, Pines Beach and Kairaki Beach areas. The WDC completed an assessment of the extent of repair/replacement of assets required in late 2010/early 2011.

A summary of the impaired assets is detailed in Section 21.

4.2.7 Unit Replacement Costs

The majority of unit rates in the 30 June 2015 valuation have been updated based on current construction and maintenance contracts rates that have been completed in the last 5 years. Where current contract rates were not available the unit rates have been increased based on NZTA cost adjustment factors, and have been adjusted using the rate from March 2014 to March 2015. The adjustment factors are as follows: maintenance works 1.0093, construction works 1.0081, surfacing 0.9894, or bridges 1.0036.

4.2.8 Total Useful Lives

A meeting was held between WDC and MWH to review the Total Useful Lives to be used. The TULs used in previous valuations were reviewed and deemed to not require an update.

4.2.9 Residual Lives

For the purposes of this valuation we have assumed that all assets, except footpaths, have no residual value. The RAVM software does not allow for footpaths to be broken down into its basecourse and surface components. To deal with this, we have used the residual value field, where necessary, as the cost of the basecourse. The replacement rates for footpaths include the cost of the footpath basecourse and surface.

4.2.10 Minimum Remaining Useful Lives

The Minimum Remaining Useful Life is applied to assets that are older than their useful life. It recognises that although an asset is older than its useful life it may still be in service and therefore have some value. Where an asset is older than its standard useful life, the minimum remaining useful life is added to the assets age and used in the calculation of the depreciated replacement value. The minimum remaining useful lives of assets in this valuation are included in the asset assumption tables

4.2.11 Restoration / Dismantling / Removal

All replacement rates, where appropriate, include an amount for removal and disposal of the existing asset, an amount for site establishment, and an amount for the formation, supply, placement, shaping, etc., of materials.

4.2.12 Activity Management Plan Review

The assumptions used in this valuation have been reviewed to ensure they are in line with current best practice and with the Council's Long Term Plan (LTP) and Activity Management Plan (AMP). Areas where the valuation differs from the AMP and LTP are listed below.

4.2.12.1 Activity Management Plan (AMP) 2012

In the Financial section of the 2012 AMP the asset total useful life ranges differ from those used in the valuation. However, the ranges quoted in the AMP fall within those used in the valuation.

4.2.12.2 Long Term Plan (LTP) 2015-2025

In Council's LTP – Financial Policies, the asset total useful life ranges differ from those used in the valuation. However, the ranges quoted in the LTP fall within those used in the valuation.

4.2.13 Quality Assurance Process

Quality checks, based on NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0, Section 6.2.2, have been undertaken on this document by both the valuer and the reviewer.

4.2.14 Borrowing Cost, Construction Cost and Construction Period

No borrowing costs have been included in this valuation. The Accounting Standard PBE IPSAS 5, gives Public Benefit Entities the option to exclude or include borrowing costs on non-cash generating assets during the construction period. WDC has opted to exclude borrowing costs.

4.2.15 Asset Inspections

No asset inspections were required as part of this valuation.

5 Formation

This item comprises bulk earthworks (excluding retaining structures) required to form the road corridor. It includes the formation of swale drains (excluding the engineered Pegasus swale drains), side drains, shoulders, and the formation underneath footpaths and surface water channels.

The formation is assumed not to depreciate as regular maintenance (slip clearing, etc.) will allow it to provide adequate service indefinitely.

Each rate included an allowance for:

i) Engineering fees (8%)

ii) Clearing vegetation and stripping topsoil;

iii) Bulk earthwork costs (cut-to-fill, borrow-to-fill etc.);

iv) Preparation of subgrade (over excavation in "soft" areas).

The replacement cost for formation is calculated as the length x (width + extra) of the treatment length multiplied by the square metre rate. The extra width allows for additional shoulder, feathered edges, footpaths, and surface water channel (SWC).

Table 5-1: Formation Extra Widths for Each Formation Type

Terrain Type	Rural Sealed Extra	Urban Sealed Extra	Unsealed Extra
Flat	boundary to boundary	boundary to boundary	boundary to boundary
Rolling	1.5m each side	boundary to boundary	0.5m each side
Mountainous	1.5m each side	boundary to boundary	0.5m each side

Formation extra widths have been stored in the 'likelihood_wt' field in the treatment length table.

Table 5-2 shows the total valuation results for Formation.

Table 5-2: Valuation Parameters and 30 June 2015 Results for Formation

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Flat	m²	26,119,147	$ 10.75	N/A	$280,676,354	$280,676,354	$ -
Rolling	m²	1,278,017	$ 31.66	N/A	$ 40,455,373	$ 40,455,373	$ -
Mountainous	m²	95,565	$ 45.54	N/A	$ 4,352,374	$ 4,352,374	$ -
TOTAL	**m²**	**27,492,729**			**$325,484,100**	**$325,484,100**	**$ -**

6 Pavement Surfacing

Pavement surfaces have been placed into groups based on surface material and pavement use for valuation purposes.

Each rate includes an allowance for:

i) Engineering fees (3%)

ii) Surfacing supply and placement based on recent contract rates

Table 6-1 shows the key parameters used in the valuation of pavement surfaces.

Table 6-2 shows the total useful lives applied to the different seal types.

Note: The capital cost of installing first coat seals is allowed for as part of the sealed pavement layer structure rather than as a pavement surfacing. This is due to the first coat seal acting as the waterproof coat on the basecourse top surface and therefore being integral to the structural performance of the pavement.

Table 6-1: Valuation Parameters and 30 June 2015 Results for Pavement Surfacing

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
1CHIP - First Coat (G3)	m²	9,599	$ -	Varies	$ -	$ -	$ -
1CHIP - First Coat (G4)	m²	29,579	$ -	Varies	$ -	$ -	$ -
1CHIP - First Coat (G5)	m²	2,264	$ -	Varies	$ -	$ -	$ -
1CHIP - First Coat (G6)	m²	5,121	$ -	Varies	$ -	$ -	$ -
1CHIP - Reseal (G3)	m²	628,264	$4.14	Varies	$ 2,601,389	$ 598,674	$ 137,278
1CHIP - Reseal (G4)	m²	1,470,938	$3.47	Varies	$ 5,105,773	$ 1,324,758	$ 281,853
1CHIP - Reseal (G5)	m²	1,002,943	$2.89	Varies	$ 2,902,817	$ 1,364,014	$ 204,319
1CHIP - Reseal (G6)	m²	44,800	$2.85	Varies	$ 127,817	$ 7,463	$ 7,463
1CHIP - Second Coat (G4)	m²	33,733	$3.47	Varies	$ 117,089	$ 8,203	$ 5,929
1CHIP - Second Coat (G5)	m²	5,968	$2.89	Varies	$ 17,272	$ 1,196	$ 1,023
2CHIP - First Coat (G2-4)	m²	11,913	$ -	Varies	$ -	$ -	$ -
2CHIP - First Coat (G3-5)	m²	516,501	$ -	Varies	$ -	$ -	$ -
2CHIP - First Coat (G4-6)	m²	128,531	$ -	Varies	$ -	$ -	$ -
2CHIP - Reseal (G2-4)	m²	14,438	$5.48	Varies	$ 79,112	$ 48,211	$ 5,642
2CHIP - Reseal (G3-5)	m²	1,339,968	$4.11	Varies	$ 5,512,190	$ 3,943,638	$ 327,756
2CHIP - Reseal (G4-6)	m²	385,398	$4.01	Varies	$ 1,544,176	$ 931,518	$ 100,000
2CHIP - Second Coat (G3-5)	m²	32,449	$4.11	Varies	$ 133,358	$ 68,411	$ 8,976
2CHIP - Second Coat (G4-6)	m²	23,606	$4.01	Varies	$ 94,584	$ 47,532	$ 6,139
AC	m²	630,263	$24.05	Varies	$ 15,158,139	$ 10,455,096	$ 651,249
RACK - Reseal (G4)	m²	9,412	$3.47	Varies	$ 32,668	$ 8,651	$ 2,042
SLRY	m²	33,857	$11.82	Varies	$ 400,341	$ 47,737	$ 26,092
VFILL (G5)	m²	26,501	$2.89	Varies	$ 76,700	$ 5,479	$ 5,479
VFILL (G6)	m²	4,059	$2.85	Varies	$ 11,580	$ 772	$ 772
TOTAL	**m²**	**6,390,102**			**$ 33,915,005**	**$ 18,861,353**	**$ 1,772,012**

Table 6-2: Total Useful Life Matrix for Pavement Surfacing

Surface Function	Surface Material	1st Chip Size	Pavement Use						
			ADT < 100	ADT 100-500	ADT 500-2000	ADT 2,000-4,000	ADT 4,000-10,000	ADT 10,000-20,000	ADT > 20,000
1st Coat	Asphaltic Concrete		25	25	25	18	16	14	12
	Interlocking Concrete Blocks		50	50	50	50	50	50	50
	Prime and Seal		4	4	2	1	1	1	1
	Racked in Seal	4	5	4	3	2	1	1	1
	Single Coat Seal	3	5	4	3	2	1	1	1
		4	5	4	3	2	1	1	1
		5	1	1	1	1	1	1	1
		6	1	1	1	1	1	1	1
	Two Coat Seal	2	5	5	3	3	2	1	1
		3	5	5	3	3	2	1	1
		4	5	5	3	3	2	1	1
2nd Coat	Asphaltic Concrete		25	25	25	18	16	14	12
	Racked in Seal	4	16	14	14	12	10	8	6
		5	12	12	10	8	4	1	1
		6	5	5	3	1	1	1	1
	Single Coat Seal	4	16	14	14	12	10	8	6
		5	12	12	10	8	4	1	1
		6	5	5	3	1	1	1	1
	Two Coat Seal	2	18	16	16	14	12	10	8
		3	18	16	16	14	12	10	8
		4	16	14	14	12	10	8	6
Not applicable	Concrete		15	15	15	15	15	15	15
Reseal	Asphaltic Concrete		25	25	25	18	16	14	12
	Bicouche/Sandwich		14	12	10	9	8	6	4
	Bitumen Bound Macadam		12	11	10	9	8	7	6
	BOLIDT Polyurethane Mix		18	16	14	12	11	10	9
	Locking Coat Seal	5	8	7	6	5	4	3	2
		6	6	5	4	3	2	1	1
	Open Graded Emulsion Mix		12	11	10	9	8	7	6
	Open Graded Porous Asphalt		12	11	10	9	8	7	6
	Racked in Seal	4	18	16	16	14	12	10	8
		5	14	14	12	10	6	2	1
		6	5	5	3	1	1	1	1
	Single Coat Seal	3	20	20	18	16	14	12	10
		4	18	16	16	14	12	10	8
		5	14	14	12	10	6	2	1
		6	5	5	3	1	1	1	1
	Slurry Seal		15	15	10	7	5	5	4
	Texturising Seal	5	8	7	6	5	4	3	2
		6	6	5	4	3	2	1	1
	Two Coat Seal	2	20	20	18	16	14	12	10
		3	20	20	18	16	14	12	10
		4	18	16	16	14	12	10	8
	Void Fill Seal	5	8	7	6	5	4	3	2
		6	6	5	4	3	2	1	1

7 Sealed Pavement Layer Structure

Pavement structure includes that of the subbase and basecourse layers.

The rates allow for:

i) Engineering fees – Urban (10%)

ii) Engineering fees – Rural (5%)

iii) Supply, placement, shaping and compaction of layers.

Note: The capital cost of installing first coat seals is allowed for as part of the sealed pavement layer structure rather than as a pavement surfacing. This is due to the first coat seal acting as the waterproof coat on the basecourse top surface and therefore being integral to the structural performance of the pavement.

Basecourse and Subbase rates for pavement uses 5 and 6 differ from those for pavement use 1 to 4 due to the extra complexity required to place this material on higher volume roads.

Due to the low traffic loadings on the pavement structure in Pavement Use 1 and 2 areas some of these pavements have been deemed to effectively be perpetual pavements. The will not require any significant structural maintenance as long as the sealed surface and drainage features are maintained.

Table 7-1 contains the matrix used to estimate the structure of existing pavements.

Table 7-1: Matrix for Estimating Sealed Pavement Structure

Pavement Use		Depth Estimates (mm)	
		Basecourse Depth	Subbase Depth
1	ADT < 100	100	100
2	ADT 100-500	100	100
3	ADT 500-2000	125	125
4	ADT 2000-4000	125	125
5	ADT 4000-10000	150	200
6	ADT 10000-20000	150	200
7	ADT > 20000	170	250

This layer depth information is stored in previously empty fields in the Treatment Length table that the valuation module then uses to calculate the pavement volume. Basecourse depths are stored in 'dtims_p020 (percent passing through a 2.0mm sieve)' and subbase depths are stored in 'dtims_p425 (percent passing through a 0.425mm sieve)'.

The replacement cost for pavement layers are calculated as the length x depth x (width + extra) of the treatment length multiplied by the cubic metre rate. The extra width allows for additional pavement under the shoulder and batter slopes. See Figure 7-1 and Table 7-2. Treatment lengths are considered to have surfaced SWC if more than 40% of the total possible SWC length (twice the length of the treatment length) consists of surfaced SWC. Table 7-2 below shows the extra allowances.

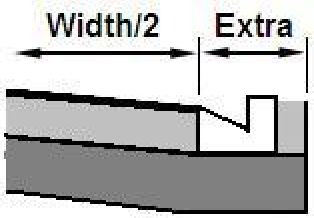
Table 7-2: Sealed Roads Extra Width Allowances

Component	Rural Sealed without KCC	Urban Sealed without KCC	Sealed with KCC
Sealed Roads Basecourse	0.82m each side	0.92m each side	0m each side
Sealed Roads Subbase	1.05m each side	1.15m each side	0.5m each side

Extra widths are calculated through analysis of the shoulder widths plus an allowance for the batter slopes. Basecourse extra widths are stored in the 'dtims_growth_light' field of the treatment length table and the subbase extra widths are stored in the 'dtims_growth_heavy' field.

Figure 7-1: Effective Width for Sealed Pavement Structure Volumes

Effective Width (with KCC)



Effective Width (without KCC)

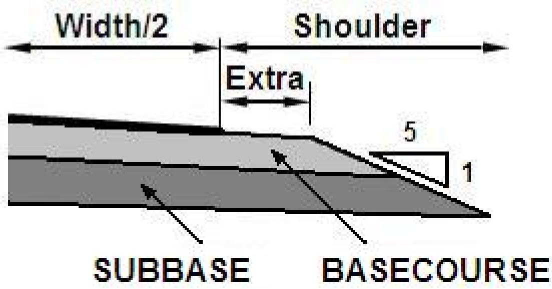


Table 7-3 shows the total valuation results for sealed pavement layers.

Table 7-3: Valuation Parameters and 30 June 2015 Results for Sealed Pavements

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
First Coat Seal							
First Coat Pave Use 1 - Rural post 1980	m²	224,532	$ 7.61	N/A	$ 1,709,250	$ 1,709,250	$ -
First Coat Pave Use 1 - Rural pre 1980	m²	228,141	$ 7.61	N/A	$ 1,736,726	$ 1,736,726	$ -
First Coat Pave Use 1 - Urban post 1980	m²	493,713	$ 7.98	N/A	$ 3,937,364	$ 3,937,364	$ -
First Coat Pave Use 1 - Urban pre 1980	m²	207,083	$ 7.98	N/A	$ 1,651,485	$ 1,651,485	$ -
First Coat Pave Use 2 - Rural post 1980	m²	559,889	$ 7.61	100	$ 4,262,153	$ 3,534,934	$ 42,622
First Coat Pave Use 2 - Rural pre 1980	m²	1,272,009	$ 7.61	80	$ 9,683,165	$ 4,419,833	$ 121,040
First Coat Pave Use 2 - Urban post 1980	m²	152,516	$ 7.98	N/A	$ 1,216,312	$ 1,216,312	$ -
First Coat Pave Use 2 - Urban pre 1980	m²	297,117	$ 7.98	N/A	$ 2,369,510	$ 2,369,510	$ -
First Coat Pave Use 3 - Rural post 1980	m²	237,061	$ 7.61	75	$ 1,804,625	$ 1,326,341	$ 24,062
First Coat Pave Use 3 - Rural pre 1980	m²	772,255	$ 7.61	50	$ 5,878,788	$ 947,142	$ 116,822
First Coat Pave Use 3 - Urban post 1980	m²	166,450	$ 7.98	80	$ 1,327,437	$ 1,039,143	$ 16,593
First Coat Pave Use 3 - Urban pre 1980	m²	360,501	$ 7.98	60	$ 2,874,996	$ 820,222	$ 47,868
First Coat Pave Use 4 - Rural post 1980	m²	157,374	$ 7.61	55	$ 1,198,008	$ 977,811	$ 21,782
First Coat Pave Use 4 - Rural pre 1980	m²	551,589	$ 7.61	45	$ 4,198,974	$ 335,585	$ 92,394
First Coat Pave Use 4 - Urban post 1980	m²	52,292	$ 7.98	60	$ 417,029	$ 317,810	$ 6,950
First Coat Pave Use 4 - Urban pre 1980	m²	175,907	$ 7.98	50	$ 1,402,859	$ 243,158	$ 27,865
First Coat Pave Use 5 - Rural post 1980	m²	123,710	$ 7.47	45	$ 924,858	$ 671,271	$ 20,552

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
First Coat Pave Use 5 - Rural pre 1980	m²	78,322	$ 7.47	40	$ 585,538	$ 23,593	$ 13,277
First Coat Pave Use 5 - Urban post 1980	m²	23,053	$ 7.83	50	$ 180,549	$ 123,020	$ 3,611
First Coat Pave Use 5 - Urban pre 1980	m²	160,366	$ 7.83	45	$ 1,255,990	$ 118,610	$ 27,498
First Coat Pave Use 6 - Rural post 1980	m²	25,449	$ 7.47	45	$ 190,257	$ 161,028	$ 4,228
First Coat Pave Use 6 - Rural pre 1980	m²	15,671	$ 7.47	40	$ 117,158	$ 4,931	$ 2,466
First Coat Pave Use 6 - Urban post 1980	m²	17,280	$ 7.83	50	$ 135,335	$ 65,627	$ 2,707
First Coat Pave Use 6 - Urban pre 1980	m²	27,597	$ 7.83	45	$ 216,140	$ 49,681	$ 4,803
First Coat Pave Use 7 - Urban post 1980	m²	9,275	$ 7.83	45	$ 72,642	$ 42,906	$ 1,614
First Coat Pave Use 7 - Urban pre 1980	m²	950	$ 7.83	40	$ 7,440	$ 186	$ 186
Pavement Basecourse							
Basecourse Pave Use 1 - Rural post 1980	m^3	28,266	$ 77.04	N/A	$ 2,177,867	$ 2,177,867	$ -
Basecourse Pave Use 1 - Rural pre 1980	m^3	29,435	$ 77.04	N/A	$ 2,267,957	$ 2,267,957	$ -
Basecourse Pave Use 1 - Urban post 1980	m^3	56,575	$ 80.71	N/A	$ 4,566,616	$ 4,566,616	$ -
Basecourse Pave Use 1 - Urban pre 1980	m^3	24,805	$ 80.71	N/A	$ 2,002,201	$ 2,002,201	$ -
Basecourse Pave Use 2 - Rural post 1980	m^3	70,980	$ 77.04	100	$ 5,468,956	$ 4,538,528	$ 54,690
Basecourse Pave Use 2 - Rural pre 1980	m^3	161,650	$ 77.04	80	$ 12,454,944	$ 5,682,836	$ 155,687
Basecourse Pave Use 2 - Urban post 1980	m^3	17,469	$ 80.71	N/A	$ 1,410,047	$ 1,410,047	$ -
Basecourse Pave Use 2 - Urban pre 1980	m^3	35,003	$ 80.71	N/A	$ 2,825,387	$ 2,825,387	$ -
Basecourse Pave Use 3 - Rural post 1980	m^3	37,172	$ 77.04	75	$ 2,864,050	$ 2,105,531	$ 38,187
Basecourse Pave Use 3 - Rural pre 1980	m^3	121,967	$ 77.04	50	$ 9,397,452	$ 1,510,080	$ 186,738
Basecourse Pave Use 3 - Urban post 1980	m^3	23,896	$ 80.71	80	$ 1,928,829	$ 1,502,767	$ 24,110
Basecourse Pave Use 3 - Urban pre 1980	m^3	52,528	$ 80.71	60	$ 4,239,981	$ 1,204,278	$ 70,587
Basecourse Pave Use 4 - Rural post 1980	m^3	24,318	$ 77.04	55	$ 1,873,656	$ 1,529,700	$ 34,066
Basecourse Pave Use 4 - Rural pre 1980	m^3	84,632	$ 77.04	45	$ 6,520,792	$ 520,950	$ 143,471
Basecourse Pave Use 4 - Urban post 1980	m^3	7,585	$ 80.71	60	$ 612,275	$ 467,193	$ 10,205
Basecourse Pave Use 4 - Urban pre 1980	m^3	25,466	$ 80.71	50	$ 2,055,532	$ 354,786	$ 40,811
Basecourse Pave Use 5 - Rural post 1980	m^3	21,930	$ 77.49	45	$ 1,699,355	$ 1,228,957	$ 37,763
Basecourse Pave Use 5 - Rural pre 1980	m^3	14,158	$ 77.49	40	$ 1,097,099	$ 44,243	$ 24,862
Basecourse Pave Use 5 - Urban post 1980	m^3	4,026	$ 81.18	50	$ 326,852	$ 224,257	$ 6,537
Basecourse Pave Use 5 - Urban pre 1980	m^3	27,553	$ 81.18	45	$ 2,236,760	$ 211,950	$ 48,966
Basecourse Pave Use 6 - Rural post 1980	m^3	4,440	$ 77.49	45	$ 344,067	$ 291,316	$ 7,646

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Basecourse Pave Use 6 - Rural pre 1980	m^3	2,744	$ 77.49	40	$ 212,654	$ 8,952	$ 4,476
Basecourse Pave Use 6 - Urban post 1980	m^3	2,951	$ 81.18	50	$ 239,523	$ 115,692	$ 4,790
Basecourse Pave Use 6 - Urban pre 1980	m^3	4,699	$ 81.18	45	$ 381,465	$ 88,097	$ 8,477
Basecourse Pave Use 7 - Urban post 1980	m^3	1,796	$ 81.18	45	$ 145,836	$ 86,306	$ 3,241
Basecourse Pave Use 7 - Urban pre 1980	m^3	185	$ 81.18	40	$ 14,998	$ 375	$ 375
Pavement Subbase							
Subbase Pavement Use 1 - Rural	m^3	62,891	$ 60.46	N/A	$ 3,802,353	$ 3,802,353	$ -
Subbase Pavement Use 1 - Urban	m^3	89,524	$ 63.34	N/A	$ 5,670,242	$ 5,670,242	$ -
Subbase Pavement Use 2 - Rural	m^3	253,042	$ 60.46	N/A	$ 15,298,638	$ 15,298,638	$ -
Subbase Pavement Use 2 - Urban	m^3	56,684	$ 63.34	N/A	$ 3,590,269	$ 3,590,269	$ -
Subbase Pavement Use 3 - Rural	m^3	169,128	$ 60.46	N/A	$ 10,225,320	$ 10,225,320	$ -
Subbase Pavement Use 3 - Urban	m^3	80,280	$ 63.34	N/A	$ 5,084,791	$ 5,084,791	$ -
Subbase Pavement Use 4 - Rural	m^3	115,081	$ 60.46	N/A	$ 6,957,668	$ 6,957,668	$ -
Subbase Pavement Use 4 - Urban	m^3	34,503	$ 63.34	N/A	$ 2,185,374	$ 2,185,374	$ -
Subbase Pavement Use 5 - Rural	m^3	50,920	$ 59.68	N/A	$ 3,039,018	$ 3,039,018	$ -
Subbase Pavement Use 5 - Urban	m^3	44,066	$ 62.52	N/A	$ 2,755,179	$ 2,755,179	$ -
Subbase Pavement Use 6 - Rural	m^3	10,053	$ 59.68	N/A	$ 599,968	$ 599,968	$ -
Subbase Pavement Use 6 - Urban	m^3	10,665	$ 62.52	N/A	$ 666,832	$ 666,832	$ -
Subbase Pavement Use 7 - Urban	m^3	3,043	$ 62.52	N/A	$ 190,257	$ 190,257	$ -
SUBTOTAL - First Coat Seal	**m^2**	**6,390,102**			**$ 49,354,588**	**$ 27,843,478**	**$ 598,939**
SUBTOTAL - Pavement Basecourse	**m^3**	**886,229**			**$ 69,365,153**	**$ 36,966,870**	**$ 905,686**
SUBTOTAL - Pavement Subbase	**m^3**	**979,880**			**$ 60,065,910**	**$ 60,065,910**	**$ -**
TOTAL					**$178,785,651**	**$124,876,258**	**$ 1,504,625**

8 Unsealed Pavements Layers

Unsealed pavements are separated into wearing course and subbase components. The estimates of subbase depth are based on local knowledge and were provided by the WDC. Unlike sealed pavements, the unsealed roads subbase is assumed to not depreciate. Regular maintenance of the wearing course, through replacement of lost metal, ensures the subbase layer will be unaffected by surface wear and tear and will provide a service indefinitely.

The rates allow for:

i) Engineering fees for unsealed subbase (2%)

ii) Engineering fees for unsealed wearing course (2%)

iii) Supply, placement, shaping and compaction of layers.

Table 8-1 shows the matrix used to estimate the structure of existing pavements.

Table 8-1: Matrix for Estimating Unsealed Pavement Depth

Vehicles Per Day	Wearing Course Depth (mm)	Subbase Depth (mm)
<499	60	100
>500	60	125

This layer depth information is stored in previously empty fields in the Treatment Length table that the valuation module then uses to calculate the pavement volume. Wearing course depths are stored in 'dtims_p020 (percent passing through a 2.0mm sieve)' and subbase depths are stored in 'dtims_p425 (percent passing through a 0.425mm sieve)'.

Table 8-2 shows the total valuation result for unsealed pavements.

Table 8-2: Valuation Parameters and 30 June 2015 Results for Unsealed Pavements

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Wearing Course							
Unsealed Wearing Course <50vpd	m^3	94,983	$ 16.20	15	$ 1,538,501	$ 769,250	$ 102,567
Unsealed Wearing Course 50vpd - 99vpd	m^3	53,223	$ 16.20	8	$ 862,083	$ 431,041	$ 107,760
Unsealed Wearing Course >100vpd	m^3	26,462	$ 16.20	4	$ 428,625	$ 214,313	$ 107,156
Unsealed Subbase							
Unsealed Subbase Pavement Use 1	m^3	247,010	$ 58.73	N/A	$14,507,304	$14,507,304	$ -
Unsealed Subbase Pavement Use 2	m^3	44,104	$ 58.73	N/A	$ 2,590,285	$ 2,590,285	$ -
SUBTOTAL - Wearing Course	**m^3**	**174,668**			**$ 2,829,209**	**$ 1,414,604**	**$ 317,483**
SUBTOTAL - Subbase	**m^3**	**291,114**			**$17,097,590**	**$17,097,590**	**$ -**
TOTAL	**m^3**	**465,782**			**$19,926,798**	**$18,512,194**	**$ 317,483**

9 Drainage

This component covers the following drainage assets only:

- Culverts (with end areas less than $3.4m^2$)
- Soak Pits
- Sumps
- Sub Soil Drains
- Other

This component also includes Under Channel Pipes where they are identified as belonging to roading, but does not include any other stormwater reticulation.

NZTA classifies any culvert with an end area greater than or equal to $3.4m^2$ as a bridge and as such, they are valued in the bridges section.

The rates allow for:

i) Engineering fees for culverts (2%)

ii) Engineering fees for subsoil drains (10%)

iii) Engineering fees for under channel storm water pipes (0%).

Note: That the engineering fees associated with under channel pipes are included with the kerb and channel as they are typically replaced at the same time.

iv) Supply, placement and compaction of backfill.

The RAMM database has many different culvert material types that when replaced would typically be replaced with reinforced concrete pipe. The replacement value for earthenware, steel, wood, aluminium, PVC, etc., have had the concrete value assigned to give a more accurate modern equivalent replacement cost.

Table 9-1 shows the total valuation results for all assets.

Table 9-1: Valuation Parameters and 30 June 2015 Results for Drainage

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Drainage (Culverts, Sumps, Soakpits)							
Aluminium Culvert - typ. 225, 300 circ	m	17	$ 283.56	100	$ 4,877	$ 4,315	$ 49
Aluminium Culvert - typ. 525, 600 circ	m	12	$ 699.14	100	$ 8,390	$ 7,551	$ 84
Aluminium Culvert - typ. 675, 750 circ	m	18	$ 956.44	100	$ 17,503	$ 16,278	$ 175
Aluminium Culvert - typ. 825, 900 circ	m	12	$1,246.75	100	$ 14,961	$ 11,969	$ 150
Aluminium Culvert - typ. 1050, 1200 circ	m	14	$1,926.37	100	$ 26,969	$ 22,924	$ 270
Aluminium Culvert - typ. 1350+ circ	m	12	$3,037.91	100	$ 36,455	$ 22,237	$ 365
Earthenware Culvert - typ. 225, 300 circ	m	749	$ 283.56	75	$ 212,386	$ 53,175	$ 2,832
Earthenware Culvert - typ. 375 circ	m	22	$ 375.08	75	$ 8,139	$ 2,255	$ 109
Earthenware Culvert - typ. 450 circ	m	39	$ 474.85	75	$ 18,472	$ 2,463	$ 246
Earthenware Culvert - typ. 525, 600 circ	m	80	$ 699.14	75	$ 55,582	$ 23,189	$ 741
Earthenware Culvert - typ.	m	80	$1,246.75	75	$ 99,740	$ 46,545	$ 1,330

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
825, 900 circ							
PVC Culvert - typ. 225, 300 circ	m	779	$ 283.56	75	$ 220,865	$ 135,104	$ 2,945
PVC Culvert - typ. 375 circ	m	19	$ 375.08	75	$ 7,126	$ 6,176	$ 95
PVC Culvert - typ. 450 circ	m	16	$ 474.85	75	$ 7,598	$ 5,660	$ 101
Reinforced Concrete Culvert - typ. 225, 300 circ	m	584	$ 283.56	100	$ 165,684	$ 154,176	$ 1,657
Reinforced Concrete Culvert - typ. 375 circ	m	68	$ 375.08	100	$ 25,580	$ 24,436	$ 256
Reinforced Concrete Culvert - typ. 450 circ	m	206	$ 474.85	100	$ 97,629	$ 82,498	$ 976
Reinforced Concrete Culvert - typ. 525, 600 circ	m	76	$ 699.14	100	$ 53,344	$ 49,902	$ 533
Reinforced Concrete Culvert - typ. 675, 750 circ	m	6	$ 956.44	100	$ 5,739	$ 2,869	$ 57
Reinforced Concrete Culvert - typ. 825, 900 circ	m	19	$1,246.75	100	$ 23,688	$ 21,082	$ 237
Reinforced Concrete Culvert - typ. 1050, 1200 circ	m	26	$1,926.37	100	$ 50,086	$ 37,063	$ 501
Reinforced Concrete Culvert - typ. 1350+ circ	m	119	$3,037.91	100	$ 360,903	$ 261,005	$ 3,609
Soak Pit	ea	494	$ 754.37	10	$ 372,660	$ 78,884	$ 18,357
Steel Culvert - typ. 225, 300 circ	m	292	$ 283.56	50	$ 82,686	$ 31,567	$ 1,570
Steel Culvert - typ. 375 circ	m	71	$ 375.08	50	$ 26,668	$ 796	$ 398
Steel Culvert - typ. 450 circ	m	71	$ 474.85	50	$ 33,477	$ 2,038	$ 523
Steel Culvert - typ. 525, 600 circ	m	32	$ 699.14	50	$ 22,163	$ 3,185	$ 375
Steel Culvert - typ. 675, 750 circ	m	67	$ 956.44	50	$ 63,986	$ 10,907	$ 1,176
Steel Culvert - typ. 825, 900 circ	m	70	$1,246.75	50	$ 87,522	$ 28,626	$ 1,675
Steel Culvert - typ. 1050, 1200 circ	m	101	$1,926.37	50	$ 193,600	$ 81,842	$ 3,848
Steel Culvert - typ. 1350+ circ	m	148	$3,037.91	50	$ 450,825	$ 68,824	$ 8,088
Subsoil Drain	m	5,542	$ 34.51	20	$ 191,238	$ 179,457	$ 9,562
Sump	ea	3,539	$1,727.64	100	$ 6,114,101	$ 4,781,662	$ 61,141
Un-Reinforced Concrete Culvert - typ. 225, 300 circ	m	8,886	$ 283.56	75	$ 2,519,686	$ 951,415	$ 33,596
Un-Reinforced Concrete Culvert - typ. 375 circ	m	2,135	$ 375.08	75	$ 800,709	$ 268,662	$ 10,676
Un-Reinforced Concrete Culvert - typ. 450 circ	m	3,074	$ 474.85	75	$ 1,459,501	$ 542,407	$ 19,460
Un-Reinforced Concrete Culvert - typ. 525, 600 circ	m	2,452	$ 699.14	75	$ 1,714,008	$ 734,641	$ 22,853
Un-Reinforced Concrete Culvert - typ. 675, 750 circ	m	1,100	$ 956.44	75	$ 1,051,610	$ 463,803	$ 14,021
Un-Reinforced Concrete Culvert - typ. 825, 900 circ	m	1,016	$1,246.75	75	$ 1,266,195	$ 552,691	$ 16,883
Un-Reinforced Concrete Culvert - typ. 1050, 1200 circ	m	1,673	$1,926.37	75	$ 3,222,628	$ 1,451,383	$ 42,968
Un-Reinforced Concrete Culvert - typ. 1350+ circ	m	1,838	$3,037.91	75	$ 5,582,458	$ 2,765,791	$ 74,433
Drainage (Under Channel Pipes)							
Earthenware Culvert - typ. 225, 300 circ	m	88	$ 278.00	75	$ 24,353	$ 18,359	$ 325

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Polyethylene Culvert - typ. 225, 300 circ	m	689	$ 278.00	75	$ 191,489	$ 181,483	$ 2,553
PVC Culvert - typ. 225, 300 circ	m	30,677	$ 278.00	75	$ 8,528,155	$ 7,797,015	$ 113,709
PVC Culvert - typ. 375 circ	m	276	$ 367.72	75	$ 101,591	$ 83,383	$ 1,355
PVC Culvert - typ. 450 circ	m	7	$ 465.54	75	$ 3,459	$ 2,721	$ 46
Reinforced Concrete Culvert - typ. 225, 300 circ	m	20,198	$ 278.00	100	$ 5,620,549	$ 4,102,172	$ 56,205
Reinforced Concrete Culvert - typ. 375 circ	m	6,160	$ 367.72	100	$ 2,265,352	$ 1,785,800	$ 22,654
Reinforced Concrete Culvert - typ. 450 circ	m	3,359	$ 465.54	100	$ 1,563,804	$ 1,146,724	$ 15,638
Un-Reinforced Concrete Culvert - typ. 225, 300 circ	m	107	$ 278.00	75	$ 29,721	$ 25,348	$ 396
SUBTOTAL - Drainage (Culverts, Sumps, Soakpits)		**31,537**			**$26,777,436**	**$13,991,453**	**$ 358,919**
SUBTOTAL - Drainage (Under Channel Pipes)		**61,561**			**$18,328,472**	**$15,143,006**	**$ 212,881**
TOTAL		**93,098**			**$45,105,908**	**$29,134,459**	**$ 571,800**

10 Surface Water Channels

This component covers all surface water channels such as kerb and channel, dish channel, and mountable kerb.

The replacement rate for the surface water channels has an allowance built in for the replacement of 1.5m of road, 0.3m of old surface water channel, 0.5m of material behind the channel all to a depth of 0.5m, and road resurfacing with two coat grade 3/5. This is to allow for removing a portion of the existing road to provide room for construction of the replacement channel when replacing existing surface water channels.

The rates allow for:

i) Engineering fees (17%)

ii) Pegasus Swale Drains (8%)

iii) Supply, placement and compaction of backfill.

Table 10-1 shows the total valuation results for all assets.

Table 10-1: Valuation Parameters and 30 June 2015 Results for Surface Water Channels

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Dished Channel	m	8,726	$ 168.22	80	$ 1,467,910	$ 1,247,000	$ 18,349
Kerb and Channel	m	298,715	$ 167.42	80	$50,009,461	$38,397,796	$ 625,118
Kerb and Deep Dished Channel (rep. Kerb and Channel)	m	22,843	$ 167.42	80	$ 3,824,268	$ 2,073,382	$ 47,803
Kerb Only	m	13,213	$ 185.03	80	$ 2,444,874	$ 2,044,198	$ 30,561
Mountable Kerb and Channel	m	15,963	$ 165.82	80	$ 2,646,863	$ 2,181,728	$ 33,086
Mountable Kerb Only	m	3,371	$ 170.91	80	$ 576,150	$ 451,079	$ 7,202
Engineered Swale – Structure	m	30,526	$ 612.46	60	$18,695,868	$16,819,922	$ 311,598
Engineered Swale - Surface	m	30,245	$ 43.92	30	$ 1,328,143	$ 1,066,973	$ 44,271
Precast Mountable Kerb Blocks (rep. Mountable Kerb)	m	477	$ 170.91	80	$ 81,526	$ 64,939	$ 1,019
TOTAL	**m**	**424,079**			**$81,075,064**	**$64,347,018**	**$ 1,119,007**

11 Footpaths

This component includes all footpaths and cycleways in the road network. Inventory information is stored in RAMM and is considered to be largely complete.

Footpaths are the only assets in this valuation that use the residual value fields in RAMM. This is because RAVM does not currently have the ability to deal with footpaths in components. The RAVM software does not allow for footpaths to be broken down into basecourse and surface components. To deal with this, we have used the residual value field, where necessary, as the cost of the basecourse.

The rates allow for:

i) Engineering fees (8%)

ii) Formation, supply, placement, shaping and compaction of layers.

Table 11-1 shows the total valuation results for all assets.

Table 11-1: Valuation Parameters and 30 June 2015 Results for Footpaths

Description	Unit	Quantity	Unit Cost (Incl Fees)	Residual Value (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Asphaltic Concrete	m²	221,686	$57.52		23	$12,751,539	$ 5,210,302	$ 510,405
Concrete - Exposed Aggregate	m²	6,471	$146.33	$15.29	80	$ 946,940	$ 915,781	$ 10,600
Concrete - Plain	m²	233,467	$88.02	$15.29	80	$20,549,721	$18,360,480	$ 212,242
Covacrete Cobblestone Paving (rep. Asphaltic Concrete)	m²	2,131	$57.52		20	$ 122,577	$ 92,980	$ 6,129
Interlocking Blocks	m²	3,380	$179.94		50	$ 608,193	$ 441,076	$ 12,164
Metal	m²	26,011	$35.72		23	$ 928,995	$ 577,684	$ 40,326
Seal	m²	11,853	$33.13		20	$ 392,601	$ 167,632	$ 18,177
Timber	m²	249	$36.72		30	$ 9,143	$ 8,442	$ 305
TOTAL	**m²**	**505,247**				**$36,309,709**	**$25,774,378**	**$ 810,347**

12 Traffic Facilities

This component includes pavement markings, edge marker posts and raised reflectorised pavement markers (RRPM's).

The road markings item includes all intersections, pedestrian crossings, edge lines and centre lines. Because of the short cycle of remarking, typically a life of less than 18 months, Council charge the annual cost of these as expenses, and as such, they have not been depreciated.

The rates allowed for:

i) Engineering fees for edge marker posts and raised pavement markers (3%)
ii) Engineering fees for markings (3%)
iii) Supply and placement.

Table 12-1 shows the total valuation results for all assets.

Table 12-1: Valuation Parameters and 30 June 2015 Results for Traffic Facilities

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Edge Marker Posts	Km	399	$ 541.58	12	$ 216,091	$ 108,045	$ 18,008
Markings	LS	1	$267,402.63	N/A	$ 267,403	$ 267,403	$ -
Raised Pavement Markers	Ea	15,068	$ 22.46	14	$ 338,371	$ 169,186	$ 24,169
Tactile Indicators – Directional	m	80	$ 349.57	23	$ 28,036	$ 20,371	$ 1,219
Tactile Indicators - Warning	m	350	$268.36	23	$ 93,817	$ 70,519	$ 4,079
TOTAL					**$ 943,718**	**$ 635,524**	**$ 47,475**

13 Signs

The replacement rates for posts are included in the signs rate.

The rates allow for:

i) Engineering fees (5%)

ii) Supply and placement.

Table 13-1 shows the total valuation results for all assets.

Table 13-1: Valuation Parameters and 30 June 2015 Results for Signs

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Electronic Warning Signage	ea	12	$6,915.02	12	$ 82,980	$ 55,320	$ 6,915
Guide - Large Sign	ea	106	$2,998.06	12	$ 317,795	$ 175,886	$ 26,483
Guide - Small Sign	ea	24	$ 579.37	12	$ 13,905	$ 7,453	$ 1,119
Hazard Markers - Large Sign	ea	604	$ 579.37	12	$ 349,939	$ 218,341	$ 28,904
Hazard Markers - Small Sign	ea	4,420	$ 53.71	12	$ 237,387	$ 141,275	$ 19,624
Information	ea	1,097	$ 579.37	12	$ 635,568	$ 350,208	$ 52,664
Miscellaneous	ea	667	$ 579.37	12	$ 386,439	$ 201,910	$ 32,203
Motorist Services	ea	72	$ 579.37	12	$ 41,715	$ 17,447	$ 3,244
Permanent Warning	ea	2,842	$ 579.37	12	$1,646,567	$1,004,365	$ 135,321
Regulatory General	ea	2,787	$ 462.50	12	$1,288,999	$ 792,745	$ 106,537
Regulatory Parking	ea	593	$ 195.50	12	$ 115,931	$ 73,226	$ 9,585
Street Name Blades	ea	2,606	$ 195.50	12	$ 509,472	$ 295,860	$ 42,075
Temporary Warning	ea	54	$ 579.37	12	$ 31,286	$ 24,044	$ 2,559
Tourist - Large Sign	ea	34	$2,998.06	12	$ 101,934	$ 57,213	$ 8,495
Warning Miscellaneous	ea	70	$ 195.50	12	$ 13,685	$ 8,455	$ 1,140
TOTAL	**ea**	**15,988**			**$5,773,601**	**$3,423,749**	**$ 476,868**

14 Railings

This component covers all guard-rails and sight rails stored in the RAMM railings table. Where railings are attached to bridges, they are valued as part of the bridge asset.

The rates allow for:

i) Engineering fees (8%)

ii) Supply and construction.

Table 14-1 shows the total valuation results for all assets.

Table 14-1: Valuation Parameters and 30 June 2015 Results for Railings

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Guard Rail (Laminated timber)	m	311	$ 183.05	25	$ 56,928	$ 31,624	$ 2,277
Hand Rail (Timber)	m	247	$ 112.65	25	$ 27,823	$ 16,433	$ 1,113
Sight Rail	m	979	$ 52.10	15	$ 51,005	$ 28,769	$ 3,400
Steel Wire Rope Barrier	m	1,749	$ 130.28	50	$ 227,860	$ 161,860	$ 4,557
W Section Guard Rail	m	700	$ 381.24	50	$ 266,868	$ 171,970	$ 5,337
TOTAL	**m**	**3,986**			**$ 630,485**	**$ 410,655**	**$ 16,685**

15 Street Lights

This component covers all the street lights that were identified in RAMM as owned by the WDC, and contained within the road reserve or within Council owned carparks.

The rates allow for:

i) Engineering fees (5%)

ii) Supply and installation

The RAMM database has many different street light pole material types that when replaced would typically be replaced with a steel pole. The replacement values for concrete, fiberglass and timber have had the steel value assigned to give a more accurate modern equivalent replacement cost.

Table 15-1 shows the total valuation results for the street lights.

Table 15-1: Valuation Parameters and 30 June 2015 Results for Street Lights

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Poles							
Concrete - Circular (rep. Steel)	ea	32	$1,027.04	35	$ 32,865	$ 19,956	$ 926
Concrete - Hexagonal (rep. Steel)	ea	647	$1,027.04	35	$ 664,493	$ 87,953	$ 16,481
Concrete - Octagonal (rep. Steel)	ea	180	$1,027.04	35	$ 184,867	$ 22,370	$ 4,509
Concrete - Rectangular (rep. Steel)	ea	22	$1,027.04	35	$ 22,595	$ 6,448	$ 568
Concrete - Unknown (rep. Steel)	ea	96	$1,027.04	35	$ 98,596	$ 20,410	$ 2,707
Fibreglass (rep. Steel - Circular)	ea	4	$1,027.04	50	$ 4,108	$ 3,533	$ 82
Steel - Circular	ea	1,273	$1,027.04	50	$ 1,307,417	$ 1,123,886	$ 26,148
Steel - Fancy	ea	345	$3,040.56	50	$ 1,048,993	$ 802,282	$ 20,980
Steel - Hexagonal	ea	401	$1,027.04	50	$ 411,842	$ 279,867	$ 8,237
Steel - Octagonal	ea	1,025	$1,027.04	50	$ 1,052,712	$ 795,727	$ 21,054
Steel - Rectangular	ea	11	$1,027.04	50	$ 11,297	$ 8,833	$ 226
Steel - Unknown	ea	137	$1,027.04	50	$ 140,704	$ 86,025	$ 2,814
Timber - Circular (rep. Steel)	ea	188	$1,027.04	50	$ 193,083	$ 55,398	$ 3,862
Unknown - (rep. Steel)	ea	58	$1,027.04	50	$ 59,568	$ 29,455	$ 1,191
Brackets							
Brackets	ea	4,559	$ 278.03	50	$ 1,267,536	$ 828,066	$ 25,351
Lights							
Delux 26W (rep. 70W SON)	ea	4	$ 452.59	35	$ 1,810	$ 1,759	$ 52
Flourescent 3-ft (rep. 70W SON)	ea	214	$ 452.59	35	$ 96,855	$ 18,447	$ 2,428
High Pressure Sodium 50W	ea	31	$ 452.59	35	$ 14,030	$ 10,798	$ 401
High Pressure Sodium 70W	ea	2,206	$ 452.59	35	$ 998,418	$ 674,394	$ 27,980
High Pressure Sodium 100W	ea	694	$ 493.21	35	$ 342,285	$ 237,629	$ 9,647
High Pressure Sodium 110W (rep. 100W SON	ea	15	$ 493.21	35	$ 7,398	$ 3,452	$ 211
High Pressure Sodium 150W	ea	756	$ 557.04	35	$ 421,119	$ 229,551	$ 11,764

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
High Pressure Sodium 250W	ea	259	$ 568.64	35	$ 147,277	$ 77,976	$ 4,179
High Pressure Sodium 400W (rep. 250W SON	ea	2	$ 568.64	35	$ 1,137	$ 1,105	$ 32
Incandescent 60W (rep. 70W SON)	ea	15	$ 452.59	35	$ 6,789	$ 5,638	$ 194
LED	ea	184	$ 493.21	35	$ 90,750	$ 88,340	$ 2,593
Low Pressure Sodium 90W (rep. 100W SON)	ea	1	$ 493.21	35	$ 493	$ 23	$ 12
Mercury Vapour 80W (rep. 70W SON)	ea	1	$ 452.59	35	$ 453	$ 414	$ 13
Mercury Vapour 125W (rep. 70W SON)	ea	19	$ 452.59	35	$ 8,599	$ 1,065	$ 209
Mercury Vapour 150W (rep. 100W SON)	ea	1	$ 493.21	35	$ 493	$ 21	$ 10
Mercury Vapour 160W (rep. 100W SON)	ea	20	$ 493.21	35	$ 9,864	$ 3,503	$ 272
Mercury Vapour Flood 125W (rep. 150W SON	ea	1	$ 557.04	35	$ 557	$ 255	$ 16
Metal-Halide 70W (rep. 70W SON)	ea	6	$ 452.59	35	$ 2,716	$ 2,560	$ 78
Metal-Halide 150W (rep. 150W SON)	ea	11	$ 557.04	35	$ 6,127	$ 3,979	$ 175
Metal-Halide 350W (rep. 250W SON	ea	7	$ 568.64	35	$ 3,980	$ 3,412	$ 114
Metal-Halide 400W (rep. 250W SON)	ea	2	$ 568.64	35	$ 1,137	$ 317	$ 28
Prismatic (fluorescent) 18W	ea	1	$ 452.59	35	$ 453	$ 284	$ 13
SUBTOTAL - SL POLES	**ea**	**4,419**			**$ 5,233,139**	**$ 3,342,143**	**$ 109,786**
SUBTOTAL - SL BRACKETS	**ea**	**4,559**			**$ 1,267,536**	**$ 828,066**	**$ 25,351**
SUBTOTAL - LIGHTS	**ea**	**4,450**			**$ 2,162,741**	**$ 1,364,921**	**$ 60,420**
TOTAL					**$ 8,663,417**	**$ 5,535,130**	**$ 195,557**

16 Minor Structures

This component covers all the minor Structures (Bollards, Seats, Retaining Walls, Bus Shelters and Cattle Stops) that were identified in RAMM as owned by the WDC, and contained within the road reserve or within Council owned carparks.

The rates allow for:

i) Engineering fees for retaining walls (12%)
ii) Engineering fees for bollards and seats (10%)
iii) Engineering fees for bus shelters and cattle stops (5%)
iv) Supply and installation

Table 15-1 shows the total valuation results for the minor structures.

Table 16-1: Valuation Parameters and 30 June 2015 Results for Minor Structures

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Bollards	ea	334	$ 172.83	10	$ 57,725	$ 30,850	$ 5,773
Bus Shelters	ea	12	$13,837.06	50	$ 166,045	$ 139,478	$ 3,321
Cattle Stops	ea	19	$22,039.41	80	$ 418,749	$ 153,725	$ 5,234
Retaining Wall	m	819	$589.37	50	$ 482,691	$ 423,552	$ 9,654
Seats	ea	26	$ 1,186.91	20	$ 30,860	$ 20,771	$ 1,543
TOTAL					**$ 1,156,069**	**$ 768,376**	**$ 25,525**

17 Islands

This component covers all the Islands that were identified in RAMM as owned by the WDC, and contained within the road reserve or within Council owned carparks.

The rates allow for:

i) Engineering fees for Pegasus Buildouts (8%)

ii) Engineering fees for other traffic islands (5%)

iii) Supply and installation

Table 15-1 shows the total valuation results for the islands.

Table 17-1: Valuation Parameters and 30 June 2015 Results for Islands

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Buildout	ea	38	$ 5,170.55	80	$ 196,481	$ 183,619	$ 2,456
Central	ea	28	$ 6,399.84	80	$ 179,196	$ 157,356	$ 2,240
Median	ea	113	$ 6,521.31	80	$ 736,908	$ 611,046	$ 9,211
Pedestrian Refuge	ea	89	$ 3,717.85	80	$ 330,889	$ 276,050	$ 4,136
Pegasus Buildouts	ea	480	$ 1,167.68	80	$ 560,484	$ 500,962	$ 7,006
Roundabout	ea	31	$ 7,790.12	80	$ 241,494	$ 223,285	$ 3,019
Splitter	ea	92	$ 8,034.45	80	$ 739,168	$ 632,612	$ 9,240
TOTAL	**ea**	**871**			**$ 2,984,619**	**$ 2,584,930**	**$ 37,308**

18 Bridges and Bridge Culverts

The replacement cost of a bridge is calculated as the cost of building it "today". It is assumed that modern equivalent construction techniques and materials are used, but that the physical result replaces the bridge as it exists. For this valuation we have assumed that all bridges will be replaced with a similar dimensioned concrete bridge or culvert.

Bridge approaches have been valued in the formation, pavement surfacing and pavement structure sections of this report. Any railing attached and leading onto the bridges has been valued with the bridges.

The Council's two boundary bridges, the Old Waimakariri Bridge and the Waimakariri Gorge Bridge, have been valued at half the current rate.

Stock and pedestrian underpasses have been valued as separate components in this year's valuation. This is a change from previous valuations.

The rates allow for:

i) Engineering fees for bridges and bridge culverts (12%)
ii) Engineering fees for individually valued bridges (8%)
iii) Substructure formation and construction
iv) Superstructure construction

The remaining life of a bridge or bridge culvert is dependent on a number of factors. For the purpose of this valuation we have assumed that the most predominate factor is the superstructure construction material.

Table 18-1 shows the total valuation results for bridges and bridge culverts.

Table 18-1: Valuation Parameters and 30 June 2015 Results for Bridges and Bridge Culverts

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Bridge 23 A - ASHLEY GORGE BRIDGE	m	135	$ 25,401.60	150	$ 3,429,216	$ 1,714,608	$ 22,861
Bridge 26 A - ASHWORTHS RD BRIDGE	m	20	$ 38,465.28	150	$ 769,306	$ 384,653	$ 5,129
Bridge 59 A - GARRY RIVER BRIDGE	m	86	$ 25,788.67	150	$ 2,217,826	$ 1,108,913	$ 14,786
Bridge 59 B - GLENTUI BRIDGE	m	32	$ 31,622.40	150	$ 1,011,917	$ 505,958	$ 6,746
Bridge 59 C - BULLOCK CREEK BRIDGE	m	30	$ 33,333.12	150	$ 999,994	$ 499,997	$ 6,667
Bridge 59 E - OKUKU BRIDGE	m	224	$ 25,401.60	150	$ 5,689,958	$ 2,844,979	$ 37,933
Bridge 80 A - BRIDGE ST BRIDGE	m	24	$ 36,184.32	75	$ 868,424	$ 440,001	$ 11,579
Bridge 106 A - CAM RD	m	21	$ 37,895.04	150	$ 795,796	$ 397,898	$ 5,305
Bridge 149 A - ASHLEY BRIDGE	m	299	$ 25,401.60	150	$ 7,595,078	$ 7,595,078	$ 50,634
Bridge 178 B - EYRE RIVER BRIDGE	m	170	$ 15,876.00	150	$ 2,698,920	$ 1,349,460	$ 17,993
Bridge 178 D - WAIMAK GORGE BRIDGE (BOUNDARY)	m	164	$ 22,485.60	150	$ 3,687,638	$ 3,613,886	$ 24,584

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Bridge 183 A - MAKERIKERI BRIDGE 1	m	45	$ 26,922.24	150	$ 1,211,501	$ 605,750	$ 8,077
Bridge 262 A - GILES RD BRIDGE	m	45	$ 26,894.59	150	$ 1,210,257	$ 605,128	$ 8,068
Bridge 285 C - EYRE RIVER BRIDGE (WELLS)	m	38	$ 28,200.96	150	$ 1,071,636	$ 535,818	$ 7,144
Bridge 286 A - SAULEYS BRIDGE	m	25	$ 35,614.08	150	$ 890,352	$ 445,176	$ 5,936
Bridge 311 E - HODGSONS FOOTBRIDGE	m	20	$ 24,040.80	75	$ 480,816	$ 243,613	$ 6,411
Bridge 373 A - MIDDLE BRIDGE	m	81	$ 25,926.91	150	$ 2,100,080	$ 1,050,040	$ 14,001
Bridge 373 B - GILLESPIES BRIDGE	m	119	$ 25,401.60	150	$ 3,022,790	$ 1,511,395	$ 20,152
Bridge 373 C - TOP (upper) ASHLEY BRIDGE	m	74	$ 23,526.72	150	$ 1,740,977	$ 870,489	$ 11,607
Bridge 373 E - WHISTLER BRIDGE	m	30	$ 32,762.88	150	$ 982,886	$ 491,443	$ 6,553
Bridge 386 C - GREY BRIDGE	m	78	$ 26,009.86	150	$ 2,028,769	$ 1,014,384	$ 13,525
Bridge 386 E - KARETU BRIDGE	m	33	$ 31,052.16	150	$ 1,024,721	$ 512,361	$ 6,831
Bridge 399 A - OLD WAIMAK BRIDGE (BOUNDARY)	m	356	$ 18,506.88	150	$ 6,588,449	$ 3,294,225	$ 43,923
Bridge 418 D - STONY CREEK BRIDGE 1	m	30	$ 32,762.88	150	$ 982,886	$ 491,443	$ 6,553
Bridge 482 A - LOWER OKUKU PASS BRIDGE	m	30	$ 32,762.88	150	$ 982,886	$ 491,443	$ 6,553
Bridge 487 A - OXFORD RD BRIDGE	m	29	$ 33,333.12	150	$ 966,660	$ 483,330	$ 6,444
Bridge 521 A - POYNTZS RD BRIDGE	m	103	$ 25,456.90	150	$ 2,622,060	$ 1,311,030	$ 17,480
Bridge 548 B - RAVEN QUAY BRIDGE	m	57	$ 26,590.46	150	$ 1,515,656	$ 757,828	$ 10,104
Bridge 548 C - MANDERVILLE FOOTBRIDGE	m	61	$ 26,479.87	150	$ 1,615,272	$ 807,636	$ 10,768
Bridge 602 C - SKEWBRIDGE	m	32	$ 31,622.40	90	$ 1,011,917	$ 56,218	$ 11,244
Bridge 608 A - SMITH ST BRIDGE	m	45	$ 26,922.24	150	$ 1,211,501	$ 605,750	$ 8,077
Bridge 613 A - EYRE DIVERSION BRIDGE	m	86	$ 25,788.67	150	$ 2,217,826	$ 1,108,913	$ 14,786
Bridge 632 B - CUST RIVER BRIDGE No.60	m	25	$ 35,614.08	150	$ 890,352	$ 445,176	$ 5,936
Bridge 646 A - THRELKELDS RD BRIDGE	m	30	$ 32,762.88	150	$ 982,886	$ 491,443	$ 6,553
Bridge 708 A - WILLIAMS ST BRIDGE	m	55	$ 26,811.65	150	$ 1,474,641	$ 737,320	$ 9,831
Bridge 721 A - COOPERS CREEK BRIDGE	m	47	$ 26,866.94	150	$ 1,262,746	$ 631,373	$ 8,418
Small Concrete Bridges <= 5.9m wide	m	464	$ 24,931.20	150	$11,568,077	$ 6,446,211	$ 77,121

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Small Concrete Bridges > 5.9m wide	m	213	$ 39,889.92	150	$ 8,496,553	$ 4,483,627	$ 56,644
Small Steel Bridges <= 5.9m wide (rep. CONC)	m	80	$ 24,931.20	150	$ 1,994,496	$ 997,248	$ 13,297
Small Steel Bridges > 5.9m wide (rep. CONC)	m	18	$ 39,889.92	150	$ 718,019	$ 359,009	$ 4,787
Small Timber Bridges <= 5.9m wide (rep. CONC)	m	126	$ 24,931.20	75	$ 3,141,331	$ 1,634,157	$ 41,884
Bridge Culvert Alum ARMCO Double (rep. CONC)	m	54	$ 11,634.56	100	$ 630,593	$ 435,482	$ 6,306
Bridge Culvert Alum ARMCO Single (rep. CONC)	m	34	$ 6,232.80	100	$ 211,292	$ 166,484	$ 2,113
Bridge Culvert Concrete Double	m	214	$ 11,634.56	100	$ 2,487,469	$ 1,401,022	$ 24,875
Bridge Culvert Concrete Single	m	715	$ 6,232.80	100	$ 4,454,582	$ 2,501,098	$ 44,546
Bridge Culvert Steel ARMCO Double (rep. CONC)	m	28	$ 11,634.56	50	$ 330,422	$ 76,602	$ 6,608
Bridge Culvert Steel ARMCO Single (rep. CONC)	m	217	$ 6,232.80	50	$ 1,353,141	$ 633,705	$ 25,229
SUBTOTAL - Bridges	**m**	**3,680**			**$95,773,074**	**$53,974,412**	**$ 672,922**
SUBTOTAL - Bridge Culverts	**m**	**1,262**			**$ 9,467,499**	**$ 5,214,393**	**$ 109,676**
TOTAL	**m**	**4,942**			**$105,240,573**	**$59,188,804**	**$ 782,598**

19 Traffic Signals

This component covers all Traffic Signal installations that were identified by WDC as currently being operational, and owned/maintained by the Council.

Currently as there are only a limited number of signal locations operational or coming on line, the valuation has been completed on a Lump Sum basis for each installation. Once the asset data is captured in RAMM at the component level future valuations will be completed in RAMM/RAVM.

The rates allow for:

i) Engineering fees for Traffic Signals (12%)

ii) Supply and installation

Table 15-1 shows the total valuation results for the minor structures.

Table 19-1: Valuation Parameters and 30 June 2015 Results for Traffic Signals

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Red Lion Corner Traffic Signals	LS	1	$222,122.20	30	$ 222,122	$ 214,718	$ 7,404
TOTAL	**LS**	**1**			**$ 222,122**	**$ 214,718**	**$ 7,404**

20 Vested Assets

Not all increases in asset size are due to construction of new assets by WDC itself. When ownership of developments such as subdivisions is transferred to the Council, this can create a noticeable increase in the quantities and value of the total asset base

This section details the quantity of assets and their value vested in the Council in the year ending 30 June 2015. These assets were identified at the carriageway level, by reviewing all carriageways that were entered new into RAMM during the 2014/2015 financial year, and that were identified as being 'Vested'. Vested carriageways have been identified as such by a flag in the carriageway table in the 'cway_group_4' field.

The carriageways identified as being vested in the Council, as opposed to constructed by the Council, were identified by a review of these carriageways, and by a quick desktop review of the remaining carriageways to ensure none were missed.

The total value of assets vested in the Council is shown in Table 20-1.

Table 20-1: Summary of Valuation of All Assets Vested in WDC for year ending 30 June 2015

Asset Description	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Formation	$ 5,033,579	$ 5,033,579	$ -
Sealed Pavement Surface	$ 1,801,554	$ 1,578,597	$ 73,069
Sealed Pavement Layers	$ 2,516,443	$ 2,469,291	$ 3,742
Unsealed Pavement Layers	$ 480,952	$ 458,494	$ 6,279
Drainage	$ 596,446	$ 535,129	$ 13,009
Surface Water Channels	$ 4,178,792	$ 3,944,020	$ 58,959
Footpath	$ 1,685,342	$ 1,630,727	$ 18,104
Traffic Facilities	$ -	$ -	$ -
Signs	$ 66,876	$ 52,339	$ 5,573
Railings	$ 4,731	$ 3,217	$ 189
Street Lights	$ 392,762	$ 363,264	$ 8,722
Minor Structures	$ 22,039	$ 6,887	$ 275
Islands	$ 259,648	$ 247,113	$ 3,246
Bridges and Bridge Culverts	$ 95,985	$ 90,226	$ 960
Traffic Signals	$ -	$ -	$ -
Total	**$ 17,135,149**	**$ 16,412,884**	**$ 192,127**

20.1 Comparison of Vested Assets by Component

Table 20-2: Value of Assets Vested in WDC for year ending 30 June 2015

Asset Type		Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Formation	Vested Value	$ 5,033,579	$ 5,033,579	$ -
	30 June 2015	$ 325,484,100	$ 325,484,100	$ -
	% Vested	1.5%	1.5%	
Sealed Pavement Surfacing	Vested Value	$ 1,801,554	$ 1,578,597	$ 73,069
	30 June 2015	$ 33,915,005	$ 18,861,353	$ 1,772,012
	% Vested	5.3%	8.4%	4.1%
Sealed Pavement Layers	Vested Value	$ 2,516,443	$ 2,469,291	$ 3,742
	30 June 2015	$ 178,785,651	$ 124,876,258	$ 1,504,625
	% Vested	1.4%	2.0%	0.2%
Unsealed Pavement	Vested Value	$ 480,952	$ 458,494	$ 6,279
	30 June 2015	$ 19,926,798	$ 18,512,194	$ 317,483

Asset Type		Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Layers	**% Vested**	2.4%	2.5%	2.0%
Drainage	Vested Value	$ 596,446	$ 535,129	$ 13,009
	30 June 2015	$ 45,105,908	$ 29,134,459	$ 571,800
	% Vested	1.3%	1.8%	2.3%
Surface Water Channels	Vested Value	$ 4,178,792	$ 3,944,020	$ 58,959
	30 June 2015	$ 81,075,064	$ 64,347,018	$ 1,119,007
	% Vested	5.2%	6.1%	5.3%
Footpaths	Vested Value	$ 1,685,342	$ 1,630,727	$ 18,104
	30 June 2015	$ 36,309,709	$ 25,774,378	$ 810,347
	% Vested	4.6%	6.3%	2.2%
Signs	Vested Value	$ 66,876	$ 52,339	$ 5,573
	30 June 2015	$ 5,773,601	$ 3,423,749	$ 476,868
	% Vested	1.2%	1.5%	1.2%
Railings	Vested Value	$ 4,731	$ 3,217	$ 189
	30 June 2015	$ 630,485	$ 410,655	$ 16,685
	% Vested	0.8%	0.8%	1.1%
Street Lights	Vested Value	$ 392,762	$ 363,264	$ 8,722
	30 June 2015	$ 8,663,417	$ 5,535,130	$ 195,557
	% Vested	4.5%	6.6%	4.5%
Minor Structures	Vested Value	$ 22,039	$ 6,887	$ 275
	30 June 2015	$ 1,156,069	$ 768,376	$ 25,525
	% Vested	1.9%	0.9%	1.1%
Islands	Vested Value	$ 259,648	$ 247,113	$ 3,246
	30 June 2015	$ 2,984,619	$ 2,584,930	$ 37,308
	% Vested	8.7%	9.6%	8.7%
Bridges and Bridge Culverts	Vested Value	$ 95,985	$ 90,226	$ 960
	30 June 2015	$ 105,240,573	$ 59,188,804	$ 782,598
	% Vested	0.1%	0.2%	0.1%

21 Impaired Assets/Red Zone Assets

In September 2010 and February 2011 major earthquakes occurred in the Canterbury region. These earthquakes caused significant damage to roading infrastructure in the town of Kaiapoi and the beach settlements of Pines Beach and Kairaki Beach. This damage was mainly caused by liquefaction and lateral spread and damaged the carriageways, kerb and channel and footpaths along with underground drainage pipes. The extent of the damage has been assessed, design work has been undertaken for the repair and the estimated cost of the repairs has been determined.

Outside of Kaiapoi only minor damage occurred to roading assets with the damage consisting mainly of some slumping of bridge approaches. This slumping has subsequently been repaired. Based on road inspections no assets outside of the Kaiapoi and Beach areas referred to above have suffered damage that will reduce their useful lives.

In August 2011 the Government announced the residential red zoning which would be applied to the damaged areas of Kaiapoi, Pines Beach and Kairaki Beach. In the future the majority of the roading assets in these areas are likely to not be repaired or rebuilt and will ultimately be disposed of.

The following table details the current valuation for all assets which are located within the Red Zone which are currently open to the public and which have no decision made on future use.

Table 21-1: Current Unimpaired value of assets located within the residential Red Zone which have not been closed

Asset Description	Replacement Cost	Total Accumulated Depreciation	Depreciated Replacement Cost	Annual Depreciation
Formation	$ 632,338	$ -	$ 632,338	$ -
Sealed Pavement Surface	$ 309,165	$ 210,857	$ 98,308	$ 14,614
Sealed Pavement Layers	$ 1,170,238	$ 365,334	$ 804,904	$ 8,936
Unsealed Pavement Layers	$ -	$ -	$ -	$ -
Drainage	$ 82,926	$ 32,963	$ 49,963	$ 829
Surface Water Channels	$ 1,135,838	$ 540,291	$ 595,547	$ 14,198
Footpath	$ 720,542	$ 308,857	$ 411,684	$ 13,295
Traffic Facilities	$ -	$ -	$ -	$ -
Signs	$ 21,766	$ 10,480	$ 11,286	$ 1,805
Railings	$ -	$ -	$ -	$ -
Street Lights	$ 163,990	$ 96,067	$ 67,923	$ 3,782
Minor Structures	$ -	$ -	$ -	$ -
Islands	$ 7,436	$ 837	$ 6,599	$ 93
Bridges and Bridge Culverts	$ -	$ -	$ -	$ -
Traffic Signals	$ -	$ -	$ -	$ -
Total	**$ 4,244,237**	**$ 1,565,686**	**$ 2,678,552**	**$ 57,552**

The following table details the current valuation for all assets which are located within the Red Zone which have been closed to the public and will be disposed on in the future. These assets have been excluded from the main asset valuation as the decision to dispose of them has been made.

Table 21-2: Current Unimpaired value of assets located within the residential Red Zone which have been closed

Asset Description	Replacement Cost	Total Accumulated Depreciation	Depreciated Replacement Cost	Annual Depreciation
Formation	$ 671,797	$ -	$ 671,797	$ -
Sealed Pavement Surface	$ 188,057	$ 124,186	$ 63,871	$ 9,546
Sealed Pavement Layers	$ 820,816	$ 75,247	$ 745,569	$ 1,720
Unsealed Pavement Layers	$ -	$ -	$ -	$ -
Drainage	$ 92,337	$ 39,276	$ 53,060	$ 943
Surface Water Channels	$ 1,032,944	$ 509,342	$ 523,601	$ 12,912
Footpath	$ 503,781	$ 291,749	$ 212,032	$ 14,812
Traffic Facilities	$ -	$ -	$ -	$ -
Signs	$ 9,913	$ 4,699	$ 5,214	$ 826
Railings	$ -	$ -	$ -	$ -
Street Lights	$ 127,623	$ 85,176	$ 42,447	$ 2,920
Minor Structures	$ -	$ -	$ -	$ -
Islands	$ 8,034	$ 3,515	$ 4,519	$ 100
Bridges and Bridge Culverts	$ -	$ -	$ -	$ -
Traffic Signals	$ -	$ -	$ -	$ -
Total	**$ 3,455,301**	**$ 1,133,190**	**$ 2,322,111**	**$ 43,780**

22 Recommended Improvement Actions

22.1 General recommendations

The following general recommendations will improve the accuracy of future valuations by reducing the number of assumptions required and by ensuring that those assumptions that are used best represent the conditions in the District.

Recommended Improvement Actions	Links to OAG Assessment Criteria for Asset Management*
Traffic Counts Review current traffic counts/pavement use fields against carriageway sections as a number of records are inconsistent.	Planning Assumptions and Confidence Levels
Sealed Surfacing Review current pavement surfacing Total Useful Life matrix. The valuation indicates that a significant number of seals are still performing past the end of the assumed TUL. Mainly in the single coat chipseal and slurry seal categories.	Description of Assets
Drainage Review current assumed Total Useful Life for soakpits and steel culverts. The valuation indicates that a significant number of these asset types are still performing past the end of the assumed TUL. Average of 7 years past TUL.	Description of Assets
Street Lights Review street light database, there are currently 109 more brackets than lamps reported in the RAMM database.	Description of Assets
Street Lights Review street light database, with the uptake of LED technology the asset descriptions need to be updated to reflect future asset data.	Description of Assets
Signage Valuation Methodology Review the methodology used for valuing signs and posts to better reflect the nature of replacement on the network.	Lifecycle (Optimised) Decision-making
Valuation Assumptions Review and verify the assumptions used in the valuation. In particular total useful lives, pavement depths and extra widths.	Lifecycle (Optimised) Decision-making
Tender Schedule of Quantities The current way that Seal Extension capital works projects are scheduled, with pavement construction on a per metre basis, does not allow the unit rates for basecourse and subbase to be included in the calculation of the unit rates for the Valuation.	N/A
Bridge Valuation Review the methodology used for valuing bridges to better reflect the nature of replacement on the network	Lifecycle (Optimised) Decision-making

* As detailed in the International Infrastructure Management Manual – Version 3.0, 2006

23 Glossary

Annual Depreciation
The Annual Depreciation is the amount the asset depreciates in a year. It is defined as the replacement cost minus the residual value, divided by the estimated total useful life for the asset.

Depreciation
Depreciation is a measure of the consumption of the economic benefits embodied in an asset. It distributes the cost or value of an asset over its estimated useful life. Thus depreciation only applies to those assets with finite lives. Assets with infinite lives (e.g. Land, Formation and Subbase) are not depreciated. Straight-line depreciation is used in this valuation.

Depreciated Replacement Cost
Depreciated Replacement Cost is the current replacement cost less allowance for physical deterioration and optimisation for obsolescence and relevant surplus capacity.

Where the remaining life of an asset can be assessed, the Depreciated Replacement Cost has been calculated as:

$$\frac{\text{Remaining useful life}}{\text{Total useful life}} \text{ X (replacement cost – residual value)} \quad \text{+ residual value}$$

Note: That for assets that have exceeded their Total Useful Lives (TUL) the Adjusted Total Useful Life is calculated as the age of the asset plus the Minimum Remaining Useful Life (MRUL).

Minimum Remaining Useful Life (MRUL)
The Minimum Remaining Useful Life is applied to assets that are older than their useful life. It recognises that, although an asset is older than its useful life, it may still be in service and therefore have some value. Where an asset is older than its standard useful life, the minimum remaining useful life is added to the standard useful life and used in the calculation of the depreciated replacement value. The minimum remaining useful lives of assets in this valuation are included in the asset assumption tables.

Replacement Cost
The Replacement Cost is the cost of building the asset "today". In arriving at the value, it is assumed that modern construction techniques and modern equivalent materials are used, but that the physical result replaces the asset as it exists.

Residual Value
The Residual Value is the value of the asset when it reaches the end of its life. For the purposes of this valuation we have assumed that all assets have no residual value. The residual value has been removed due to the minimum remaining useful life being a more appropriate way of valuing assets that have reached the end of their TUL.

Total Useful Life (TUL)
The Total Useful Life is the period over which an asset is expected to be available for use by an entity.